Manual of Operations
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HF-ACTION

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The voting members of the Steering Committee will consist of the principal investigator of each clinical center, the principal investigator of the Coordinating Center, and the National Heart, Lung, and Blood Institute (NHLBI) Project Officer.

The main roles and responsibilities of the Steering Committee are:

- To oversee the overall scientific direction of the trial.
- To develop and approve the protocol.
- To review and finalize the case report forms, quality of life instruments, patient manual, and operations manual.
- To review and approve the analysis plan.
- To approve substudies and publications.
- To review study progress, including enrollment, adherence, and quality of study design.
- To review reports from each subcommittee and the Executive Committee and provide recommendations.

The committee will meet annually at the American Heart Association and the American College of Cardiology national meetings. During these meetings, the committee will act on the recommendations of the DSMB, review and vote on potential protocol amendments, and review and vote on presentations and publications of the study.

HF-ACTION

Executive Committee

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*Voting members

The HF-ACTION Executive Committee is authorized by the HF-ACTION Steering Committee to conduct the week-to-week business of the study and to lead the implementation of policies and practices approved by the Steering Committee. Executive Committee members will include the Coordinating Center principal investigator, co-principal investigator, lead statistician, and project leader, the chair and vice chair of the Steering Committees, the NHLBI investigators, and a rotating member from the regional investigator group, and a senior clinical study coordinator.

The main roles and responsibilities of the Executive Committee are:

- To resolve issues not requiring full Steering Committee input.
- To develop and prepare the agenda and recommendations for the steering committee meetings.
- To review operational aspects of the trial on an ongoing basis.
- To oversee the conduct of the study and initiate the approval process for any protocol changes needed to improve the quality of the study.
- To implement all protocol amendments approved by the Steering Committee and the DSMB.
- To propose membership of the other committees to the Steering Committee.
- To serve as a liaison between the NHLBI and the other committees.
- To present the trial results to the Steering Committee in advance of national presentations.
- To approve all manuscripts prior to submission.

HF-ACTION

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All are voting members.

The Coordinating Committee will act as a liaison between the various subcommittees and the Executive Committee. It will report monthly as necessary in writing or by conference call to the Executive Committee to apprise the latter of progress and problems in the relevant areas of the study. It will consist of the Executive Committee and the chairs of the subcommittees.

HF-ACTION

Endpoint Subcommittee Charter

Version: 4 07/15/2003

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All are voting members.

Creation of the Endpoint Subcommittee (ES)

The Endpoint Subcommittee systematically identifies, adjudicates, and classifies suspected safety and efficacy endpoint events while blinded to treatment assignment. The ES group develops trial specific processes for the identification of suspected endpoint events, the collection of required clinical data, and the adjudication of the suspected endpoint events using pre-specified criteria.

Heart Failure and A Controlled Trial Investigating Outcomes of Exercise TraiNing (HF-ACTION) is a multicenter, international, randomized trial that addresses the primary hypothesis that patients with left ventricular (LV) systolic dysfunction and New York Heart Association (NYHA) class II-IV symptoms who are given exercise training in addition to standard care will have a ≥20% lower rate of death and hospitalization over two years than patients who receive usual care alone. Important secondary endpoints include exercise testing parameters, economics, quality of life, and depression.

The main roles and responsibilities of the ES are:

- To agree on standard definitions for the endpoints of mortality and hospitalization.
- To standardize adjudication procedures for assessing these endpoints.
- To summarize above definitions and procedures in an Endpoint Charter.
- To provide an independent assessment of mode of death and hospitalizations according to the Endpoint Charter definitions and procedures.

Composition of the Committee

The ES will consist of twelve cardiologists who are not employees of the sponsor or have a financial conflict of interest. One Cardiologist will serve as Chair. The selection of the ES will be made by the Executive Committee. Replacements will be made as necessary to maintain the committee at full complement throughout the study

EX officio members of the ES will include a representative from the NHLBI and from the Executive Committee. Ex officio members may attend the face-to-face adjudication meetings in an advisory/observation capacity. Ex officio members will be chosen by the NHLBI and the Executive Committee.

Committee Responsibilities

1. The ES will provide the working definitions and criteria for classification for all mortality and hospitalization endpoints. This will become an Appendix to the ES manual on approval by the Steering Committee.
2. The ES will review all suspected mortality and cardiovascular hospitalization endpoints and classify them into study endpoints or non-endpoints and further classify all study endpoints into their type according to the working definitions and criteria. Based on the definition of cardiovascular hospitalization created by the endpoints committee, the coordinating center will identify cardiovascular hospitalizations for adjudication. Noncardiovascular hospitalizations will be reviewed by a CEC Coordinator except for Pulmonary and Renal admissions. If the Coordinator has uncertainty or there is insufficient information then those events will be forwarded to the committee for review.

   Cardiovascular procedures that require hospitalization will be reviewed by a cardiology fellow. If the fellow has uncertainty or there is insufficient information, then those hospitalization events will be forwarded to the committee for review. The Chair of the ES will receive copies of all the classification forms completed by the Coordinator and the Fellow. Any cases deemed by the chair as needed adjudication, will undergo ES review. See Appendix One of this charter.
3. The DCRI will not assign an ES member an endpoint adjudication which comes from the ES members own institution. If the ES member is assigned an event from the member's institution by mistake, the member should return the packet to the DCRI for reassignment to a different ES member.

Conduct of Business

1. **Adjudication process**

   a) Adjudication by mail:

   Endpoint packets will be mailed to the reviewers as soon as 60 endpoint packets are ready for review. Endpoints must have CEC data clean and all the required medical records submitted before the endpoints are reviewed. Each case will be reviewed independently by 2 members. If there is agreement, the decision is final. If there is disagreement, the case will be discussed at the face-to-face meetings described below.

   b) Adjudication by face-to-face meeting:

   The ES will hold one initial face-to-face meeting to ratify its manual, finalize definitions, and adjudicate a number of events. Thereafter, the meetings will be scheduled on a semiannual basis to fulfill the responsibilities of the ES for the duration of the study. All meetings will be held in Durham at the DCRI. Two members of the ES different from those performing the initial review described in 1a *(above)* will review the events independently. If agreement is reached, the adjudication is final. If there is disagreement, the case will be discussed by the whole committee and will be resolved by majority vote. Occasionally, an event may need to be reclassified because of the discovery of new information.

2. **Quorum**

   Five regular members must be present in order to conduct the business of the committee.

3. **Conduct of Meetings**

   Business will be conducted by parliamentary procedure and decisions will be made by majority vote. The DCRI will provide a person to record minutes of meetings.

Processing of Data

All suspected events are identified systematically by a computer program that queries key data fields on the CRF determined to be critical variables. This program is called the “trigger” program and is typically run once all CRF data fields relevant to the ES process are query clean. Although an initial set of “triggers” is typically defined at the start of a trial, if changes are

suggested based on reviewed events, they may be modified during the course of the trial.

Every effort will be made to provide the ES with query clean CRF data and required clinical data prior to event adjudication. However, it is anticipated that CRF data may be updated or additional clinical data may become available subsequent to event adjudication. Reports generated from the query database will notify the ES of updates to critical variable fields that may affect event adjudication. If this occurs or additional data is submitted that may affect the adjudication, the event will be identified for re-review. The ES event classification form and database will subsequently be updated to reflect changes, if necessary, to the initial adjudication.

Final classification of mortality and hospitalization events will be conducted according to the following time frame.

Allowable Time Frame	**Activity**
Within 4 weeks of event	Site will forward CRFs and MRAs to DCRI
60 endpoint packets are ready	DCRI will forward endpoints to ES reviewers
Within 2 weeks of receipt of packet	Reviewers will return completed classification form(s) to DCRI
Within 3 weeks of receipt of packet	DCRI will forward adjudicated results to EC chair
Twice per year	Face-to-face EC meetings to adjudicate disagreements

All final determination of the endpoint events will be confidential until such a time as the trial ends, when data will be disclosed to individual investigators. Event classification by the committee will be final and will be reported as the official primary and secondary endpoints.

Processing of Data for the Event Classification Committee

1. Data required to apply the classification criteria will be collected on the Case Report Forms and taken from reports of diagnostic studies, required ECGs, or other reports provided as medical record attachments (MRAs), including the hospital discharge summary.
2. Within four weeks of the presumed event, these data will be forwarded from the Principal Investigator (PI) and Study Coordinator to the DCRI.
3. The DCRI CEC Coordinator will review the information for completeness. A CEC query will be sent to the site requesting either missing medical records or additional information.
4. The DCRI CEC Coordinator will have copies made of the endpoint packets and will

distribute them to two ES members. Members have two weeks to determine a final event classification, document their decision on the Committee Classification Form(s) provided, sign, date, and return the Committee Classification Form(s) to the DCRI CEC Coordinator. The DCRI CEC Coordinator will review the forms for completeness and consistency. After the adjudication process has been completed the Coordinator will identify the final adjudicated form for database entry by checking the “enter this page box,” at the top of the review form. Data will be analyzed, processed and reported to the Data Safety & Monitoring Board (DSMB) on a routine basis.

DCRI CEC Coordinator

The individual will be a non-physician health professional trained and knowledgeable in the clinical diagnosis pertaining to the protocol. Responsibilities and functions will be:

1. Review and screen all endpoints for appropriate documentation. Blind any patient identifiers not already done by the sites on all items of the MRA’s. The CEC Coordinator will then duplicate all information required for event classification from the database and MRAs received from sites.
2. The CEC Coordinator will then distribute the endpoint packets to the ES members.
3. Forward information on all deaths and cardiovascular hospitalization events to the ES members.
4. Adjudicate non-cardiovascular hospitalizations except for Pulmonary and Renal admissions.
5. Submit forms for re-reading for Quality Assurance Program.

Endpoint Packets

The package of information that will be sent to the EC members for patients with a presumed study endpoint event will include:

1. Completed case report forms reporting cardiovascular hospitalization or death.
2. Copies of pertinent hospital discharge summaries and other pertinent studies if available (i.e., CT scans, ECGs, operative reports, coronary angiography, catheterization laboratory reports etc).
3. Summary of interview by Study Coordinator of spouse or witnesses describing out-of-hospital death.
4. Completed Event Inventory Form identifying all attached study forms and MRAs for presumed events.
5. Blank Committee Classification Form(s) for completion by the reviewer.

Classification Forms

The Endpoint Classification Form(s) will be developed by the ES committee and approved by the Executive committee.

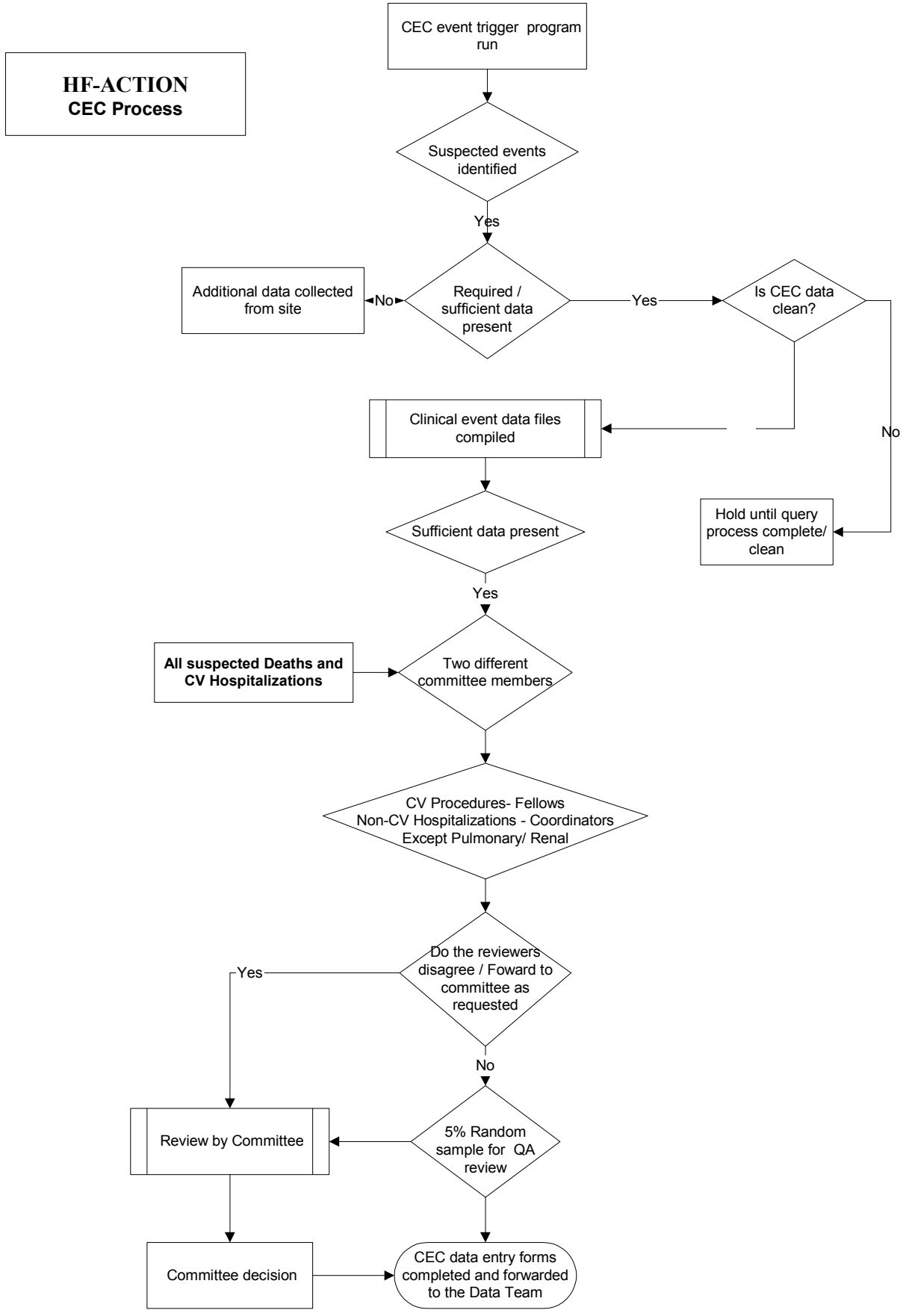
Quality Assurance

Throughout the trial, 5% of the cases will be randomly selected by the trial's statistician and re-reviewed by the committee members to insure consistency of the adjudication process and to determine the intra-observer reliability. Results will be reported to the Executive Committee.

Publications

The work of the ES will be published in scientific papers with approval of the publications committee.

APPENDIX ONE



Appendix Two: Events List

1) Cause of Death
    a) Sudden
    b) Pump failure
    c) MI
    c) Acute Coronary Syndrome or Unstable Angina Pectoris
    d) CVA
    e) Cardiovascular procedure related
    f) Other cardiovascular
    g) Non cardiovascular
    h) Unknown
2) Cause of Hospitalization
    a) Worsening heart failure
    b) Acute Coronary Syndrome or Unstable Angina
    c) Myocardial infarction
    d) Cardiovascularization procedure
        1) PCI
        2) CABG
        3) Transplant
        4) EPS
        5) AICD
        6) Pacemaker
        7) Cardioversion
        8) LVAD
        9) Valve replacement / repair
    e) Resuscitated cardiac arrest
    f) Arrhythmia
        1) Atrial: SVT, AF
        2) Ventricular: VF, VT
        3) Conduction disorder: Bradycardia heart block, SSNS
    g) Other cardiovascular
        1) Vascular: CVA, TIA, PVD
        2) Presyncope, Syncope
        3) Chest Pain
        4) Hypotension, Hypertension
    h) Non-cardiovascular

Appendix Three: Endpoint Definitions

Cause of Hospitalization

I. To reach a protocol-specified endpoint hospitalization, the following are required:

1) Hospitalization in a hospital-based bed (includes observation units but not emergency room beds) for ≥24 hours or involving a calendar date change if timing can not otherwise be assessed.

2) Cardiovascular hospitalization for a primary cause listed in appendix two of this charter.

II. MI, stroke, and worsening heart failure occurring during any hospitalization. These represent important and in some cases irreversible endpoints.

III. Supplemental definitions

a) Worsening heart failure

Patients should have some of the following features:

1. Symptoms of heart failure, for example: DOE, PND, orthopnea, edema, fatigue.
2. Signs on physical exam of heart failure, for example: JVD, pulmonary rales, S3, edema.
3. Laboratory evidence of heart failure, for example: Chest x-ray - PVR, interstitial edema, effusions, significantly increased BNP, NT-BNP, Pro-BNP, new onset or worsening prerenal azotemia (BUN/CR).
4. Intravenous treatment with intotropics, diuretics, or vasodilator therapy or significant augmentation (50% increase) of oral therapy.

b) Acute coronary syndrome

1. Angina occurring at rest, prolonged, or with a significant change in pattern.
2. New onset.
3. Recent acceleration of angina reflected by an increase in severity, duration, frequency or necessitating increased use of NTG.
4. Transient ischemic ST-T changes, including ST segment depression or T wave inversion
5. Significant change (PO or IV or SQ) in medication.

c) Myocardial infarction:

1. Either 1 of the following criteria satisfies the diagnosis for an acute, evolving or recent AMI:

a. Typical changes in biochemical markers of myocardial necrosis (troponin or CK-MB) with at least 1 of the following:
   1. Ischemic symptoms
   2. ECG change typical of Q or non Q MI

   or

b. Pathological findings of an acute MI by autopsy

2. The following are biochemical indicators for detecting myocardial infarction:
   a. Troponin T or I: Maximal concentration of troponin T or I greater than two times the upper limit of normal on at least 1 occasion.

      or

   b. CK-MB maximal value greater than the upper limit of normal on at least 1 occasion.

      or

   c. Total CK, in the absence of availability of troponin or CK-MB assay, greater than 2 times the upper limit of normal or the characteristic rise and fall.
3. The following are ECG indicators for detecting myocardial infarction:
   a. ST-segment elevation: New or presumed new ST-segment elevation at the J point in 2 or more contiguous leads with the cutoff points greater than or equal to 0.2 mV in leads V1, V2, or V3, or greater than or equal to 0.1 mV in other leads

      or

   b. Development of a Q wave in lead V1-V3 or the development of a Q wave greater than or equal to 30 msec (0.03 sec) in leads I, II, avL, avF, V4, V5 or V6. (Q wave changes must be present in any 2 contiguous leads and be greater than or equal to 1 mm in depth.)

      or

   c. Characteristic ST - T wave changes compatible with non Q MI
4. Evidence which would raise the index of suspicion in the absence of clear data regarding ECG and/or enzyme changes.
   a. The use of thrombolytics
   b. Catheterization evidence of acute thrombus
   c. Echocardiographic, radionuclide, or contrast ventriculography evidence of a new wall motion abnormality

    d. Evidence of infarct complication: such as myocardial rupture, papillary muscle dysfunction, VSD

d) Ventricular dysrhythmia (VT, VF) Typical ECG evidence.

e) Atrial dysrhythmia (SVT, AF) Typical ECG evidence.

f) Stroke: Stroke is defined as a persistent disturbance of focal neurological function resulting in symptoms thought to be due to athero/thrombotic cerebral infarction, embolus, evidence of hemorrhage or for which there is no certain etiology. Diagnosis will require characteristic history, physical exam, imaging techniques and / or autopsy data.

Cause of Death

a) Sudden Death

Unexpected and otherwise unexplained death in a previously stable patient. This includes patients who were comatose then died after attempted resuscitation. Patients in this category should have had recent human contact before the event. Patients who die who have been out of contact for prolonged or unknown periods of time will be classified as unknown.

b) Pump Failure Death

Death from worsening/intractable heart failure which generally occur during hospitalization but can occur at home during hospice care. Terminal arrhythmias associated with pump failure deaths will be classified as a pump failure death. Pump failure secondary to a recent myocardial infarction will be classified as an MI death.

c) Myocardial Infarction Death

Death occurring after a hospital–verified definite AMI, or in cases of death occurring outside the hospital, autopsy findings showing a recent myocardial infarction or a recent occluding coronary thrombus. (MI criteria above)

d) CVA Death

Death occurring after a hospital–verified definite stroke, or in cases of death occurring outside the hospital, autopsy findings showing a recent stroke. (stroke criteria above)

Appendix Four: HF-ACTION ES Membership

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APPENDIX Five: MEETING SCHEDULE (all meetings held at DCRI in Durham)

1) Investigators meeting
   a) February 2003

2) Adjudication meetings: Initial meetings to work out systems issues
   a) January 2004

3) Event reviews with face-to-face meetings will occur semiannualy.
   a) September 2004
   b) February 2005
   c) September 2005
   d) February 2006
   e) September 2006

4) Projected end of trial
   a) February 2007

HF-ACTION

Ancillary Studies Subcommittee Charter

Members:

Name	Phone	Email
Bill Kraus, Chair	919-681-6733	wekraus@duke.edu
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All are voting members.

A. Background

Large numbers of well characterized patients are required to conduct clinical trials, especially those that require hard clinical endpoints to achieve their primary goals. These trials constitute a substantial investment and provide a unique resource of potential subjects and patient materials for studies to better understand disease mechanisms or how responses to therapy are mediated. There is general agreement within the scientific community that our understanding of many of the mechanisms underlying interventions for treatment of heart, lung, and blood diseases are limited, even in cases where efficacy has been shown. In addition, clinical trials supported by industry and other sources, including NIH, often do not incorporate studies of underlying mechanisms. Therefore, it is necessary to consider novel approaches to capitalize on these valuable and expensive clinical trials to utilize patient information and samples from clinical trials of heart, lung, and blood diseases for study of the basic mechanisms of therapeutic effect, physiologic/cellular function and disease pathogenesis. These mechanistic studies not only offer an opportunity to elucidate disease pathogenesis and correlate this information with clinical course and outcome, but a means to investigate new mechanisms and obtain new information. This information will be crucial to identifying effective surrogate markers that can be used to predict which patients are at high risk, or to design treatments, or the timing of treatments that can be targeted to patients with specific responses or characteristics. These issues are never more pertinent than they are for the HF-ACTION trial where the ability to address mechanistic questions regarding the mechanisms of potential responsiveness to exercise training in CHF may never come again. Therefore there is a great interest in the development of mechanistic ancillary studies for the HF-ACTION trial on the part of participating investigators, the National Institutes of Health and the greater research community.

B. Mission

It is the mission of the HF-ACTION Ancillary Studies Committee to facilitate the development and implementation of Ancillary Studies for the trial by critically addressing issues related to overlap, complementarity and patient burden and not to be a barrier to the conduct of good and innovative science in the trial.

C. Definitions

1. **Ancillary Studies.** An Ancillary Study for the purposes of the HF-ACTION trial is any

study that develops supplementary data collected on patients who are screened for entry into, or enrolled in HF-ACTION, over and above the data collection required by the standard HF-ACTION CRF. Such studies may be as involved as the uses of a specific testing technique or as simple as using only supplemental data collected on HF-ACTION patients. The studies may be conducted either on a fraction of subjects seen at each Clinical Center or may consist of subjects seen at selected Clinical Centers. Ancillary studies must be reviewed and approved by the HF-ACTION Ancillary Studies Committee (ASC) and ratified by the Steering Committee prior to initiation to ensure that they do not conflict with the main protocol. All ancillary studies will be funded through separate funding sources. Review by the HF-ACTION Ancillary Studies Committee and the HF-ACTION Publications Committee is required for presentation or publication of an ancillary study.

2. **Data Bank Studies.** A Data Bank Study uses data, specimens, or recordings which are routinely collected on patients who are screened for entry into, or enrolled in HF-ACTION. Analysis of these data is used to answer a specific scientific question. Data bank studies will be considered by the Publications Committee.

3. **Genetics Studies.** Although genetics studies will be handled by the Genetics Studies Committee, the GSC will have a reporting relationship to the Ancillary Studies Committee so that this committee can serve as a resource for information about all Ancillary Studies being conducted on subjects in the HF-ACTION trial.

D. Committee Structure

The ASC will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster of the Committee is listed on the first page of this document. For business meetings a quorum of 5 voting members of the committee must be present.

E. Preparation of Proposal Ancillary Studies

Each proposal for an Ancillary Study should contain description of the objectives, methods, analysis plans, significance of the study, and proposed collaborators. Full details should be given concerning any procedures to be carried out on a study patient such as psychiatric interviews, psychological testing, biochemical assay procedures, ancillary testing, etc. Any substances to be injected or otherwise administered to the patients should be described. Any observations to be made or procedures to be carried out on a patient outside of the Clinical Unit

should be described. Mention should be made of the extent to which the Ancillary Study will require extra clinic visits by the patient or will prolong the patient's usual clinic visit (Patient Burden). Information should be given concerning the extent to which the study will require fluid or biopsy specimens in addition to those already required for HF-ACTION. If blood specimens are to be obtained from the patients, all procedures to be carried out on these specimens should be described.

Proposals should also include the following:

- Summary of proposed work (preferably in the form of Specific Aims and hypotheses).
- Scientific Rationale in the context of HF-ACTION. (That is, why this study should be done in the context of HF-ACTION).
- Outline of study design.
- Potential Co-Investigators (i.e., what sites and how many sites will be involved).
- Potential Funding source and deadline for submission.
- Likely budget range.
- Subject burden - what will subjects be asked to do in addition to HF-ACTION protocol items.
- Subject compensation.
- Estimate of power calculations.
- Additional data collection plan.
- Potential resource needs from the HF-ACTION trial.
- Potential conflict of interest (most particularly with industry-funded studies).

The Ancillary Studies Committee (ASC) will keep a registry of the above mentioned items for each study associated with HF-ACTION, as well as the submission date, the date communicated out of Committee to the Steering Committee, the date and action of the Steering Committee, a log of study progress, and any publications proceeding from the work. Also, a log of site burden will be kept.

F. Submission of Proposals (Figure 1)

One copy of each proposal should be submitted to the Chair or co-Chair of the Ancillary Studies Committee for inventory, and facilitated transmission to the ASC for consideration. The action of the ASC will be communicated back to the initiating investigator for comments and

suggestions from the committee, if appropriate, within one month. In the case of positive action by the ASC, the proposal will be communicated to the Steering Committee with recommended approval, also within one month. The investigator will then work with a designated statistician and financial analyst from the Coordinating Center to develop the statistical section of their proposal that concerns common measures and to identify the budgetary resources to support this. This process will also take approximately one month. Once the entire process is completed, the Coordinating Center will provide from the HF-ACTION study a letter of support for the project to be submitted to with the grant application for funding.

Thus, although the ASC will facilitate the timely consideration of proposals by the ASC and HF-ACTION Steering committee, it is strongly suggested that the Principal Investigator submit the proposal to the ASC no later that 12 weeks prior to the proposed submission date. The Chair or co-Chair of the ASC will notify the Investigator when the project is approved, disapproved or additional information is needed before a decision can be made to submit to external funding.

G. Committee Review

The Committee with take the following under consideration when reviewing proposals, in addition to the items identified in Item D above, with the goal of promoting the best mechanistic studies proceeding from the HF-ACTION trial:

- Similarity to studies proposed by other investigators – facilitate collaborative work and minimize overlap
- Potential for collaborative work with other mechanistic ancillary studies (i.e., ability to answer larger questions when combined with data from other ancillary studies
- Potential for interference with the parent HF-ACTION trial
- Subject burden
- Site burden (i.e., number of different studies being conducted on same pool of subjects)
- Investigator conflict of interest (industry-funded studies)
- Use of HF-ACTION resources

A study proposed by a member of the ASC will require recusal of the member when the study is being considered for a vote.

All industry-funded studies will require a full review of the Committee or a sub-committee thereof to ensure proper peer review. This panel may include outside reviewers if appropriate

expertise is not available on the Ancillary Studies Committee or among the HF-ACTION investigators. This is not required of NIH proposals.

H. Funding

All studies must seek independent funding, including but not limited to industry funding, and NIH R01 mechanisms. Investigator initiated applications according to the customary peer review procedures deadlines are February 1, June 1, and October 1.

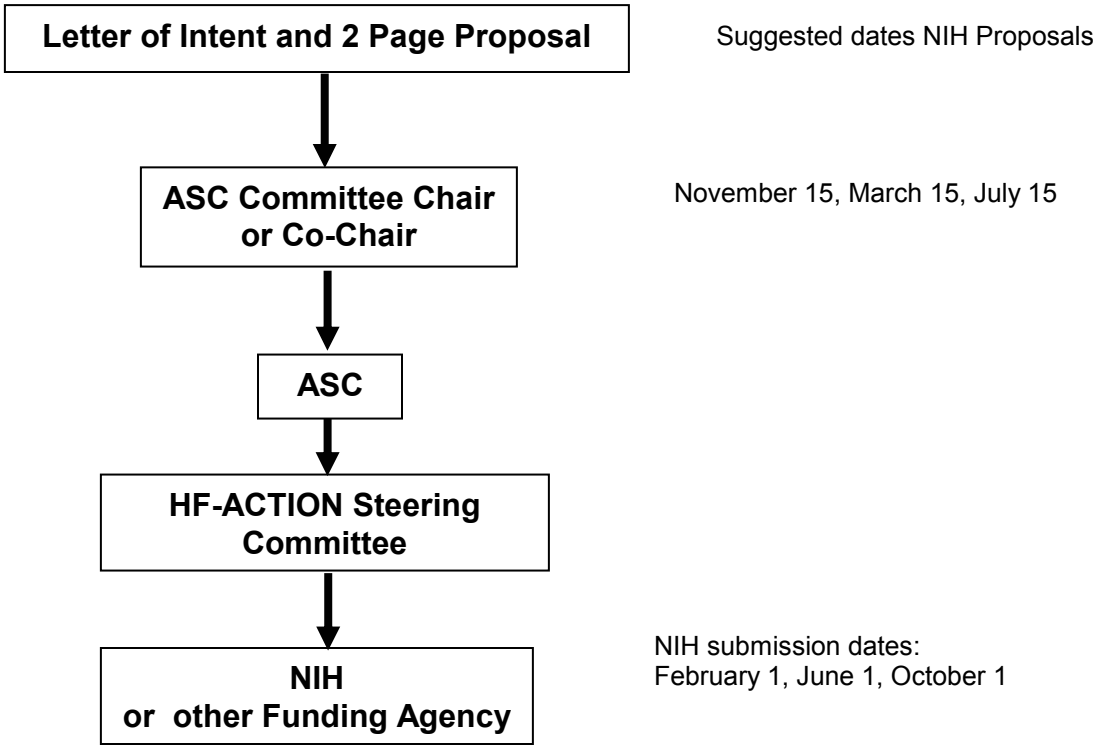
I. Reporting

The Principal Investigators for each ancillary study will make a report of recruitment and progress, including any adverse events, to the Ancillary Studies Committee through the Chair, and to the Coordinating Center on a quarterly basis. Adverse events for the ancillary studies will be considered by the HF-ACTION DSMB. The Chair or co-Chair of the ASC may be asked by the Coordinating Center to make these reports.

J. Ancillary Study papers, abstracts and presentations

Papers or abstracts resulting from these studies will have named authorship of individuals involved, ending with the phrase “for the HF-ACTION Investigators.” In addition, papers will have an appendix containing the names of the sites, their Principal Investigators and Co-Investigators and other individuals participating in the study. Sites will include the participating Clinical Centers, the Coordinating Center, and the NHLBI Project Office. All papers and abstracts must be approved by the Publications Committee before they are submitted. All abstracts prepared for presentation must be submitted to the Publications Committee and to the Coordinating Center at least 1 month prior to the deadline. In addition, all abstracts must receive separate approval for any meeting or presentation. An approved abstract or symposium for one meeting must obtain independent approval for submission to a separate meeting.

FIGURE 1: PREFERRED MECHANISM FOR ANCILLARY STUDY PROPOSALS.



HF-ACTION

Quality Assurance Subcommittee Charter

Members:

Name	Phone	Email
Lynn Wagoner, Chair	513-558-3712	wagonele@ucmail.uc.edu
Gene Wolfel, Co-Chair	303-315-4398	Gene.wolfel@uchsc.edu
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Dave Rendall	919-668-8787	Renda002@mc.duke.edu
Richard Schofield		schofrs@medicine.ufl.edu

All are voting members.

A. Mission

The Quality Assurance Subcommittee will be responsible for assuring that the quality of clinical trial data, particularly exercise testing, meets the standard set in the protocol and manual of operations and will be usable for analysis. The Quality Assurance subcommittee will not be responsible for assuring the quality of the intervention, which falls under the Intervention subcommittee.

B. Responsibilities

The main roles and responsibilities of the Quality Assurance Subcommittee are:

- To develop and write procedures for all measurements, including a Manual of Procedures.
- To oversee clinical site training for data collection.
- To develop and implement methods to maintain the exercise testing standards for the study.
- To review core laboratory processes on an ongoing basis.
- To regularly review the quality of data acquisition at HF-ACTION investigative sites and inform the Executive Committee of consistent variance from established guidelines at any clinical site.
- To recommend corrective action for any consistent variance from testing standards at any clinical site to the Executive Committee.

C. Committee Structure

The QA Subcommittee will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster is listed on the first page of this document. For business meetings a quorum of 5 voting members of the QA Subcommittee must be present.

HF-ACTION

Intervention Subcommittee Charter

Members:

Name	Phone	Email
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Jen Kekerlegand	215-662-7774	Jennifer.torkish@uphs.upenn.edu
Brian Duscha	919-660-6696	Dusch001@mc.duke.edu
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Frank Yanowitz	801-408-5302	ldfyanow@ihc.com
Robin Boineau	301-435-0399	rb@nih.gov

All are voting members.

Mission

The overall objective of the Intervention Subcommittee is to develop and oversee implementation of the study intervention, assuring that patients in the HF-ACTION trial receive the study intervention throughout the trial. These objectives will be discharged by site certification, monitoring, education.

Responsibilities

The main roles and responsibilities of the Intervention Subcommittee are:

- To develop and write the operational details of implementing the study intervention, including patient education, for both intervention and usual care arms (to include the Intervention Manual of Procedures).
- To oversee clinical site training for implementation of the intervention.
- To develop and implement methods for maintaining the exercise training standards for the study.
- To regularly review the exercise training data from HF-ACTION investigative sites and inform the Executive Committee of consistent variance from established training guidelines at any clinical site.
- To recommend corrective action for any consistent variance from training standards at any clinical site to the Executive Committee.

Committee Structure

The Intervention Subcommittee will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster is listed on the first page of this document. For business meetings a quorum of 5 voting members of the Intervention Subcommittee must be present.

HF-ACTION

Medical Therapy Subcommittee Charter

Members:

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Lawton Cooper	301-435-0425	cooperls@nhlbi.nih.gov

All are voting members.

A. Mission

The overall objective of the Medical Therapy Committee (MTC) is to oversee the background medical therapy (pharmacological and non-pharmacological, except patient education) that patients in the HF-ACTION trial receive throughout the trial. The primary goal is for patients enrolled in the trial to receive treatments that meet the national heart failure guidelines so that the results of the HF-ACTION study are seen as beneficial in addition to best-medical practice.

B. Responsibilities

The main roles and responsibilities of the Medical Therapy Subcommittee are:

- To develop and write the operational details of implementing the background medical therapy for both intervention and usual care arms.
- To review advances in medical therapy that might necessitate modification of the standardized medical regimen during the trial and recommend adoption of changes that appear appropriate to the Steering Committee.
- To inform the Executive Committee regarding the potential need to include new pharmacological and non-pharmacological therapies for the management of HF, LV systolic dysfunction, and CAD. Final approval of these changes will be made by the Steering Committee.
- To review Coordinating Center data reflecting clinical site compliance with the standards of therapy given during the trial.
- To recommend corrective action for any consistent variance from medical therapy standards at any clinical site to the Executive Committee.

C. Committee Structure

The MTC will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster of the MTC is listed on the first page of this document. For business meetings a quorum of 5 voting members of the MTC must be present.

D. Process for Proposals for Changes to Protocol, Enrollment Criteria, and Endpoints

Each proposal for a change to the medical therapy for enrolled patients will be submitted as a written proposal to the Chair and co-Chair of the Medical Therapy Committee. The proposal will be two pages or less and must include rationale for proposed change and supporting literature and references if applicable

The MTC Chair and co-Chair will circulate proposed changes to the committee membership upon receipt. In addition, as appropriate, the MTC Chair will send such proposals to other committees for review and comment. The MTC will convene quarterly, usually by teleconference, and will review and vote on proposed changes. In the event that the proposed change is being considered in conjunction with another committee (i.e. Design and Analysis), a representative from the appropriate committee (preferably the chair or co-chair) will participate in the MTC call.

Those changes which are approved by the MTC will be forwarded to the Executive Committee for review within three (3) months of their receipt by the MTC Chair and co-Chair. Pending Executive Committee approval, the proposed changes will be circulated to the Steering Committee for a final vote. If approved by the Steering Committee, the coordinating center will issue an amended protocol to all participating centers for submission to institutional IRB's for approval. The DSMB will be notified by the NHLBI project officer of all approved protocol changes.

If proposed protocol amendments are rejected by the Medical Therapy Committee, the Executive Committee or the Steering Committee, the person(s) making the original proposal will be notified by the MTC Chair. The notification will include a specific rationale for rejecting the amendment.

The MTC Chair will keep records of proposed changes as well as the outcome associated with each. A file of this record will be sent to the coordinating center at least every year.

HF-ACTION

Design and Analysis Subcommittee Charter

Members:

MEMBER	PHONE	EMAIL
Dalane Kitzman, Chair	336-716-3274	dkitzman@wfubmc.edu
Gregg Fonarow, Co-Chair	310-206-9112	gfonarow@mednet.ucla.edu
Steven Keteyian	313-972-1920	Sketeyi1@hfhs.org
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Eric Leifer	301-435-0434	leifere@nhlbi.nih.gov
Dave Whellan	919-668-8778	Whell001@mc.duke.edu

All are voting members.

A. Mission

The overall objective of the Design and Analysis Committee (DAC) is to approve and recommend changes to the HF-ACTION protocol to the Steering Committee.

B. Responsibilities

The main roles and responsibilities of the Design and Analysis Committee are:

- To develop, evaluate, and recommend changes to the protocol, including alterations to the statistical analysis plan.
- To develop, evaluate, recommend changes to, and periodically review the study enrollment criteria, in coordination with the Recruitment and Retention Subcommittee.
- To develop, evaluate, and recommend changes to the study endpoints, in coordination with the Endpoint Subcommittee.
- To submit amendments to the Executive Committee for presentation to the Steering Committee. All amendments must be approved by the Steering Committee.
- To finalize the Endpoint Subcommittee's endpoint definitions.

C. Committee Structure

The Design and Analysis Committee will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster of the DAC is listed on the first page of this document. For business meetings a quorum of 5 voting members of the DAC must be present.

D. Process for Proposals for Changes to Protocol, Enrollment Criteria, and Endpoints

Each proposal for a change to the protocol, enrollment criteria, or endpoints will be submitted as a written proposal to the chair and co-chair of the Design and Analysis Committee. The proposal will be two pages or less and must include:

- Rationale for proposed change
- Clear outline of anticipated impact of change on enrollment, endpoints and/or analysis
- Supporting literature and references if applicable

The DAC chair and co-chair will circulate proposed changes to the committee membership upon receipt. In addition, as appropriate, the DAC chair will send such proposals to other committees for review and comment. The DAC will convene quarterly, usually by teleconference, and will review and

vote on proposed changes. In the event that the proposed change is being considered in conjunction with another committee (i.e. Recruitment and Retention, Endpoints), a representative from the appropriate committee (preferably the chair or co-chair) will participate in the DAC call.

Those changes which are approved by the DAC will be forwarded to the Executive Committee for review within three (3) months of their receipt by the DAC chair and co-chair. Pending Executive Committee approval, the proposed changes will be circulated to the Steering Committee for a final vote. If approved by the Steering Committee, the coordinating center will issue an amended protocol to all participating centers for submission to institutional IRB's for approval. The DSMB will be notified by the Steering Committee Chair of all approved protocol changes.

If proposed protocol amendments are rejected by the Design and Analysis Committee, the Executive Committee or the Steering Committee, the person(s) making the original proposal will be notified by the Design and Analysis Subcommittee Chair. The notification will include a specific rationale for rejecting the amendment.

The DAC chair will keep records of proposed changes as well as the outcome associated with each. A file of this record will be sent to the coordinating center at least every year.

HF-ACTION

Recruitment and Retention Subcommittee Charter

Members:

MEMBER	PHONE	EMAIL
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Gerald Fletcher	904-296-7278	Fletcher.gerald@mayo.edu
Jim Raczynski	501-526-6600	Jmr@uams.edu

All are voting members.

The Recruitment and Retention Subcommittee will focus on meeting recruitment goals and maintaining high trial retention and exercise adherence. The Recruitment and Retention Assistance Program (RRAP) methodology will be used as part of the study design to enhance recruitment and retention. This subcommittee will work closely with the Intervention Subcommittee and the Adherence intervention team.

The main roles and responsibilities of the Recruitment and Retention Subcommittee are:

- To develop adherence and retention interventions for patients in the exercise training arm. The interventions will be included in the final protocol that receives Steering Committee approval.
- To develop motivational tools to promote enrollment at regional centers.
- To oversee clinical site training at the investigator meeting of the adherence and retention intervention.
- To propose remedies to overcome barriers to minority, women, and elderly subject inclusion encountered during the trial.
- To work with regional center hub investigators to promote enrollment at hub center and aligned regional centers.
- To regularly review enrollment retention and adherence data from HF-ACTION investigative sites and inform the Executive Committee of consistent variance from established study goals and guidelines at any clinical site. The subcommittee will pay particular attention to minority, gender, and elderly data.
- To review submitted proposals for transportation and dependent care funds from regional centers (subcontracted).
- To recommend corrective action for any consistent variance from enrollment, retention, and adherence goals at any clinical site to the Executive Committee.
- To work with regional centers and their satellite centers to maintain high levels of retention and adherence.
- To recommend any changes to the adherence and retention intervention based on review of trial data or new methods developed outside of the study.

Recruitment and Retention Assistance Plan- Committee Representative (RAP-REP)

Each committee member will be responsible for assisting in retention and recruitment for a given set of regional sites.

1. **Committee representative:** Dalynn Badenhop (Medical College of Ohio, #303)

2. **Committee representative:** Ron Oren (University of Iowa Hospital, #213)

3. **Committee representatives:** Gerald Fletcher (Mayo Clinic Jacksonville, #306) and Bleakley Chandler (University Hospital, Georgia, #203)

4. **Committee representative:** Dan Forman (Boston University Medical Center, #105)

5. **Committee representative:** Jalal Ghali (Cardiovascular Center, Louisiana, #205)

6. **Committee representative:** Ann Swank (University of Louisville, #216)

7. **Committee representative:** Matt Saval (Henry Ford Hospital, #107)

8. **Committee representative:** David Whellan (Duke University, #209)

9. **Committee representatives:** Ken Melvin (Toronto General Hospital, #409) and Robert McKelvie (Health Sciences, #406)

HF-ACTION

Publications and Presentations Subcommittee Charter

December 8, 2002 Version

Members:

MEMBER	PHONE	EMAIL
Jalal Ghali, Chair	318-795-4086	mllalt@shreve.net
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Malcom Arnold	519-667-6650	Malcom.arnold@lhsc.on.ca
Gordon Blackburn	216-444-8300	blackbg@ccf.org
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Jerome Fleg	301-435-0420	flegj@nhlbi.nih.gov

All are voting members.

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I. Editorial Policy

The HF-ACTION Publications & Presentations Subcommittee (PPS) is committed to derive the maximum amount of scientific information from the HF-ACTION database. The HF-ACTION Publications Subcommittee will assume primary responsibility for coordinating, monitoring, and reviewing all presentations and publications relating to the study.

II. Duties of the Publications & Presentations Subcommittee

The duties of the PPS are as follows:

1. In collaboration with the investigators, and with consultation with the executive committee, help identify publications to be written and set target dates for each.
2. Avoid conflict with and/or duplication of other publications.
3. Review and set priorities for manuscripts and presentations.
4. Identify a chair and co-chair for each manuscript writing group, and coordinate the formation of writing groups.
5. Monitor the writing of each paper to ensure publication in a timely fashion.
6. Review, edit and approve all publications and presentations relating to the study prior to submission, enlisting the special assistance of appropriate outside experts whenever appropriate. In those circumstances where there is significant overlap between members of the PPS and manuscript writing groups, ad hoc reviewer(s) will be sought to avoid a conflict of interest and ensure a fair review. Primary and secondary reviewers may be identified for each proposed manuscript as needed, to ensure an efficient review process. The review will be conducted pursuant to the following editorial policy:
    a. To ensure that all publications preserve the scientific integrity of the study.
    b. To correct factual and conceptual inaccuracies, if necessary.
    c. To prepare comments to assist writing groups to publish papers of the highest quality and clarity.
7. Review and approve each writing group's first choice of an appropriate journal for publication, and propose a list of alternate choices if needed.
8. Insure that National Heart Lung and Blood Institute (NHLBI) approval procedures are followed.

9. Approve general trial press releases.

III. Specific Definitions, Policies and Application Procedures

The specific definitions, policies and application procedures for publications and manuscripts are as follows:

A. Publications

A publication is any document submitted to a professional journal listed in the Index Medicus or any popular periodical with regional, national or international circulation, including book chapters and monographs. The distribution of any information of study data in any format, including written, spoken, electronic, or otherwise that could potentially jeopardize subsequent acceptance/publication of an original manuscript particularly in reference to established 'pre-publications' policy will proceed under the overall review of the PPS as follows:

1. Submit Abstract and Application Form for Presentations and Manuscripts (Appendix A)

   All manuscript proposals must be submitted via the HF-ACTION Coordinating Center to the PPS. Proposals should include an abstract (limited to 3 pages/1000 words) and a completed Application Form for Presentations and Manuscripts (AFPM) (Appendix A).

2. PPS Review and Recommendation

   The PPS will review the proposal based on: 1) Potential overlap with the primary manuscript(s); 2) Scientific merit; and 3) Analytical resource limitations of the Coordinating Center in view of other already approved or proposed manuscripts. If approved, the PPS will select/endorse a chair and co-chair for the paper, and coordinate the formation of a writing group. The manuscript proposer will often be the person identified as chair or co-chair. The chair of the writing group will be responsible for ensuring that the first draft of the publication is written. In cases of slow, or no progress, the PPS may recommend to the Steering Committee that the co-chair or another member of the writing group be appointed chair. The choice of individuals for the writing group will be based on:

   1) Performance in HF-ACTION;2) Scientific or technical expertise in the area of the proposed manuscript topic; and 3) Participation in other proposals or manuscript writing groups. Should the chair and co-chair feel that an investigator assigned to the writing group is not contributing sufficiently to the process, the matter should be brought to the PPS. The PPS reserves the right to remove an investigator from a writing group in cases of inadequate or no participation. The PPS will also review the manuscript proposer's

choice of an appropriate journal for the publication of the manuscript, and set target dates for the writing process. In addition, the PPS will circulate proposals for manuscripts and match investigators' interest with suggested proposals based on performance in HF-ACTION, expertise and participation in other manuscripts.

3. Data Retrieval, Preparation and Analysis

   A reasonable number of data analyses and tabulations will be prepared by the Coordinating Center to assist the writing group for each manuscript. The Study Biostatistician (or a designated member of the Coordinating Center) will work with each writing group in order to provide liaison and resource material for their particular manuscript. Applicants should allow at least 60 days for delivery of data and analyses.

4. Draft Manuscript Submitted for Review

   The manuscript proposal should include a detailed analysis plan. Once the manuscript proposal and the writing group is approved by the PPS, a priority will be assigned to it by PPS. The statistics group at the Coordinating Center will then review the proposed analysis plan, request any additional clarification from the writing group co-chair, and then give a non-binding, estimated date as to when the analyses for the manuscript will begin. The statistics group will notify the chair of the writing group and PPS when analyses begin. Results will be forwarded to the chair of the writing group as they are produced. The statistics group will notify the PPS chair when the analyses have been completed and provided to the writing group chair. Within 4 months of the analyses completion date, the writing chair will complete a preliminary draft of the manuscript and circulate to the writing group members for review and comment. The writing chair will revise the manuscript taking into consideration the comments of the writing group members, recirculate for final comments, and achieve consensus. Within 6 months of the analyses completion date, the writing chair will forward to PPS the complete draft of the manuscript.

   The PPS will review the manuscript draft – generally employing at least two reviewers within four weeks of receipt, and will approve or request revisions pursuant to the PPS editorial policy. Each revised draft must be resubmitted to the PPS until no further changes are required, and the final draft is approved by the PPS.

5. Final Manuscript Submission

   The final PPS-approved manuscript will be submitted via the HF-ACTION Coordinating Center to the Steering Committee. The manuscript will be distributed to the NHLBI for review as required, but except for issues related to policy requirements or when NHLBI

staff are co-authors, comments of the reviewers(s) are only advisory. Any member of the PPS wishing to comment on the paper must communicate his or her comments or concerns to the PPS Chair within two weeks. The PPS Chair will delay submission of the manuscript until resolution is reached of any conflict.

In the rare instance that no resolution is reached, the matter will be referred to the Executive Committee.

Approved manuscripts must be submitted to the journal within 2 weeks of approval.

6. The main HF-ACTION manuscript will be authored by the HF-ACTION investigators.
7. The HF-ACTION Methods manuscript will be authored by the investigators who contributed significantly to the development and writing of the HF-ACTION protocol.
8. The PPS will prepare for the HF-ACTION website a listing of: (a) proposed manuscripts with proposed writing groups, (b) all published abstracts and manuscripts (with authorship), and (c) a grid to allow tracking of progress on publications.

B. Presentations

A presentation is any delivery of information to scientific, professional or public groups. A presentation may be given without prior review and approval by the PPS provided that the content is limited to substantive information available either in the HF-ACTION Protocol or other published data, with no added interpretations or inferences.

All HF-ACTION presentations involving any "new" data (not published as peer reviewed article) must be reviewed and approved by the PPS, as described below. Presentation of any outcome data prior to a formal presentation at a national or international meeting is prohibited, as well as presentation of results from a single site or a subset of sites.

1. Submit abstract and Application Form for Presentations and Manuscripts (Appendix A):
   All proposals or invitations to present "new" HF-ACTION data must be submitted via the Coordinating Center to the PPS. Proposals should include an abstract and a completed Application Form for Presentations and Manuscripts (AFPM).
2. Review and Recommendation
   PPS will review/approve the proposal, and will select or endorse the presenter(s) and the proposed forum for the presentation.
3. Data Retrieval, Preparation and Analysis by the Coordinating Center

Requests for additional data from the HF-ACTION Coordinating Center must be made sufficiently early to allow for delivery of the data or analyses requested (at least 60 days).

4. Abstract Submitted for review

   The abstract for the proposed presentation must be submitted via the Coordinating Center to the PPS at least three weeks prior to the scientific society's deadline for receipt of abstract. The abstract will be forwarded immediately to the study sponsors (the NHLBI) to provide time for review, and possible revision. The presenter will be informed of any required or recommended revisions to the abstract within one week of receipt. For a presentation for which there is no scientific society abstract review, an abstract must still be prepared and submitted for review, in the same time frame as noted above.

5. Final Abstract Submission

   A final abstract is to be submitted via the Coordinating Center to the PPS at least 60 days before the scheduled presentation. The PPS will distribute copies to the NHLBI.

6. Presentation Script (talk copy) and Slides Submitted

   A presentation script (talk copy) with slides must be sent via the Coordinating Center to the PPS Chair at least three weeks prior to the scheduled presentation. The script and slides will be forwarded to the PPS and NHLBI.

7. The PPS will prepare for the HF-ACTION website a listing of all presentations (with authorship) and a grid to track progress on presentations.

IV. Guidelines For Authors Of Manuscripts And Presentations

In addition to the review system established for the critique of publications and presentations as described in the previous section, the following guidelines are suggested for maintaining the highest standards of excellence for HF-ACTION publications and presentations.

If, in the opinion of the members of the PPS, there is no member of HF-ACTION who has sufficient scientific background to review the pertinent material, outside expert consultants will be selected by the PPS and asked to critique the material. However, it is expected that sufficient expertise will be available from the members of the HF-ACTION Investigational Group to provide a review of most publications and presentations.

For the major publications and presentations, the completeness or adequacy of the reports may be assessed by the following criteria:

1. Purpose of the report should be clearly stated.
2. Selection of the population exclusion criteria should be explicitly delineated.
3. Information on the loss of subjects during the study including reasons for loss to follow-up. Data should be presented to demonstrate comparability of the subjects who participated and who exited from each treatment group throughout follow-up.
4. Information on the exact statistical tests as well as the actual data should be presented.
5. Information on the estimated range of treatment effects, i.e., use of confidence intervals in reporting results.
6. Information on the power to assure the reader of the strength of the conclusion, if a negative conclusion is reached.
7. Significance testing should be used in conjunction with an empirical review of the data.

V. Manuscript Categories and Authorship

A. Categories

Responsibility for the category assignment for all manuscripts rests with the PPS in consultation with the ancillary studies subcommittee. Four categories of manuscripts are anticipated:

1. Primary/High Priority Manuscripts: There will be one primary manuscript that will address the principal goals and objectives of the trial. The PPS, in consultation with the Executive Committee, has the discretion to designate other papers with compelling or important information as high priority manuscripts.
2. Other/Secondary Manuscripts: These are papers other than the primary or high priority manuscripts that utilize the database from all participating sites.
3. Manuscripts that utilize only limited subgroups of subjects: (Ancillary manuscripts) These papers would utilize the data either from certain subgroups of sites or from one site and/or would use significant amounts of non-study data.
4. Miscellaneous Category: Some papers, mostly concerned with methodological issues, may arise which do not deal with the population of the study directly.

These papers may have been prompted by discussions during the development of the study design, study conduct or analysis.

B. Authorship

Authorship for each of the four categories will be as follows:

1. Primary Manuscript(s): The HF-ACTION Investigators
   Footnote/Acknowledgement of NIH support: Clinical sites, Investigators and study personnel participating in HF-ACTION are listed in the Appendix. HF-ACTION was sponsored by the National Heart, Lung and Blood Institute (NHLBI).

   Appendix: At the end of the manuscript the organizational units and personnel that participated in HF-ACTION will be listed in the following order:

   All investigator of HF-ACTION who have served at least two years in a significant capacity with the study will be listed in the aforementioned organizational units. However, a Principal Investigator may provide justification in writing to the PPS to include individuals who have been with the study for less than two years for inclusion.
2. Other Manuscripts: Author, Author, Author, for the HF-ACTION Investigators
   Footnote/Acknowledgment of NIH support: From Clinical site; $^{+}$ Clinical site, $^{\pm}$ Clinical site; *A complete list of Clinical sites, Investigators and study personnel participating in HF-ACTION are listed in the Appendix. HF-ACTION was sponsored by the National Heart, Lung and Blood Institute (NHLBI).
3. Manuscripts that utilize only limited subgroups of subjects: - Author, Author‡, Author$^{\dagger *}$
   Footnote: From Clinical site, ‡Clinical site, †Clinical site; * A complete list of Clinical sites, Investigators and study personnel participating in HF-ACTION can be found in Journal, vol.:pgs,year.
4. Miscellaneous Category: - Author, Author‡, Author†
   Footnote: From Clinical site; ‡Clinical site; †Clinical site

The PPS would like to acknowledge that this policy was drawn heavily from the BETA-BLOCKER EVALUATION OF SURVIVAL TRIAL (BEST) publication policy.

APPENDIX A: Application Form for Presentations and Manuscripts

HF-ACTION TRIAL APPLICATION AND PROPOSAL FORM FOR PRSENTATIONS AND MANUSCRIPTS	**PUBLICATIONS SUB-COMMITTEE USE ONLY APPLICATION #:_____**
APPLICANT INFORMATION	
NAME OF APPLICANT	DATE
CLINICAL SITE/ORGANIZATIONAL UNIT:	PHONE: FAX: E-MAIL:
PROPOSAL INFORMATION	
□ **PRESENTATION** (___PERSONAL INVITATION?) FORUM: _____ ABSTRACT DEADLINE: _____ PRESENTATION DATE: _____ PROPOSED PRESENTER(S):	□ **MANUSCRIPT** PROPOSED JOURNAL: PROPOSED AUTHOR(S):
TITLE/QUESTION:	
PATIENT SUBGROUP(s): (Who are the patients to be examined?).	
STRATA: (VARIABLES TO BE CONTROLLED FOR IN CONDUCTING COMPARISONS).	
TIME POINTS FOR COMPARISON: (EG: END OF STUDY FOLLOW-UP, 3 OR 12 MOS., ETC...)	
EVENT OR OUTCOMES: (eg. Death, hospitalization, EF, functional class).	
EFFECT MODIFIERS OF INTEREST: (Variables which can alter the effect of interest). **Consider adding: ANALYSIS PLAN (Summary)**	

Please attach abstract to this application form. Abstract should contain a description of the background, rationale, a proposed hypothesis, review of the literature and references

APPENDIX B

Attachment 1. Publication Grid

Attachment 2. Presentation Grid

					PUBLICATION GRID								
Title	Primary Author	Co-Authors	Date Proposal	Approval Date	Priority Rank	Date Data	Date Data Provided to	Date First Draft	Date Review	Date Second Draft	Suggested Journals to be	Date Manuscript	ID Number
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Journal Decision	Date Resubmitted	Date Manuscript	Journal Decision									

					PRESENTATION GRID								
Title	Primary Author	Co-Authors	Name & Date of	Date Proposal	Approval Date	Priority Rank	Date Data Analysis	Date Data Provided to	Date Abstract/ Presentation	Date Review Returned to	Date Final Abstract/	Presentation Slides	ID Number
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HF-ACTION

Economic and Quality-of-Life (EQOL) Subcommittee Charter

Members:

MEMBER	PHONE	EMAIL
John Reitano, Chair	631-689-7700	Jmr444@aol.com
Kevin Schulman, Co-chair	919-668-8101	Kevin.schulman@duke.edu
James Blumenthal	919-684-3828	Blume003@mc.duke.edu
Ginger Conway	513-558-3476	conwaygg@ucmail.uc.edu
Joelle Freidman	919-668-8772	Fried023@mc.duke.edu
Debra Isaac	403-670-2124	dlisaac@ucalgary.ca
Karen Joynt	919-384-0171	Joynt001@mc.duke.edu
Leah Masselink	919-668-8224	Masse034@mc.duke.edu
Cheryl Nordstrom	313-343-3244	Cheryl.nordstrom@stjohn.org
Ileana Pina	216-844-8370	ilppina@aol.com
Bonnie Sanderson	205-934-9628	bsanderson@usbmc.edu
John Spertus	816-932-8270	Spertusj@umkc.edu
Lawton Cooper	301-435-0425	cooperls@nhlbi.nih.gov
Dave Whellan	919-668-8778	Whell001@mc.duke.edu
Dave Rendall	919-668-8787	Renda002@mc.duke.edu
Samuel F. Sears	352-273-6147	ssears@hp.ufl.edu

All are voting members.

Charter

The Economic and Quality-of-Life (EQOL) Subcommittee charge is to function as an advisory committee to the EQOL Substudy. The subcommittee is responsible for reviewing the progress of the EQOL Substudy and assist in resolving issues that arise.

Scope

The EQOL Subcommitte is responsible for the following items:

- To ensure that issues for investigation are well-communicated between the EQOL group and HF-ACTION investigators
- To address the feasibility of or issues about data collection
- To discuss and review EQOL hypotheses and findings
- To play an educational role by clarifying justification of instruments and administration of instruments to HF-ACTION investigators
- To communicate the importance of economic and quality-of-life data in HF-ACTION to investigators

Committee Structure

The Economic and Quality-of-Life (EQOL) Subcommittee consists of site PIs and members of the Coordinating and Executive Committees. The roster of the Committee is listed on the first page of this document. Biannual meetings will occur to review data and discuss issues. At least 4 people will be the quorum.

HF-ACTION

Genetics Subcommittee Charter

Members:

MEMBER	PHONE	EMAIL
Kirk Adams, Chair	919-966-4445	kfa@med.unc.edu
Ray Hershberger, Co-Chair	503-494-3203	hershber@ohsu.edu
Bill Abraham	614-292-9560	abraham-1@medctr.osu.edu
Mark Donahue	919-668-8744	mark.donahue@duke.edu
Howard Eisen	215-707-1503	eisenh@tuhs.temple.edu
Andrew Kao	215-662-2727	akao@mail.med.upenn.edu
Bill Kraus	919-681-6733	wekraus@duke.edu
Terry O'Brien	843-792-2295	obriente@musc.edu
Daniel Pauly		paulydf@medicine.ufl.edu
Jeremy Sugarman	919-668-9000	sugar001@mc.duke.edu
Paul Thompson	860-545-2899	pthomps@harthosp.org
Lynn Wagoner	513-558-3712	wagonele@ucmail.uc.edu
Robin Boineau	301-435-0399	rb@nih.gov
Dave Whellan	919-668-8778	whell001@mc.duke.edu

All are voting members.

A. Background

Large numbers of well-characterized patients are required to conduct clinical trials, especially those that require hard clinical endpoints to achieve their primary goals. These trials constitute a substantial investment and provide a unique resource of potential subjects and patient materials for studies to better understand disease mechanisms or how responses to therapy are mediated. There is general agreement within the scientific community that our understanding of many of the mechanisms underlying interventions for treatment of heart, lung, and blood diseases are limited, even in cases where efficacy has been shown. In addition, clinical trials supported by industry and other sources, including NIH, often do not incorporate studies of underlying mechanisms. Therefore, it is necessary to consider novel approaches to capitalize on these valuable and expensive clinical trials to utilize patient information and samples from clinical trials of heart, lung, and blood diseases for study of the basic mechanisms of therapeutic effect, physiologic/cellular function and disease pathogenesis. These mechanistic studies not only offer an opportunity to elucidate disease pathogenesis and correlate this information with clinical course and outcome, but a means to investigate new mechanisms and obtain new information. This information will be crucial to identifying effective surrogate markers that can be used to predict which patients are at high risk, or to design treatments, or the timing of treatments that can be targeted to patients with specific responses or characteristics. These issues are never more pertinent than they are for the HF-ACTION trial where the ability to address mechanistic questions regarding the mechanisms of potential responsiveness to exercise training in CHF may never come again. Therefore there is a great interest in the development of mechanistic genetic studies for the HF-ACTION trial on the part of participating investigators, the National Institutes of Health and the greater research community.

B. Mission

It is the mission of the HF-ACTION Genetic Subcommittee to facilitate the development and implementation of genetic studies for the trial by critically addressing issues related to overlap, complementarity and patient burden and not to be a barrier to the conduct of good and innovative science in the trial.

C. Definitions

1. **Genetic Studies.** For the purposes of the HF-ACTION trial, a genetics study is any study that develops supplementary genetics data collected on patients who are screened for entry into, or enrolled in HF-ACTION, over and above the data collection required by the standard HF-ACTION CRF. Such studies may be as involved as the uses of a specific testing techniques or as simple as using only supplemental data collected on HF-ACTION patients. The studies may be conducted either on a fraction of subjects seen at each Clinical Center or may consist of subjects seen at selected Clinical Centers. Genetic studies must be reviewed and approved by the HF-ACTION Genetic Subcommittee and ratified by the Steering Committee prior to initiation to ensure that they do not conflict with the main protocol. All genetic studies will be funded through separate funding sources. Review by the HF-ACTION Genetic Subcommittee and the HF-ACTION Publications Committee is required for presentation or publication of an genetic study.

2. **Data Bank Studies.** A Data Bank Study uses data, specimens, or recordings, which are routinely collected on patients who are screened for entry into, or enrolled in HF-ACTION. Analysis of these data is used to answer a specific scientific question. Data bank studies will be considered by the Publications Committee.

3. **Genetics Studies.** Although genetics studies will be handled by the Genetics Subcommittee, it will have a reporting relationship to the Ancillary Studies Committee so that this committee can serve as a resource for information about all genetic studies being conducted on subjects in the HF-ACTION trial.

D. Committee Structure

The Genetic Subcommittee will consist of a minimum of 5 site PIs and members of the Coordinating and Executive Committees. The roster of the Committee is listed on the first page of this document. For business meetings a quorum of 5 voting members of the Committee must be present.

E. Preparation of Proposal Genetic Studies

Each proposal for a genetic study should contain description of the objectives, methods, analysis plans, significance of the study, and proposed collaborators. Full details should be

given concerning any procedures to be carried out on a study patient such as psychiatric interviews, psychological testing, biochemical assay procedures, genetic testing, etc. Any substances to be injected or otherwise administered to the patients should be described. Any observations to be made or procedures to be carried out on a patient outside of the Clinical Unit should be described. Mention should be made of the extent to which the genetic study will require extra clinic visits by the patient or will prolong the patient's usual clinic visit (Patient Burden). Information should be given concerning the extent to which the study will require fluid or biopsy specimens in addition to those already required for HF-ACTION. If blood specimens are to be obtained from the patients, all procedures to be carried out on these specimens should be described.

Proposals should also include the following:

- Summary of proposed work (preferably in the form of Specific Aims and hypotheses).
- Scientific rationale in the context of HF-ACTION. (That is, why this study should be done in the context of HF-ACTION).
- Outline of study design.
- Potential Co-Investigators (i.e., what sites and how many sites will be involved).
- Potential Funding source and deadline for submission.
- Likely budget range.
- Subject burden - what will subjects be asked to do in addition to HF-ACTION protocol items.
- Subject compensation.
- Estimate of power calculations.
- Additional data collection plan.
- Potential resource needs from the HF-ACTION trial.
- Potential conflict of interest (most particularly with industry-funded studies).

The Genetic Subcommittee will keep a registry of the above mentioned items for each study associated with HF-ACTION, as well as the submission date, the date communicated out of Committee to the Steering Committee, the date and action of the Steering Committee, a log of study progress, and any publications proceeding from the work. Also, a log of site burden will be kept.

F. Submission of Proposals (Figure 1)

One copy of each proposal should be submitted to the Chair or co-Chair of the Genetics Subcommittee for inventory, and facilitated transmission to the Genetics Subcommittee for consideration. The action of the Genetics Subcommittee will be communicated back to the initiating investigator for comments and suggestions from the committee, if appropriate, within one month. In the case of positive action by the Genetics Subcommittee, the proposal will be communicated to the Steering Committee with recommended approval, also within one month. The investigator will then work with a designated statistician and financial analyst from the Coordinating Center to develop the statistical section of their proposal that concerns common measures and to identify the budgetary resources to support this. This process will also take approximately one month. Once the entire process is completed, the Coordinating Center will provide from the HF-ACTION study a letter of support for the project to be submitted to with the grant application for funding.

Thus, although the Genetics Subcommittee will facilitate the timely consideration of proposals by the Genetics Subcommittee and HF-ACTION Steering committee, it is strongly suggested that the Principal Investigator submit the proposal to the Genetics Subcommittee no later that 12 weeks prior to the proposed submission date. The Chair or co-Chair of the Genetics Subcommittee will notify the Investigator when the project is approved, disapproved or additional information is needed before a decision can be made to submit to external funding.

G. Committee Review

The Committee with take the following under consideration when reviewing proposals, in addition to the items identified in Item D above, with the goal of promoting the best mechanistic studies proceeding from the HF-ACTION trial:

- Similarity to studies proposed by other investigators – facilitate collaborative work and minimize overlap
- Potential for collaborative work with other mechanistic genetic studies (i.e., ability to answer larger questions when combined with data from other genetic studies)
- Potential for interference with the parent HF-ACTION trial
- Subject burden
- Site burden (i.e., number of different studies being conducted on same pool of subjects)

- Investigator conflict of interest (industry-funded studies)
- Use of HF-ACTION resources

A study proposed by a member of the Genetics Subcommittee will require recusal of the member when the study is being considered for a vote.

All industry-funded studies will require a full review of the Committee or a sub-committee thereof to ensure proper peer review. This panel may include outside reviewers if appropriate expertise is not available on the Genetic Subcommittee or among the HF-ACTION investigators. This is not required of NIH proposals.

H. Funding

All studies must seek independent funding, including but not exclusive of industry funding, and NIH R01 mechanisms. Investigator initiated applications according to the customary peer review procedures deadlines are February 1, June 1, and October 1.

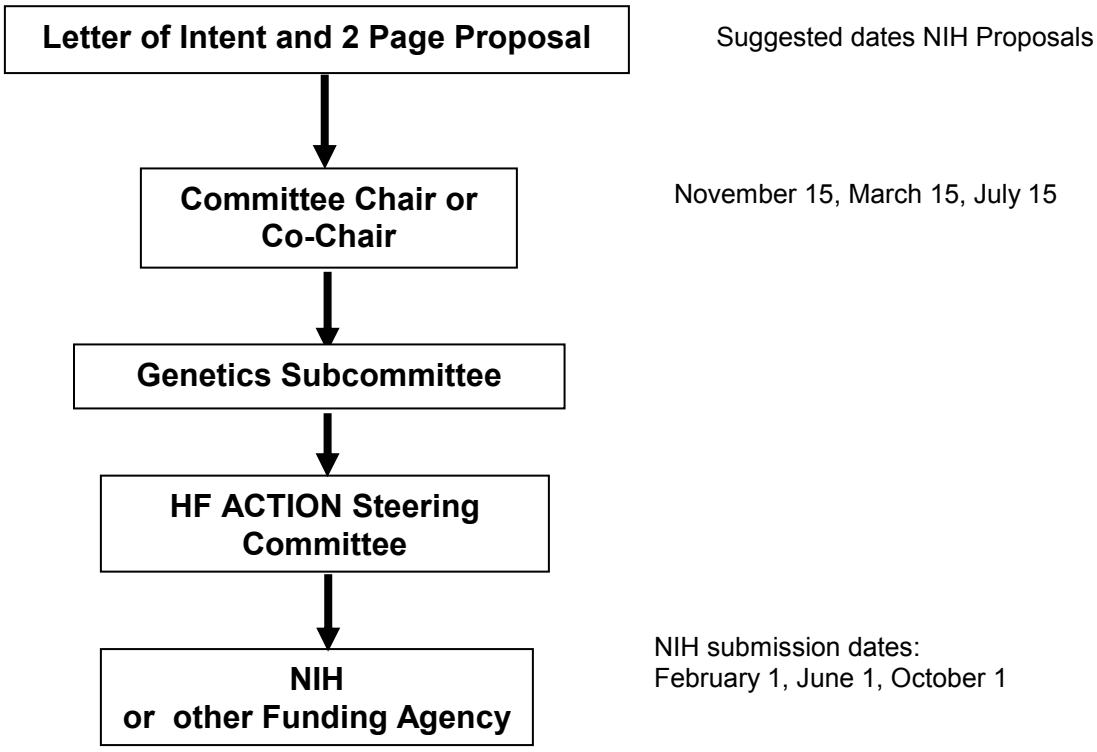
I. Reporting

The Principal Investigators for each genetic study will make a report of recruitment and progress, including any adverse events to the Genetic Subcommittee through the Chair, and to the Coordinating Center on a quarterly basis. Adverse events for the genetic studies will be considered by the HF-ACTION DSMB. The Chair or co-Chair of the Genetics Subcommittee may be asked by the Coordinating Center to make these reports.

J. Genetic Study papers, abstracts and presentations

Papers or abstracts resulting from these studies will have named authorship of individuals involved, ending with the phrase “for the HF-ACTION Investigators.” In addition, papers will have an appendix containing the names of the sites, their Principal Investigators and Co-Investigators and other individuals participating in the study. Sites will include the participating Clinical Centers, the Coordinating Center, and the NHLBI Project Office. All papers and abstracts must be approved by the Publications Committee before they are submitted. All abstracts prepared for presentation must be submitted to the Publications Committee and to the Coordinating Center at least 1 month prior to the deadline. In addition, all abstracts must receive separate approval for any meeting or presentation. An approved abstract or symposium for one meeting must obtain independent approval for submission to a separate meeting.

FIGURE 1: PREFERRED MECHANISM FOR GENETIC STUDY PROPOSALS.



Responsibilities of Data and Safety Monitoring Boards (DSMBs) Appointed By The NHLBI

National Heart, Lung, and Blood Institute
National Institutes of Health

Revised: October 30, 2001

(1) DSMB Role. The NHLBI supports randomized clinical trials that vary widely in size and complexity and must ensure that clinical trial participants are not exposed to unreasonable or unnecessary research risks. The trials should not continue beyond the point when the objective(s) has been met and a clinically meaningful answer of importance to the scientific community and the public has been obtained, or when possible serious adverse effects are identified. In order to provide this assurance, all clinical trials involving assignment to alternative treatments or procedures must have a mechanism in place for reviewing interim data in the context of the most recent scientific literature. DSMBs are essential elements in this decision-making process.

The principal role of the DSMB is to regularly monitor the data from the clinical trial, review and assess the performance of its operations, and make recommendations, as appropriate, to the Institute with respect to:

- the performance of individual centers (including possible recommendations on actions to be taken regarding any center that performs unsatisfactorily);

- interim results of the study for evidence of efficacy or adverse effects;

- possible early termination of the trial because of early attainment of study objectives, safety concerns, or inadequate performance;

- desirability of proceeding to the full-scale trial at the completion of the feasibility phase; and

- possible modifications in the clinical trial protocol.

Thus, the DSMB must provide a multidisciplinary and objective perspective, expert attention to the many factors during the course of the trial, and considerable judgement.

(2) Establishment of the DSMB: The Director, NHLBI, is responsible for the establishment of DSMBs and the appointment of its members.

(3) Selection of Members: The DSMB should be formed after a protocol is approved by the NHLBI. If the Institute had previously convened a Protocol Review Committee, some of its members may be asked to participate on the DSMB. The number and expertise of DSMB members will be dictated by the size and complexity of the study. Typically, DSMBs consist of three to nine members who together provide adequate representation in biostatistics, ethics, and clinical trials, and the specific area(s) of research in question. The Chairperson should have clinical trial experience. Advice regarding potential members will be sought from several sources, including study investigators.

(4) Conflict of Interest: DSMB members are invited to participate by the Director, NHLBI; their final appointment is contingent upon the absence of any conflicts of interest. For example, Board members must avoid potential conflicts of interest that may arise from financial ties to any commercial concerns likely to be affected by the outcome of the trial, or the appearance of a conflict of interest such as a professional or other affiliation that could cause others to question the objectivity of DSMB deliberations. Individuals are requested to complete and submit a "Conflict of Interest Certification" submitted at the time they are asked to participate and annually thereafter.

(5) Voting: All of the standing members of a DSMB are voting members. The following individuals may not vote: attendees who typically include the ES, a representative from the Coordinating Center, the Chair of the Steering Committee, an Institute biostatistician, and ad hoc consultants or other individuals invited to meetings on an as needed basis at the request of the ES. Note: Exeuctive Sessions may exclude non-voting attendees with the exception of the ES who should attend all such sessions, and other Institute representatives who would attend on an as needed basis.

(6) Blinded Data: Note that as a general rule, the representative of the investigators is not permitted to receive blinded data or participate in discussions of blinded data that are collected during the investigation. This is particularly important if the representative is involved with seeing participants or is otherwise involved in a major way with running a clinic. Exceptions to this policy may be considered on a case-by-case basis by the ES in consultation with the relevant NHLBI Division Director. At the appropriate time in the study, the NHLBI and the DSMB may determine that the representative of the investigators may be unblinded to begin preparation of the outcome paper. At that time, the representative of the investigators must then have no further involvement in working with participants.

(7) Reimbursement: DSMBs should also be intellectually and financially independent of trial investigators. Thus, if the reimbursement of DSMB members for their participation is not directly from the NHLBI, it must be provided by the Coordinating Center of the participating contractor(s) or grantee(s) from funds restricted for this purpose. These reimbursements must be made with the concurrence of the NHLBI Executive Secretary (ES). In the case of studies without a separate Coordinating Center, the funds will be restricted in such a fashion as to maintain the independent funding of the DSMB.

(8) Meetings: While DSMB meetings should be scheduled at intervals as needed, most extramural Boards choose to meet every six to 12 months and schedule interim meetings as necessary. DSMB members may elect to hold Executive Sessions. The ES and/or other NHLBI staff must attend all meetings convened by the DSMB or the NHLBI, including Executive Sessions. When appropriate, conference calls may be held in place of face-to-face meetings.

The DSMB will review the final protocol during its first meeting. Any protocol changes during the performance of the study will also be reviewed by the Board. DSMBs should primarily address issues of patient protection and quality assurance of the research. Its members must be satisfied that the timeliness and accuracy of the data submitted to them for review are sufficient to protect the safety and health of study participants.

(9) Recommendations: At the end of each meeting, DSMB members should be asked to make a recommendation regarding the continuation of the trial. The Boards are responsible for defining the process they intend to use to reach such a recommendation. This process should be established as early as possible, but in all cases prior to initiating any data review. Decisions regarding issues such as stopping guidelines or whether the DSMB may at times remain blinded to study group identity will be made jointly by the DSMB members and the NHLBI representatives.

A brief summary of all DSMB recommendations is forwarded to the Division Director and Director, NHLBI, in writing no more than two working days after a DSMB meeting. However, recommendations for major changes, such as stopping, should be communicated immediately, and followed by a written summary. The NHLBI will act on recommendations expeditiously; the NHLBI Project Officer or Program Scientist will communicate the recommendations promptly to the appropriate study investigators.

(10) Follow Up Actions: All DSMB recommendations are directed to the NHLBI for resolution. Depending on the specific circumstances, the Institute may address safety and/or quality concerns in any of the following ways: expanding the number of trial centers, extending the period of recruitment, stopping recruitment because of inadequate rate of acquisition, modifying the protocol (in collaboration with the investigators/Steering Committee), or discontinuing a center with poor performance. The NHLBI may also elect to establish an ad hoc committee to provide assistance in these matters. Such ad hoc committees may include selected initial reviewers, DSMB members, and members of the relevant scientific community.

(11) Minutes: The ES will be responsible for preparing minutes for each meeting or conference call. Within 30 days after a DSMB meeting, the ES forwards a copy of the final version (signed/approved by both the ES and the Chairperson) of the minutes, if available, through the appropriate Division Office, to the Director, NHLBI. If the final version cannot be provided within this timeframe, the ES forwards a copy of the unsigned draft minutes to the Director, NHLBI, within 30 days, and the final version as soon as it is available.

U Grant Organization and Site Bundles

Sites are funded in HF-ACTION through their own U01 grants with the NIH or through the Coordinating Center U01 grant with the NIH. U grant and non U grant sites have been loosely affiliated with each other to provide support to each other, to solve problems together, and to facilitate the implementation of HF-ACTION. One example of this collaboration might be to share recruitment and retention strategies that have proven to be successful. The U grant/non U grant affiliations are seen as important relationships that complement the central management of the trial from the Coordinating Center.

U-Sites	Regional Associate 1	Regional Associate 2	Regional Associate 3	Regional Associate 4
101 Ohio State (Columbus, OH)	**216** U of Louisville (Louisville, KY)	**303** Medical College of Ohio (Toledo, OH)		
102 UAB (Birmingham, AL)	**205** Cardiac Centers of Louisiana (Shreveport, LA)	**211** Alton Ochsner Medical Foundation (New Orleans, LA)	**305** Cardiopulmonary Research Science and Technology Institute (Dallas, TX)	
103 Wash U (St. Louis, MO)	**206** Northwestern U (Chicago, IL)	**213** University of Iowa (Iowa City, IA)		
	219 LDS Hospital and U. of Utah (Salt Lake City, UT)	**309** U. of California San Diego (San Diego, CA)		
105 Boston U (Boston, MA)	**217** Hartford Hospital (Hartford, CT)	**214** North Suffolk Cardiology Associates (East Setauket, NY)	**311** Lawrence Hospital (Bronxville, NY)	**208** U of Pennsylvania (Philadelphia, PA)
	212 U of Minnesota (Minneapolis, MN)	**207** U of Wisconsin (Madison, WI)		
107 Henry Ford (Detroit, MI)	**204** St. John (Detroit, MI)	**301** Beaumont (Royal Oak, MI)	**312** Temple U (Philadelphia, PA)	
-	**201** UNC (Chapel Hill, NC)	**209** Duke University (Durham, NC)	**220** USC (Charleston, SC)	**306** Mayo Clinic (Jacksonville, FL)
109 University Hospitals of Cleveland (Cleveland, OH)	**202** Cleveland Clinic (Cleveland, OH)	**304** Washington VAMC (Washington, DC)	**307** U. of Medicine and Dentistry of New Jersey (New Brunswick, NJ)	**218** U of Cincinnati (Cincinnati, OH)
110 Emory U (Atlanta, GA)	**203** University Hospital (Augusta, GA)	**302** University of Florida (Gainesville, FL)	**310** Moorehouse School of Medicine (Atlanta, GA)	
111 U of Colorado (Denver, CO)	215 Mid America Heart Institute (Kansas City, MO)	**308** Oklahoma U. Health Sciences Center (Oklahoma City, OK)	**210** Warren Clinic (Tulsa, OK)	

Medical Therapy Recommendations

(Adapted from The Comprehensive HFSA Guidelines 2003)

Renin-Angiotensin-Aldosterone Antagonism

Using ACE Inhibitors, ARB's, and Spironolactone

- Angiotensin converting enzyme inhibitors (ACE I) should be routinely administered to symptomatic and asymptomatic patients with LVEF ≤ 40%. These agents, rather than Angiotensin receptor blocker's (ARB's), remain the cornerstone of standard therapy for patients with left ventricular systolic dysfunction with or without symptoms of HF.
- ACE inhibitors are well tolerated in the great majority of patients with symptomatic or asymptomatic LV dysfunction with the following considerations:
    - ACE inhibitors should be titrated as tolerated to target doses used in clinical trials.
    - ACE inhibitors should be used with caution and monitored closely under the following circumstances:
        - Baseline creatinine >3 mg/dL
        - Serum potassium >5 mmol/L
        - Severe hyponatremia
        - Orthostatic hypotension
    - ACE inhibitors should not be given to patients with history of angioedema to these drugs or in patients with a history of severe angioedema (laryngospasm) to any drug.
    - Cough in patients with heart failure is often due to fluid overload and this possibility should be excluded before ACE inhibitors are discontinued.
    - In the absence of congestion, a decrease in diuretic dose may be needed to prevent symptomatic hypotension, worsening of renal function, or the development of hyperkalemia.
    - In patients who cannot tolerate ACE inhibitors due to cough, ARBs should be substituted.
    - Patients intolerant to ACE inhibitors due to hyperkalemia or renal insufficiency are likely to experience the same side effects with ARB's. In these cases, the combination of hydralazine and oral nitrate is recommended.
- ARB's may be considered in addition to ACE inhibitors if beta-blockers are contraindicated or cannot be tolerated.

- ARBs should not be routinely given to symptomatic heart failure patients receiving the combination of ACE inhibitor and beta-blocker therapy.
- Administration of the aldosterone antagonist spironolactone (25 mg qd or qod) is recommended for patients who have severe heart failure (recent or current NYHA class IV symptoms) due to left ventricular systolic dysfunction (LVEF ≤35) while receiving standard therapy including diuretics. Patients should have a normal serum potassium (<5.0 mmol/L) and not have renal insufficiency (creatinine <2.0 mg/dL).
    - In patients receiving spironolactone, serum potassium concentration should be monitored within 1 week of initiation of an aldosterone antagonist and at least every 4 weeks for the first 3 months and every 3 months thereafter.
    - Serum potassium should also be measured after any: 1) change in dose of an aldosterone antagonist or 2) change in a concomitant medication or medical condition that may affect potassium balance.
    - In the absence of persistent hypokalemia (<4.0 mmol/L), supplemental potassium is not recommended in patients taking aldosterone antagonists.
    - A recent trial with eplerenone (an aldosterone antagonist) in survivors of acute MI and LV dysfunction has concluded that this agent improves survival when administered early after the event. Much of the survival advantage was from a reduction in sudden arrhythmic deaths. Note: Eplerenone has not received FDA approval and is not currently available in the US.

Adrenergic Receptor Antagonism

The following beta-blocker therapy recommendations include only beta-blockers with a known positive benefit in heart failure as demonstrated through clinical trials. Beta-blockers with positive clinical evidence for use in heart failure include metoprolol, carvedilol, and bisprolol.

- Beta-blocker therapy should be routinely administered in the presence of a left ventricular ejection fraction $\leq$ 40% and stable mild to severe heart failure symptoms, with background ACE inhibitor therapy. Diuretics and digoxin should be used as needed for symptom control.
- Beta-blocker therapy should be instituted in patients with decompensated HF only after optimizing volume status and successful discontinuation of IV diuretics and vasoactive agents including inotropic support.
- Beta-blocker therapy may be initiated before discharge even in patients admitted for HF who no longer have contraindications.

- Beta-blocker therapy is recommended in the great majority of patients with diabetes, chronic obstructive lung disease, and peripheral vascular disease. Beta-blocker therapy may be relatively contraindicated in patients with diabetes who are prone to hypoglycemia, in patients with active bronchospasm or those with resting limb ischemia.
- Beta-blocker therapy should be used with caution in patients with resting heart rate <55 beats/minute or systolic blood pressure <80 mmHg.
- Beta-blocker therapy should be initiated at low doses and up titrated gradually, typically no sooner than at 2 week intervals. Target doses are generally achieved in 8 to 12 weeks. Patients developing worsening heart failure symptoms or other side effects during titration may require an adjustment of diuretic dose and/or concomitant vasoactive medications.
- Patients not tolerating target doses of beta-blockers, despite repeated efforts and adjustment of concomitant medications, should be maintained on the maximum tolerated dose.
- Beta-blocker therapy should be continued in patients experiencing a symptomatic exacerbation of HF during chronic maintenance treatment and any abrupt discontinuation with symptomatic exacerbation should be avoided.
- Only those beta blockers shown to be effective in the treatment of chronic systolic HF should be used. These include metoprolol, carvedilol, and bisoprolol. A recent trial that compared metoprolol IR with carvedilol has concluded a 17% survival advantage in favor of carvedilol. In this trial, carvedilol was noted to provide a 1.4 year median prolongation in survival.

Diuretic Therapy

Loop diuretics are typically recommended in patients with heart failure to restore normal volume status. The initial dose of diuretic may be increased and loop diuretics may be combined with distal tubular diuretics as necessary to relieve congestion.

- The dose rather than the frequency of diuretic administration should generally be increased when fluid retention recurs.
- Loop diuretics should be administered twice daily for symptom relief. Oral torsemide may be considered in patients with persistent fluid retention despite high doses of other loop diuretics where poor absorption of oral medication may be present. The addition of chlorothiazides or metolazone to loop diuretics should be considered in patients with persistent fluid retention despite high-dose loop diuretic therapy.

- Metolazone may particularly useful in patients with renal failure; however, it is not recommended for daily use since it may cause significant hyponatremia, hypokalemia, and prerenal azotemia.
- Patients treated with diuretics, especially at high doses and in combination, should be carefully observed for development of renal dysfunction, electrolyte abnormalities and symptomatic hypotension.
- Diuretics may need to be decreased and even discontinued in patients experiencing significant improvement in clinical status and cardiac function or in those who successfully restrict dietary sodium intake. These patients may undergo cautious weaning of diuretic dose and frequency with careful observation for recurrent fluid retention. A flexible diuretic regimen may be sufficient.
- Selected patients may be educated to adjust daily dose of diuretic in response to weight gain due to fluid overload (typically short-term weight gain of 2 to 4 pounds).

Digoxin

Digoxin should be considered for patients with LVEF ≤40 who remain significantly symptomatic with heart failure while receiving standard therapy including ACE inhibitors and beta-blockers.

- The dose of digoxin, which should be based on age, lean body weight, renal function and concomitant medications, should be 0.125 mg daily in the majority of patients.
- In patients with heart failure and atrial fibrillation with a rapid ventricular response, high doses of digoxin (maintenance dose >0.25 mg daily) for the purpose of rate control are not recommended. When necessary, additional rate control should be achieved by the addition of beta-blocker therapy.
- In general, trough levels of digoxin >1ng/dl are not recommended.

Amiodarone

- The routine use of amiodarone for the primary prevention of sudden death in patients with heart failure should be discouraged.
- Amiodarone should be considered in patients with heart failure who have been resuscitated from cardiac arrest or who have experienced life threatening ventricular arrhythmias, if they are not candidates for ICD placement.
- Amiodarone should be used when antiarrhythmic therapy is indicated in heart failure patients with symptomatic supraventricular tachycardia or ventricular arrhythmia.
- Patients on amiodarone therapy should be monitored for the occurrence of thyroid, pulmonary, or hepatic abnormalities.
    - Thyroid function tests, CXR, and liver function tests should be assessed at baseline and every 6 months during therapy.
    - An eye exam is recommended annually.
    - Pulmonary function tests should be obtained at baseline and only repeated if pulmonary symptoms or abnormalities are seen on CXR examination.
    - Patients taking amiodarone therapy and digoxin or warfarin should be carefully monitored for the possibility of adverse drug interactions. Adjustment in doses of these drugs and laboratory assessment of drug activity or serum concentration after initiation of amiodarone is recommended.
    - Patients taking statins may require statin dosage adjustments.

Anticoagulation and Anti-Platelet Therapy

- All patients with heart failure and atrial fibrillation or previous thromboembolic disease and patients with left ventricular thrombus should be treated with warfarin (goal INR 2.0 to 3.0), unless contraindicated.
- Patients admitted with acute, decompensated heart failure who are in sinus rhythm should be considered for low molecular weight heparin or subcutaneous heparin for prevention of venous thromboembolism.
- Aspirin (162 to 325 mg qd) or clopidogrel (75 mg) is recommended in patients with heart failure and concomitant coronary artery or cerebrovascular disease.

Agents to be Avoided

- TNF alpha antagonists (available for treatment of rheumatoid arthritis) should not be used for the treatment of asymptomatic or symptomatic patients with heart failure.
- Selective or nonselective endothelin receptor antagonists (available for treatment of pulmonary hypertension) should be avoided for the treatment of asymptomatic or symptomatic patients with heart failure.
- Drugs such as nonsteriodal anti-inflammatory agents (including COX-2 inhibitors), antiarrhythmics (other than amiodarone), glitazones, sympathomimetics, and calcium channel blockers (other than amlodipine) should not be prescribed in the presence of heart failure as far as possible.

Pacemakers and Prophylactic ICD Therapy

- Patients with a proven history of myocardial infarction (>1 month ago) and LVEF <30%, who are asymptomatic or have mild heart failure, should be considered for ICD placement.
    - The benefit of prophylactic ICD placement in patients with moderate to severe heart failure (NYHA III - IV) is uncertain and remains to be established.
- Cardiac resynchronization therapy, using multisite (atrial synchronous biventricular pacing) may be considered for symptomatic improvement in patients with a QRS ≥ 120 msec and with severe left ventricular systolic dysfunction (LVEF < 35% with LV dilatation) who have persistent, severe (NYHA III and IV) heart failure despite aggressive standard therapy including beta blockers and ACE inhibitors as tolerated.
- The routine use of dual (atrial-ventricular) chamber pacemakers for heart failure in the absence of symptomatic bradycardia or high grade A-V block is not recommended.

Target Dosing with Heart Failure

Beta blockers	Initial dose	Target dose
Metoprolol tartrate	5 mg bid	50-75 mg bid[a]
Metoprolol succinate	12.5 – 25 mg qd	200 mg qd[b]
Carvedilol	3.125 mg bid	25[c]-50[d] mg bid
Bisoprolol	1.25 mg qd	10 mg qd[e]

[a]Waagstein F, Bristow MR, Swedberg K, et al. Beneficial effects of metoprolol in idiopathic dilated cardiomyopathy: Metoprolol in Dilated Cardiomyopathy (MDC)Trial Study Group. *Lancet* 1993;342:1441-1446.
[b]MERIT-HF Study Group. Effect of metoprolol CR/XL in chronic heart failure: metoprolol CR/XL Randomised Intervention Trial in Congestive Heart Failure (MERIT-HF). *Lancet* 1999 Jun;353:2001-7.
[c]Packer M, Coats AJ, Fowler MB, et al. Effect of carvedilol on survival in severe chronic heart failure. *N Engl J Med* 2001 May 31; 344:1651-8.
[d]Packer M, Bristow MR, Cohn JN, et al. The effect of carvedilol on morbidity and mortality in patients with chronic heart failure. *N Engl J Med* 1996;334:1349-55.
[e]CIBIS-II Investigators and Committees. The cardiac Insufficiency Bisoprolol Study II (CIBIS II): a randomized trial. *Lancet* 1999;335:9-13.

ACE inhibitors	Target dose	Supporting evidence
Captopril	50 mg tid	SAVE*
Enalapril	10-20 mg bid	10 mg bid: SOLVD 20 mg bid: CONSENSUS 20 mg qd: V-HeFT II
Lisinopril	10-40 mg qd	10 mg qd : GISSI-3* 2.5-35 mg q d : ATLAS
Ramipril	5 mg bid	AIRE*
Trandolapril	4 mg qd	TRACE*
Benazepril	20-40 mg qd	No data; comparable dose of other ACE inhibitors with survival benefit or dose providing benefit for hemodynamics/exercise intolerance/disease severity
Quinapril	20-40 mg qd	No data; comparable dose of other ACE inhibitors with survival benefit or dose providing benefit for hemodynamics/exercise intolerance/disease severity
Fosinopril	20-40 mg qd	No data; comparable dose of other ACE inhibitors with survival benefit or dose providing benefit for hemodynamics/exercise intolerance/disease severity

*Populations of patients who were post-MI

	Target dose
Spironolactone	25 mg qd This a dose increase to 50 mg qd if patients have tolerated the initial dosing and remain symptomatic, or a dose reduction to 12.5 mg qd if patients develop increases in serum potassium.
Eplerenone**	Initial dose 25 mg, maximum dose 50 mg

**Pitt B, Remme WJ, Zannad F, et al. Eplerenone, a selective aldosterone blocker in patients with left ventricular dysfunction after myocardial infarction. N Engl J Med. 2003; 348: 1309–1321.

Patient Recruitment

Recruitment Strategies

General Information

Recruitment will be a challenge for many HF-ACTION regional and satellite centers. Although potential participants are readily identified by virtue of the presence of diagnosed LV dysfunction, it will be difficult to meet the HF-ACTION enrollment goals due to a number of reasons: 1) exclusion criteria will be met; 2) patients interested in exercise training will not want to risk being randomized to the control group; 3) patients will not be interested in performing exercise training.

In order to reach HF-ACTION recruitment goals, each HF-ACTION regional center should develop center-specific recruitment plans. As a start, each HF-ACTION regional center should attempt to determine the number of HF patients who reside in their catchment area. This is possible by obtaining the U.S. Census data for their city or metropolitan area and then ascertaining the number of persons who fall within the age range for HF-ACTION. In the general U.S. population, about 3% of individuals within this age range will have diagnosed HF. Each HF-ACTION regional center should design a comprehensive recruitment plan after careful assessment of its local community. Multiple strategies will be necessary to reach the study's targeted population. A single strategy is rarely sufficient to reach recruitment goals. Numerous recruitment strategies and methods that should be considered when developing a local HF-ACTION recruitment plan are included in sections that follow.

Since HF-ACTION is a long-term study, center staff must do their best to identify potential participants who will be able to maintain their commitment to the study. Motivational enhancement techniques, along with other HF-ACTION screening procedures, can help in this regard. The coordinating center behavioral psychologist will organize efforts to build skill in using motivational interviewing among recruitment staff as well as other staff and investigators who have contact with participants. The members of the site team (e.g., intervention staff) should also take part in discussions of potential participants prior to randomization.

The coordinating center, Duke Clinical Research Institute (DCRI), will support national and local media and outreach efforts for the study. The DCRI is available on a limited basis to assist with development and/or review of local media and outreach plans.

The Manual of Operations (MOO) has been written to be used in conjunction with training workshops for HF-ACTION Study Coordinators to assist individual centers in developing, designing, and implementing a localized recruitment plan.

Inform the Healthcare Community: In order to foster a supportive partnership with health care providers in the community, it is essential that individual practitioners be informed about the HF-ACTION objectives and participant eligibility criteria in advance of announcements to the media and potential participants. Three compelling reasons exist for the advance announcement of the study.

1. Potential participants are likely to consult their healthcare providers before or during the HF-ACTION screening process for guidance or approval of HF-ACTION participation.
2. Healthcare providers need to be assured that HF-ACTION will not interfere with the existing relationship with their patients.
3. Cooperation from participants' providers will be essential in managing participants' care and obtaining outcome data.

Because HF-ACTION participants will all have been diagnosed with HF and should be under the care of health care providers, healthcare provider referrals should be a source of participants. Health professionals to be informed might include:

- primary care providers, cardiologists, and heart failure programs
- medical residents and interns
- primary care providers' assistants
- nurse practitioners and registered nurses
- pharmacists
- any other healthcare providers who may be deemed appropriate by an individual center

Specific Recruitment Strategies and Tools to Use with the Healthcare Community

The following recruitment tools for use with the healthcare community have been provided to all HF-ACTION sites to promote patient referrals:

- Recruitment pocket cards
- Recruitment posters

Study staff should be encouraged freely dispense recruitment pocket cards to all healthcare staff who may come in contact with potential patients (inpatient and outpatient). In addition, recruitment posters should be placed in strategic locations to increase staff awareness of the trial. Posters are provided in 2 sizes to facilitate

placement options. Suggestions for placement include physician workrooms, staff lounges, and dictation areas. Each site should write their site-specific referral contact numbers on the pocket cards and posters provided.

Included below are a number of other ideas for your local site recruitment plan:

Colleague Letters: Regional center PIs may want to send a “Dear Colleague” letter that includes a statement about the rationale for HF-ACTION. A draft letter to physicians is provided. A protocol summary that gives a brief description of the study design, the sponsors, the dates of the start of recruitment, site-specific information about personnel (PI, co-PIs, Program Coordinator), the center location, and the phone number for more information should be included with the letter.

In-Person Contacts: Face-to-face contacts between the Principal Investigator or Co-Investigators and members of the medical community should be scheduled before recruitment begins. A slide presentation will be provided by the coordinating center. These may include:

1. HF-ACTION presentations at regularly scheduled meetings of medical groups and professional organizations.
2. Presentations hosted by the HF-ACTION centers.
3. HF-ACTION displays at national or regional medical conferences, conventions, etc.
4. More informal discussions within the medical community of the HF-ACTION design and goals may be as effective as formal presentations.

Articles: Articles describing HF-ACTION should be submitted to journals and other professional publications that are distributed nationally, statewide, or locally (e.g., local medical society newsletters – articles submitted to national publications will be coordinated centrally, but sites should pursue local publications). The Publications subcommittee charter provides guidelines.

Inform or Prepare Community-at-Large: One of the greatest challenges of recruiting participants for HF-ACTION will be to create a general awareness and understanding of the importance of this clinical trial. This effort may directly increase the number of

volunteers making contact with HF-ACTION staff, and broad-based community education about the trial will also increase the likelihood that volunteers may make contact HF-ACTION when prompted by other methods. In addition, community knowledge about the importance of the trial facilitates support for the trial from family and friends of prospective participants. This effort will necessitate a public education campaign about HF—its prevalence, the role of exercise in HF, its potential complications, and the importance of HF-ACTION in answering the critical question about the role of exercise training in the care of HF patients.

Because of the distinct differences in locations and target populations at the HF-ACTION regional centers, the most effective and expedient means of achieving community awareness will vary from site to site. The process of community assessment and the development of partnerships within the local community should be followed as part of planning recruitment strategies that are critical to achieving the HF-ACTION recruitment goals.

Some of the key strategies to create public awareness and support that will enhance HF-ACTION recruitment efforts are:

Announcements

Send letters announcing and describing HF-ACTION to business and professional organizations, service organizations (Rotary, Lions Club, sororities/fraternities, etc.), business owners and leaders, worksites and community groups. Ready-to-publish news articles about HF-ACTION or related topics (i.e., HF, cardiovascular rehabilitation, etc.) suitable for inclusion in newsletters distributed by any of the above are another effective means of raising awareness and interest. Include the telephone number and address of the local HF-ACTION centers where potential participants may learn more about HF-ACTION.

Presentations

Make presentations to the groups listed above. Topics may include HF, cardiovascular rehabilitation, treatment of HF, etc.

Inform Potential Participants: Potential participants should receive repeated recruitment messages about HF-ACTION through a variety of media. An important key to successful recruitment is to develop "layered strategies" that deliver a repeated

message to a targeted audience with a planned timeline. Volunteers are often unlikely to respond to a single message but may respond after hearing the same message a number of times.

Print and Electronic Media

Print media, television and radio may also be effective avenues of communication to potential HF-ACTION participants. The effectiveness of these methods as well as the specific print and electronic media selected may depend on the site-specific media market as well as the extent of access to targeted lists of potential participants.

Presentations

Oral Presentations about HF and HF-ACTION to any and all groups of interested people can generate numerous inquiries from potential participants. Please note: the Publications and Presentations Committee has specific approval procedures that must be followed before any HF-ACTION personnel may make formal presentations about the clinical trial at national meetings; however, these mandatory procedures do not apply to local presentations for the purpose of participant recruitment.

Telling Others

Word-of-mouth is an effective means of obtaining volunteers. Screened patients, randomized participants, and individuals who are contacted through other means (e.g., community talks at civic groups, health fairs, etc.) should be encouraged to tell others about HF-ACTION throughout the recruitment period.

Miscellaneous Advertising Opportunities may include:

- HF-ACTION information booths or displays at seminars, conferences, meetings
- HF-ACTION trial website (hfaction.org), providing address and telephone contact information for HF-ACTION sites
- Point-of-purchase displays at health care providers' offices, pharmacies, etc.

Recruitment Monitoring and Assistance

Recruitment Assistance Program (RAP) and Recruitment and Retention Committee

The Recruitment and Retention Committee (R&R) is comprised of Principal Investigators, Co-Investigators, Study Coordinators, the coordinating center, and the NHLBI. This committee will meet on a regular basis, either face-to-face or by conference call.

Overview

Knowing that recruitment of participants for HF-ACTION will be a challenge and that difficulties will be encountered, the purpose of the R&R committee will be to provide timely recruitment assistance to all HF-ACTION regional and satellite centers. The committee will also monitor recruitment continuously and identify problems early on, in order to work with the centers to find solutions that will facilitate meeting overall recruitment goals. The R&R committee will work closely with HF-ACTION study coordinators to facilitate the recruitment monitoring and assistance process.

Recruitment Goals

Multiple factors will contribute to variation in randomization rates. Size of the potentially eligible population will be a major factor as will the degree to which potential participants at sites may encounter barriers to participation. Each regional center may have considerable variation in randomization rates from month-to-month based on local factors. Nonetheless, during the 3-year randomization period, an average randomization rate of 2 participants per month per regional center will be required to meet the overall study-wide recruitment goal.

Special Considerations: Women, Minorities, and the Elderly

It should be emphasized that heart failure is really a disorder of the elderly. The mean age of heart failure patients in the community is > 75 years. It is therefore critical that we enroll a **substantial** proportion of elders if this landmark trial is to be applicable to the

majority of heart failure patients. A target of at least 30% of patients aged 70 or older should be pursued.

A few thoughts on recruiting older persons:
Geriatric clinics, larger retirement homes and large senior centers are good places to target. Consider making live presentations to clinic personnel, retirement home medical staff and residents and to senior center attendees. Senior housing complexes are another possible source of recruits.

Some recruitment barriers specific to the elderly:

- A high prevalence of comorbid conditions may limit their ability to exercise.
- They may require help with transportation and / or care of an infirm spouse, sibling, or friend.
- They may feel that exercise is for the young and healthy, not for elders with heart failure.
- They may be afraid to exercise because of the misperception that it is unsafe or unwise.

Some solutions to the above recruitment barriers:

- Elders with gait or balance problems may be able to train (and test) on a cycle ergometer.
- The help of younger family members or friends should be sought to overcome problems with transportation or care of dependent spouses, etc.
- Consider organizing van pools to sites with several study participants.
- Elders may require more explanations, reassurance, and “hand holding” than younger patients in the early phases of their participation.

In order to enroll an adequate number of women and minorities, sites should—

- Consider that female patients may need help with logistical concerns such as transportation, meals, child care and other family obligations, timing of exercise training etc. In some cases, this will require liaison with social workers and other health professionals.
- Anticipate literacy and language issues. Those centers recruiting non-English-speaking participants will require staff fluent in Spanish, French, or other native

tongue to provide effective teaching and insure informed consent. Patient education materials and self-report CRF pages will be available in Spanish and Canadian French. Patient education materials were developed at an 8th-grade reading level.

- Evaluate proposed incentives to ensure they are appropriate for the patient population.
- Be aware of the community structure and cultural norms in the potential patient population(s). Enlist the support and participation of female and/or minority health care providers for potential patient referrals.

Recruitment Monitoring

Local Monitoring: The pre-screening process will contribute valuable information regarding the initial phase of recruitment activities study-wide and at each regional center. Each regional center will capture potential participant information prior to screening via the completion of the Screening Log. The information generated by these forms will be used to identify potential barriers to enrollment and will be reviewed by the R&R committee. The R&R committee will have access to this center-specific data, including summary reports utilizing the software provided by the coordinating center. This information will be key in assisting with strategies to facilitate randomization.

Central Monitoring: Beginning with screening, information gathered on each potential participant will be captured centrally by the coordinating center and tracked. Web-based reports may be generated at any time to provide up-to-date recruitment totals and rates. Additional reports will be generated by the coordinating center, as needed. These reports may be particularly useful in gauging recruitment progress. The integrity of these reports will depend on regional centers entering data in a timely manner. The R&R will utilize information gathered locally and centrally to generate detailed progress reports and problem-solving strategies as discussed below.

Processing and Reporting

To facilitate the processing, reporting and problem-solving elements of the recruitment process, each regional center will be assigned a liaison who is a member of the R&R committee. The role of this liaison will be to review and provide feedback concerning the regional center's progress toward achieving their recruitment goals, to serve as a

resource contact for the regional center, to lend support and encouragement to the regional center, and to summarize lessons learned from sites for dissemination to other sites. In order to utilize the collective resources of the R&R committee, regional centers are encouraged to contact their R&R liaison with any questions or issues they identify in their recruitment efforts. Each R & R Committee member will be assigned one or more regional centers (other than their own) for which they serve as liaison. They will have access monthly recruitment summaries provided by the coordinating center.

The R&R committee will meet at regular intervals, generally by conference call. It is anticipated that these will be at least once a month. A dual purpose of these meeting/calls will be to formalize reports to the Steering Committee and to begin the process of defining specific approaches to recruitment problems at the regional center and/or study-wide level. Study-wide data regarding the number of potential participants screened, number randomized, and reasons for ineligibility or refusal to participate will be reviewed. The data will be compared among regional centers, and if large differences are found, explanations for these differences will be sought. It will be the responsibility of each regional center to facilitate this review process by providing center-specific summaries of their screening and recruitment activities, if requested. Problem-solving plans will be developed by the R&R committee.

During the recruitment and randomization period, each regional center will be kept abreast of national and local recruitment progress based on recruitment summaries issued by the coordinating center and the regular recruitment reports provided by the R&R committee to the Steering Committee. These recruitment reports will reflect the progress of the study as a whole and allow regional centers to measure how their efforts compare to others.

Responses to Recruitment Problems

Strategies for solving recruitment problems will be center-specific based on regional center and study-wide recruitment data. These strategies will be defined and implemented through a series of hierarchical responses that will begin 3 months after the start of randomization and will be applied study-wide. The stepped response is designed to address more serious recruitment problems with more aggressive assistance.

The following responses serve mainly as a process to approach recruitment problems and considerable flexibility will be required in the implementation of the responses. The R&R committee will determine the actual shortfall from recruitment goals that will trigger a response on a continuing basis, depending upon center-specific factors and study-

wide recruitment progress. If a significant number of regional centers fail to meet recruitment goals, it may be necessary to reassess study-wide recruitment strategies and develop recommendations to enhance overall HF-ACTION recruitment.

Level 1 Response: R&R Liaison Contact : The R&R liaison assigned to a particular regional center that is not at goal (2 randomized participants per month) will actively communicate with the regional center to gather more information regarding site-specific recruitment data, possible problems, and steps planned to address these problems. This information will be communicated to the RAP committee.

Level 2 Response: Written Response: If a site does not improve recruitment and approach or reach their goal, the regional center will be asked to provide to the R&R committee a written evaluation outlining their perception of the problem and potential solutions to insufficient recruitment. As part of this report, the Study Coordinator and PI each will provide a brief written assessment and sign-off on the final document.

Level 3 Response: R&R Committee Conference: If recruitment goals are still not being met, the R&R committee will discuss the particular regional center in detail with the contact person serving as the discussant. A representative of the regional center will be encouraged to participate. A detailed analysis with specific strategies will be developed, and the R&R liaison will contact the regional center to monitor progress and offer support.

Level 4 Response: Site Visit: If a particular site still remains below the recruitment goal, the R&R committee will recommend that a site visit be initiated. The Study Coordinator, all Co-Investigators and Principal Investigator of the regional center will be required to participate in this process. Following the site visit, the chair of the site visit group will submit a written report and recommendations to the regional center, the R&R Committee, and the Executive Committee. The regional center should submit a written response following receipt of the report.

Informed Consent

The informed consent process should meet the ethical obligations to the participant and improve retention by fostering a progressive understanding of the program by the participant as well as the development of a positive relationship between the participant

and site staff. It is an interactive and conversational process, the ultimate goal being maximum understanding of HF-ACTION and its impact upon the participant's life. The understanding includes what the responsibility of the participant is to the trial, and the responsibility of the investigators to the participant. It is anticipated that one result of this process will be maximized retention of participants in HF-ACTION. This informed consent process is integrated with the screening and enrollment process.

IMPORTANT: Templates of the HF-ACTION informed consent are available on the trial website (http://members.hfaction.org); however, when consenting patients be sure to use your site-specific IRB approved consent.

Tips for Obtaining Informed Consent:

Informed consent is a process, not just a form. The informed consent form should be considered as a teaching tool, rather than a legal document. For specific tips from the Office for Protection from Research Risks see: http://ohrp.osophs.dhhs.gov/humansubjects/guidance/ictips.htm.

Do	Don't
• Become familiar with the essential elements of the informed consent • Approach the patient with respect and a positive attitude • Approach the patient in a private area that is free of interruptions • Assess if an interpreter is needed • Introduce yourself by name and role • Review each section of the ICF with the patient • Ensure that the patient understands the nature of the research study • Inquire if the patient has questions – don't assume there are none if they don't ask • Ensure that the patient understands their right to withdraw AT ANY TIME • Provide a signed copy of the form to the patient • Maintain a copy in the patient's study file	• Act rushed; allow the patient sufficient time to read the form • Use medical jargon or language that the patient doesn't understand

Retention Issues During Screening

The Retention of this manual contains, which contains techniques for improving attendance and compliance of the HF-ACTION volunteers throughout screening and during follow-up. Nonetheless, an essential aspect of retention occurs at the same time of recruitment and screening. Volunteers who have significant barriers to participation

should be identified during the screening process, and the extent to which these barriers threaten active participation should be assessed thoroughly prior to randomization. Despite the need to meet recruitment goals, it is essential that all staff recognize that enrolling participants who have significant challenges to active participation may compromise study objectives.

The coordinating center behavioral psychologist should be actively involved in the screening and randomization process: helping all staff and investigators who have contact with volunteers build skills in motivational interviewing, discussing potential participants prior to randomization, and meeting with potential participants to assess potential barriers to success in HF-ACTION. A number of "red flags" may be considered to identify enrollees for which adherence may be particularly difficult.

- Motivation to participate not clear
- Reservations about randomization (i.e., really wants only active lifestyle)
- Doesn't fully understand commitment (i.e., long duration of study, lifestyle, time and effort requirements)
- Missed visits during screening
- Adherence problems (regarding record keeping) during run-in
- Lack of family support for participation
- Current family crisis or transition
- Frequent job changes
- Cultural issues that mitigate against protocol adherence
- Emotional problems (including low self-esteem)

Staff in other clinical trials report that many retention problems can be traced back to issues identifiable during screening. Needless to say, it is impossible to catch all retention problems prior to randomization, but "an ounce of prevention is worth a pound of cure," so careful attention during screening to the indicators listed above will likely save many problems later. Unfortunately, a minority of participants who present retention problems often take up a majority of staff time, emphasizing the need to be careful when screening participants.

Once these volunteers have been identified, regional center staff may consider adopting the following approaches to address potential adherence problems:

- Clarify motivation for participation in HF-ACTION
- Fully explore willingness to be randomized. This is a good opportunity to use motivational interviewing. In pre-randomization the goal is to help potential

participants decide if HF-ACTION is right for them, given all the things that are going on in their lives. This approach is likely to reduce potential participants' defensiveness.

- Fully explore understanding of HF-ACTION participation commitment (including having participant go over schedule for next few months and talk about how potential demands of HF-ACTION would be accommodated). Here again, motivational interviewing techniques may be useful.
- Discuss missed screening visits in the context of continuing schedule of visits during study and emphasize necessity for consistent long-term attendance.
- Discuss adherence problems during run-in in context of continuing need to adhere during study and maintain records.
- Discuss family support for participation in HF-ACTION and any current or imminent family crises or transitions.
- Discuss job situation in context of potential problems transitions may create for HF-ACTION participation.
- Discuss cultural issues that might facilitate or hamper HF-ACTION participation.

Hold full discussions among all staff, including the behavioral psychologist, to discuss potential participants for whom serious questions arise, even if the person assures staff that HF-ACTION participation will not be a problem.

Motivational Enhancement Methods

Participants volunteer in a clinical trial for many different reasons, including health improvement and altruism. HF-ACTION staff should help potential participants identify their personal motivation for participating in the trial. Once identified, these reasons can guide efforts to maintain the motivation of HF-ACTION volunteers for continued participation. The behavioral psychologist at the HF-ACTION coordinating center should develop a program to help staff and investigators incorporate motivational enhancement methods into their interactions with participants. This training program should emphasize using:

- Reflective listening to help participants identify personal reasons for participation as well as barriers to participation.
- Problem solving methods to help participants overcome identified barriers to active participation.

Screening and Enrollment

The organization and management of the screening process will differ from site to site depending on the characteristics of the site, the qualifications of the screening staff, and the preferences of investigators and staff. However, it is important to determine clearly who has responsibility for each step in the screening, eligibility determination, baseline data collection, and randomization process.

To ensure an orderly and complete screening and randomization process, use the **Patient Checklist** provided in the *Study Coordinator Tools Binder (also available at www.members.hfaction.org)*.

- Prior to approaching a potential patient, permission from the primary physician to approach the patient for the main trial and/or registry should be obtained.
- If permission to approach is granted, use the **Inclusion/Exclusion Worksheet** provided in the *Study Coordinator Tools Binder* to determine if the patient meets eligibility.
- Obtain signed informed consent(s) as necessary; give the patient a photocopy of the signed consent(s). Patients who meet criteria yet refuse participation should be approached for the HF-ACTION registry. Also, patients who meet the criteria yet fail exercise testing or the echo should be approached for the HF-ACTION registry.

Note: Template informed consents are available on the HF-ACTION website (members.hfaction.org); however, sites must use their own site-specific, IRB-approved informed consent when consenting patients.

The following study tools will also be needed at the time of patient enrollment and are provided in this section of the Manual of Operations, in Study Coordinator Tools Binder, and at www.members.hfaction.org:

- **Patient Information Form:** This is a worksheet designed to help with patient follow-up. Submit a photocopy to the DCRI using a Confidential Submission Envelope.
- **EuroQoL Thermometer** and **Administration Instructions for Patient Self-Report Forms**
- **6-Minute Walk Worksheet** and **Instructions**
- **Exercise Prescription Forms:** Use the provided Exercise Prescription template to communicate the patient's exercise prescription to the cardiac rehab center. Both initial and follow-up template prescriptions are provided.

Patient Checklist

Patient Name: _____ **Patient Number:** ___ ___ ___ – ___ ___ ___ ___

☐ **Obtain signed informed consent for trial (and substudies as appropriate); give patient photocopy of signed consent(s).**	*If primary physician refuses patient trial participation, and patient meets all criteria, request to approach for registry.*
☐ **If patient consents to the randomized trial, ask the patient the following question just after obtaining informed consent:** *Some participants in this study would prefer to be assigned to one treatment over the other, while some participants don't have a preference. Although your treatment group will be determined entirely by chance, we are interested in your preference regarding these treatments.* *Would you prefer to be in the usual care group or the exercise training group?* ☐ *Usual care group* ☐ *Exercise training group* ☐ *No preference* Record preference indicated on the CRF, if patient is randomized.	*If patient refuses consent to randomized trial, ask patient to consider registry.*
☐ **Formally screen patient using the Inclusion/Exclusion Criteria Worksheet provided. Record all screened patients on HF-ACTION Screening Log.**	
☐ **Administer patient self-report forms/CRFs.** *IMPORTANT: Administer EuroQoL Questionnaire and Thermometer first, unless patient entering registry. Forms are located in Patient CRF Binder; thermometer is located in Study Coordinator Tools Binder. These assessments* ***must*** *be completed before CPX and preferably before 6-minute walk.*	
☐ **Review, date, and initial question # 9 of Beck Depression Inventory (BDI). If patient reports suicidal tendency (response of 2 or higher), notify PI immediately.**	
☐ **Complete Patient Contact Information Form** *(located in Study Coordinator Tools Binder)***.**	
☐ **Review past medical history including list of current medications and record results of previous blood chemistries obtained as standard-of-care.**	
☐ **Perform physical examination and assess NYHA HF class and CCS angina class.**	
☐ **After 10 minutes of seated rest, obtain HR and then sitting BP. Obtain BP in the right arm (unless contraindicated).**	
☐ **Administer 6-Minute Walk Test using the 6-Minute Walk Worksheet and instructions provided** *(located in Study Coordinator Tools Binder)***.**	
☐ **Obtain echocardiogram if EF not measured within the last 30 days.** *Submit echocardiogram to the Echo Core Lab.*	*If echo results preclude participation (EF >35%), ask patient to consider registry.*
☐ **Obtain pregnancy test** *(if suspected pregnancy in females of childbearing potential).*	
☐ **Obtain blood sample for core lab; obtain serum for genetics substudy, if patient has signed consent.** *Submit samples to appropriate core lab following instructions in the Manual of Operations.*	
☐ **Administer exercise testing (CPX) on day of baseline assessment, if possible** *(if not, schedule CPX testing as soon as possible)* **& record exercise test results on CPX Worksheet.** *See additional instructions in the CPX binder or Manual of Operations.*	*If CPX results preclude participation, ask patient to consider registry.*
☐ **Immediately after CPX testing, administer Patient Expectations Evaluation** *(located in CPX binder)***.**	

Allow 2 hours between 6-minute walk and CPX

Patient Checklist

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

(usual care or exercise training)

Randomized patients only

☐ **Fax CPX Worksheet, breath-by-breath analysis, and 15-second averaged analysis to 919-681-9274.** *IMPORTANT: Remove all confidential patient identifiers (patient name, date of birth, etc.) prior to faxing. Do not fax the patient's ECG tracings.*

☐ **Call the IVRS to randomize a patient, enter a patient into the registry, OR to report screen failure for patients who have undergone CPX or echo specifically for HF-ACTION. Record patient number assigned by IVRS.**

For randomized patients, record treatment assignment:

☐ Usual Care Group **OR** ☐ Exercise Training Group →

☐ **Ask randomized patients the following question:**

You have been assigned to _____ .
(usual care or exercise training)

How satisfied are you with this assignment?

☐ *Very satisfied* ☐ *Somewhat satisfied* ☐ *Neither satisfied nor dissatisfied*

☐ *Somewhat dissatisfied* ☐ *Very dissatisfied*

☐ **Provide patient education using HF-ACTION patient materials.**

All randomized patients should be given:

☐ Patient Education Manual

Exercise patients should also receive:

☐ Exercise Patient Education Manual

☐ Patient Diary *(Exercise Group Version)*

☐ Heart rate monitor and instructions *(document on Heart Monitor Dispensing Log)*

Usual care patients should receive:

☐ Patient Diary *(Usual Care Version)*

☐ **Using the Patient Education Manual, begin to review the required education topics with the patient. Check off topics reviewed on the Patient Education Checklist** *(pages 4 & 5 attached)***. Education topics may be covered over several visits but should be completed by the 6-month visit.**

☐ **Schedule follow-up phone calls and next clinic visit. Phone calls will be every 2 weeks until 9 months. Use the Script/Worksheet for Telephone Calls provided** *(located in Study Coordinator Tools Binder)***. 1st clinic visit will occur 3 months from randomization, regardless of when patient completes supervised exercise training.**

☐ **Fax copy of signature page of informed consent form with patient's name and study ID printed legibly to Linda Davidson-Ray at 919-668-7051. For the first patient, fax all pages of the consent form. If a new consent version is used, fax entire consent for first patient signing new version. Be sure version numbers are on all pages of the consent.**

☐ **For registry and randomized patients, batch and submit the Patient Contact Information Forms to DCRI using the Confidential Submission Envelope provided.**

☐ **Complete and submit baseline CRF pages.**

For patients randomized to exercise training group:

☐ Contact cardiac rehab program to enroll patient and schedule appointment within 1 week of randomization.

☐ Complete and fax Supervised Exercise Training Prescription *(located in Study Coordinator Tools Binder)* to rehab program immediately after randomization. A copy may also be given to patient.

☐ When CPX Core Lab evaluation is received, send Supervised Exercise Prescription Follow-up to the rehab program, if needed.

Patient Checklist

Patient Name: _____ **Patient Number:** ___ ___ ___ – ___ ___ ___ ___

Follow-up Visit Checklist Follow-up visits to occur at ± 15 days

3-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ Blood sample for core lab
- ☐ 6-minute walk
- ☐ CPX testing
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

6-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

9-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ Provide new diary
- ☐ Tell the patient phone calls decrease to q mo
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

12-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ Blood sample for core lab
- ☐ 6-minute walk
- ☐ CPX testing
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

15-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

18-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

21-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Provide new diary
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

24-Month Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ Perform 6-minute walk
- ☐ Perform CPX
- ☐ Provide new diaries for 1 year
- ☐ Tell the patient phone calls decrease to q 3 mo
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

3-Year Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ 6-minute walk
- ☐ Provide new diaries for 1 year
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

4-Year or End of Study Visit
- ☐ Record resource utilization*
- ☐ Physical exam**
- ☐ Patient self-report forms/CRFs
- ☐ 6-minute walk
- ☐ Submit CRFs and, if applicable, CEC source documentation
- ☐ Fax Resource Utilization Rapid Report Form

For Exercise Patients
- ☐ Determine home-exercise compliance using patient diary

* *Determine resource utilization through patient interview and the completed patient diary. Resource utilization includes number of hospitalizations, emergent and non-emergent clinic and ER visits, days of home IV infusion, and days spent at home/with caregiver/assisted living/skilled nursing/rehab center/hospitalized. Make note of all healthcare-related procedures.*

** *Physical exam to include : BP, HR, NYHA HF class, and CCS angina class.*

Patient Education Checklist

Patient Name: _____ Patient Number: ___ ___ ___ - ___ ___ ___ ___

☐ For patients randomized to exercise only: Pro Form treadmills and bikes will be shipped with a standard Pro Form User Manual. Instruct patients to disregard the Conditioning Guidelines described within the Pro Form User Manual. Instead, instruct the patient to adhere to the HF-ACTION exercise guidelines provided.

Using the HF-ACTION Education Manual, review the following topics:

Heart Failure Facts

☐ How a normal heart works versus one with heart failure

☐ Possible causes of heart failure

☐ Common heart failure symptoms such as:

- ☐ Fluid retention
- ☐ Shortness of breath
- ☐ Waking up breathless at night
- ☐ Fatigue and loss of energy
- ☐ Swelling of feet, ankles, legs, and/or abdomen
- ☐ Dizziness or fainting
- ☐ Change in appetite
- ☐ Frequent coughing

Heart Failure Treatment Plan

Medications

☐ Importance of knowing medications, keeping a written list and schedule, how to properly store medications, and how to properly take them. Review the following medication types as appropriate:

- ACE inhibitors
- ARBs
- Antiarrhythmics
- Anticoagulants
- Beta blockers
- Digitalis preparations
- Diuretics
- Potassium
- Vasodilators

☐ Review possible side effects

☐ Avoiding grapefruit and grapefruit juice

☐ Discuss all OTC medications taken and to avoid specific OTC medications that might affect how heart failure medications work

☐ Avoiding NSAIDs—*define NSAIDs*

Diet

☐ Importance of reducing salt intake

☐ Review salt reduction tips and ask patient if they have any other ideas for salt reduction in their diets

☐ Importance of heart-healthy eating

☐ How to read food labels for sodium, fat, calories, and trans fat ingredients

☐ Food labeling definitions

Patient Education Checklist

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

Fluid Management

- ☐ **Importance of weighing oneself—***discuss how frequently the PI would like the patient to weigh, how to weigh, and where to record the weight on the diary*
- ☐ **How to limit fluid intake**
- ☐ **What counts as fluid intake—***discuss tips*

Activity—*For usual care patients, study staff should not provide exercise/activity-related information beyond what is provided in the Patient Education Manual. Patients seeking additional exercise/activity-related information should be referred to their primary (usual) healthcare provider.*

- ☐ **Importance of daily activity plan of 30 minutes—moderate intensity most days of the week**
- ☐ **Considerations for exercising outdoors during the winter and summer**

Other Important Lifestyle Considerations

- ☐ **Sexual activity considerations**
- ☐ **Not smoking and to avoiding second-hand smoke**
- ☐ **Alcohol—limiting intake to no more than 1 drink per day**
- ☐ **Importance of weight loss** *(if applicable)*
- ☐ **Managing stress, importance of support**
- ☐ **Avoiding constipation**
- ☐ **Avoiding colds and the flu**

When to Call for Help

- ☐ **When to call the doctor**
  - ☐ **Weight gain of > 3lbs in 3 days or 5 lbs in 1 week**
  - ☐ **Worsening of symptoms such as swelling, SOB, fatigue, restlessness**
  - ☐ **Symptoms such as confusion, poor appetite, changes in sleeping habits**
  - ☐ **Increasing cough or respiratory infection**
  - ☐ **Medication side effects**
- ☐ **When to go to the emergency room**
  - ☐ **Severe SOB that is not relieved by rest**
  - ☐ **Chest tightness/pain**
  - ☐ **Increased resting heart rate of 120–150 beats per minute**
  - ☐ **Sudden onset of severe headache**
  - ☐ **Sudden weakness or paralysis**
  - ☐ **Fainting**
- ☐ **Important telephone numbers—***be sure HF-ACTION trial contacts are completed at the back of the manual*
- ☐ **Discuss/identify the patient's support system. If needed, contact personnel who can help coordinate existing support services** *(financial services, transportation)*

Inclusion/Exclusion Worksheet

Site Number: ___ ___ ___ Patient Number: ___ ___ ___ – ___ ___ ___ ___ Patient's Initials: ___ ___ ___ (first middle last)

Inclusion Criteria Answers to questions 1-4 must be "Yes" to be eligible

1 **Does the patient have a LVEF of ≤ 35%?** *(For screening purposes, LVEF can be ≤ 35% at any time. Prior to enrollment a new ejection fraction must be obtained by echo with a resulting LVEF of ≤ 35%. This pre-enrollment measurement must be obtained at least 6 weeks after the initiation of a stable dose of medication therapy or after receiving any intervention that might improve the LVEF. An echo performed within 30 days of screening is acceptable for inclusion if there have been no changes in patient status.)* ☐ No ☐ Yes

2 **Does the patient have a NYHA classification of II, III, or IV heart failure for the previous 3 months despite a minimum of 6 weeks of treatment?** ☐ No ☐ Yes

3 **Is the patient receiving optimal therapy according to the AHA/ACC and HFSA HF guidelines, including treatment with ACEI and beta-blocker therapy or have documented rationale for variation from the guidelines including intolerance, contraindication, patient preference, or personal physician's judgment?** ☐ No ☐ Yes

4 **Is the patient sufficiently stable, by investigator judgment, to begin an exercise program?** ☐ No ☐ Yes

Exclusion Criteria Answers to questions 5-16 must be "No" to be eligible

5 **Is the patient less than 18 years of age?** ☐ No ☐ Yes

6 **Does the patient have any comorbid disease, or behavioral or other limitations, that would interfere with performing exercise training or prevent completion of 1 year of exercise training?** ☐ No ☐ Yes

7 **Is the patient currently pregnant or intending to become pregnant in the next year?** ☐ No ☐ Yes

8 **Has the patient had a major cardiovascular event or cardiovascular procedure within the prior 6 weeks?** ☐ No ☐ Yes

9 **Does the patient have future plans for a hospitalization** *(for any reason)* **or cardiovascular procedure?** ☐ No ☐ Yes

10 **Is it expected that the patient will receive a cardiac transplant within the next 6 months?** ☐ No ☐ Yes

11 **Does the patient have HF secondary to significant uncorrected primary valvular disease (except mitral regurgitation secondary to left ventricular dysfunction)?** *If valve replacement has been performed, patient may not be enrolled until 12 months after valve replacement* ☐ No ☐ Yes

12 **Does the patient have HF secondary to congenital heart disease or obstructive cardiomyopathy?** ☐ No ☐ Yes

13 **At any time during the past 6 weeks has the patient been performing exercise training at regular intervals of more than once per week at moderate to vigorous intensity?** ☐ No ☐ Yes

14 **Do the exercise testing results preclude safe exercise training as defined by AACVPR guidelines, including abnormal blood pressure response, early ischemic changes, or unexpected life-threatening arrhythmia?** ☐ No ☐ Yes

15 **Does the patient have a fixed rate pacemaker, a pacemaker with inability to attain target heart rates, or an AICD device with heart rate limits set below the target heart rate for exercise training?** ☐ No ☐ Yes

16 **Is the patient participating in another clinical trial that may interfere with HF-ACTION participation, follow-up, data collection, or that may affect cardiovascular morbidity or mortality?** ☐ No ☐ Yes

Patient Contact Information

Patient Number: ___ ___ ___ – ___ ___ ___ ___ Patient's Initials: ___ ___ ___ (first middle last)

Patient Contact Information (please print)

Title: ☐ Miss ☐ Ms. ☐ Mrs. ☐ Mr. ☐ Dr.

Patient name: _____ (last) _____ (first) _____ (middle)

Date of birth: ___ ___ (day) / ___ ___ ___ (month) / ___ ___ ___ ___ (year)

Social security number *(For non-US residents, record country-specific ID number)*: _____ - _____ - _____

Hospital medical record number: _____

Father's surname: _____

Primary home address: Street: _____

City: _____ State/Province: _____ Zip code: _____

Street address if above is PO Box: _____

Primary home phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Business phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Cellular phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Email address: _____

Spouse or significant other: _____ (last) _____ (first) _____ (middle)

Secondary Residence *(vacation home, etc.)*:

Street: _____

City: _____ State/Province: _____ Zip code: _____

Phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Primary Social Support:

Name: _____ (last) _____ (first) _____ (middle)

Mailing address: Street: _____

City: _____ State/Province: _____ Zip code: _____

Phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Alternate Contact *(relative, friend, neighbor not living with patient)*:

Name: _____ (last) _____ (first) _____ (middle)

Relationship to patient: _____

Mailing address: Street: _____

City: _____ State/Province: _____ Zip code: _____

Phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___ Best time to call: _____ ☐ AM ☐ PM

Local/Referring MD:

Name: _____ (last) _____ (first) _____ (middle)

Mailing address: Street: _____

City: _____ State/Province: _____ Zip code: _____

Doctor's office phone number: (___ ___ ___) ___ ___ ___–___ ___ ___ ___

IMPORTANT: Place photocopy in the Confidential Envelope and submit to DCRI with CRFs.

6-Minute Walk Patient Worksheet

Patient Number: ___ ___ ___ – ___ ___ ___ ___ **Patient's Initials:** ___ ___ ___ (first middle last)

Visit: ☐ Baseline ☐ 3 months ☐ 12 months ☐ 24 months ☐ Year 3 ☐ End of study

Did the patient attempt the 6-minute walk at this visit?

☐ No → **Specify reason:** _____

☐ Yes → **Examination date:** ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (day / month / year)

Start walk time: ___ ___ : ___ ___ (00:00 to 23:59)

End walk time: ___ ___ : ___ ___ (00:00 to 23:59)

Total distance walked: _____ ☐ feet ☐ meters

Did the patient experience any of the following symptoms?

☐ No

☐ Yes → **If Yes, check all that apply:**

☐ Angina ☐ Lightheadedness ☐ Syncope

Borg Rating of Perceived Exertion (RPE) Scale: _____

(Borg scale & scoring instructions on separate instruction sheet)

Were the patient self-report forms *(includes QoL instruments)* **completed before or after the 6-minute walk?**

☐ Before OR ☐ < 30 minutes after ☐ 30–60 minutes after ☐ > 60 minutes after

Suggested explanation of the 6-minute walk:

Walk for 6 minutes around this course, covering as much ground as possible during that time. Keep going continuously, if possible, but don't worry if you have to slow down or stop to rest. You can rest either standing or sitting if you need to.

The aim at the end of the 6 minutes is for you to feel that you couldn't have covered more ground in the time provided. I will stay with you as you walk. We won't talk while you walk because this could affect your performance. I will say some things to you periodically, such as how much time is left.

Please let me know if you are uncomfortable or have pain. The idea is for you to walk at a comfortable pace, but for you to cover as much ground as possible in the 6 minutes. Are you ready?

To start: *Begin walking.*

1 minute: *You're doing well; keep up the good work.*

2 minutes: *You're doing a good job; keep it up.*

3 minutes: *You're doing fine with the test, and you're halfway through.*

4 minutes: *You're continuing to do well; you've walked for 4 minutes.*

5 minutes: *Keep up the good work; you've got 1 more minute to go.*

6 minutes: *Stop.*

Encouragement statements if patient is resting:

After 1 minute of rest: *It's been 1 minute. Rest as long as you need and let me know when we can get started again.*

After 2 minutes of rest: ___ *minute(s) are left in the test. You can keep resting or begin walking again when you feel able.*

Repeat the last statement at each minute if the patient continues to rest.

6-Minute Walk Instructions

Description: The 6-minute walk is a simple test for assessing exercise capacity as a measure of functional status. It also reflects the normal daily activity levels of patients.

Equipment Needed

- Watch or clock with second hand
- Tape measure
- Tape
- Chairs
- 6-Minute Walk Worksheet and pen

Preparation

1 Measure an indoor course with a chair at each end. Establish a suitable distance between chairs so that if the patient tires, a chair is easily accessible. A distance of 20 to 25 feet (about 8 meters) is a suitable distance to start with, but this may vary based on the patient's condition and space at your facility. Avoid L-shaped hallways.

2 Provide patient teaching. Explain the test to the patient using the suggested wording on the 6-Minute Walk Patient Worksheet. Answer any questions the patient may have.

Conducting the 6-Minute Walk Test

1 Escort the patient to the start of the course. Show the patient the walking course and ask the patient to begin walking as you begin keeping time. Stay with the patient for the entire walk test and record the number of completed laps.

2 Provide encouragement to the patient. At 1-minute intervals, encourage the patient using the examples provided on the 6-Minute Walk Patient Worksheet. Use your judgment to assess the patient's comfort and clinical state and, if appropriate, recommend that the patient rest or stop the test early. You may stop the test early for any of the following reasons: anginal symptoms (e.g., chest pain or tightness), ataxia, staggering, unsteadiness, confusion, claudication or other significant leg pain, cyanosis, facial expression signifying distress, lightheadedness, marked dyspnea, pallor, signs of peripheral circulatory insufficiency, or unusual fatigue.

3 Stop the test after 6 minutes. Mark the floor where the patient stops with a piece of tape.

4 Determine the total distance walked. Multiply the number of laps times the distance of each lap (round to the nearest foot or meter). Add this figure to the distance covered in the last partial lap. Record the distance.

5 Obtain the patient's Borg Rating of Perceived Exertion (RPE) Scale at the end of the walk.* Show the patient the scale (printed on back) as you instruct how to rate his or her level of exertion.

Note: *If the patient cannot complete the full 6-minute walk, record the highest score experienced by the patient while attempting to complete the walk.*

Borg Rating of Perceived Exertion (RPE) Scale

While doing this exercise, pay close attention to how hard **you** feel the exercise work rate is. This feeling should reflect your total amount of exertion and fatigue, combining all feelings of physical stress, effort, and fatigue. Don't concern yourself with any one factor such as leg pain, shortness of breath, or exercise intensity, but concentrate on your total, inner feeling of exertion. Try not to overestimate or underestimate your feelings of exertion; be as accurate as possible.

6	**No exertion at all**
7	**Very, very light**
8	
9	**Very light**
10	
11	**Fairly light**
12	
13	**Somewhat hard**
14	
15	**Hard**
16	
17	**Very hard**
18	
19	**Very, very hard**
20	**MAXIMAL EXERTION**

Supervised Exercise Training Prescription

For Cardiac Rehabilitation Programs

Dear _____,

I am requesting your consideration of the following patient for enrollment into your cardiac rehabilitation program as part of the HF-ACTION trial. This trial is a NHLBI-sponsored study evaluating the safety and efficacy of exercise training in heart failure patients.

The patient's exercise test results and exercise prescription are listed below. The patient should begin their exercise training with you within 1 week of randomization, and training should be performed between 3–10 hours after the last dose of beta blockers. Please complete the Supervised Exercise Training Worksheet for each supervised exercise training session. The required progression of exercise is outlined in the HF-ACTION Exercise Training Manual provided or may be accessed at: http://members.hfaction.org.

Do not hesitate to contact me at _____ should you have any questions regarding this patient or the HF-ACTION trial. Thank you for your assistance.

_____	_____	_____
Signature, Principal Investigator or Designee	*Print name, Principal Investigator or Designee*	*Phone #*

Patient Name: _____ **Medical Record #:** _____

HF-ACTION Patient #: ____ ____ ____–____ ____ ____ ____

HF-ACTION Study Center: _____

Patient preference of exercise equipment *(if any)*: ☐ Treadmill ☐ Bicycle

Baseline Exercise Test Results:

Date: __ __ / __ __ __ / __ __ __ __ (*day / month / year*) **Time:** __ __ : __ __ hrs (*24-hour clock*)

Was the patient on a beta-blocker? *(Note: Training should occur 3–10 hours after last dose.)*

☐ No

☐ Yes → **Time of last dose:** __ __ : __ __ hrs (*24-hour clock*)

Maximal HR: _____ bpm

Resting HR: _____ bpm *(after 5 minutes sitting or standing)*

VO_2 max: _____ mL/kg/min

HR Reserve (HRR) = (Max HR – Rest HR) = _____ bpm

60% Training Intensity = (0.6 x HRR + Resting HR) = _____ bpm

70% Training Intensity = (0.7 x HRR + Resting HR) = _____ bpm

Exercise-induced angina or ischemic ECG changes? ☐ No ☐ Yes → **HR @ initial onset:** _____ bpm

Target Training Heart Rate from CPX Core Lab: _____ bpm **TO** _____ bpm

OR

If CPX Core Lab prescription not available, <u>preliminary</u> exercise prescription:

☐ No angina or ischemic ECG changes → _____ (*60% Training Intensity minus 10 bpm*) bpm **TO** _____ (*60% Training Intensity*) bpm

OR

☐ Angina or ischemic ECG changes → _____ (*HR at Initial Onset minus 20 bpm*) **TO** _____ (*HR at Initial Onset minus 10 bpm*)

RPE training range = 12–14*

Comments: _____

* *For patients with frequent ventricular beats that make HR measurement by palpitation or HR monitor invalid, a RPE corresponding to their 60–70% HRR or 4 beats below ventilatory threshold, whichever is lower, should be used.*

Supervised Exercise Training Prescription
For Cardiac Rehabilitation Programs
Follow-up Prescription

Dear _____,

Thank you for continuing to follow this patient in your cardiac rehabilitation program as part of the HF-ACTION trial. This NHLBI-sponsored study is continuing to evaluate the safety and efficacy of exercise training in heart failure patients.

The patient's new exercise test results and exercise prescription are listed below. Supervised exercise should continue to be performed between 3–10 hours after the last dose of beta blocker. Please continue to complete the Supervised Exercise Training Worksheet for each supervised exercise training session. The required progression of exercise is outlined in the HF-ACTION Exercise Training Manual provided or may be accessed at: http://members.hfaction.org.

Do not hesitate to contact me at _____ should you have any questions regarding this patient or the HF-ACTION trial. Thank you for your continued assistance.

_____ _____ _____

Signature, Principal Investigator or Designee | *Print name, Principal Investigator or Designee* | *Phone #*

Patient Name: _____ **Medical Record #:** _____

HF-ACTION Patient #: ____ ____ ____–____ ____ ____ ____

HF-ACTION Study Center: _____

Patient preference of exercise equipment *(if any)*: ☐ Treadmill ☐ Bicycle

Exercise Test Results:

Date: __ __ / __ __ __ / __ __ __ __ (*day / month / year*) **Time:** __ __ : __ __ hrs (*24-hour clock*)

Was the patient on a beta-blocker? *(Note: Training should occur 3–10 hours after last dose.)*

☐ No

☐ Yes → **Time of last dose:** __ __ : __ __ hrs (*24-hour clock*)

Maximal HR: _____ bpm

Resting HR: _____ bpm *(after 5 minutes sitting or standing)*

VO_2 max: _____ mL/kg/min

HR Reserve (HRR) = (Max HR – Rest HR) = _____ bpm

60% Training Intensity = (0.6 x HRR + Resting HR) = _____ bpm

70% Training Intensity = (0.7 x HRR + Resting HR) = _____ bpm

Exercise-induced angina or ischemic ECG changes? ☐ No ☐ Yes → **HR @ initial onset:** _____ bpm

Target Training Heart Rate from CPX Core Lab: _____ bpm TO _____ bpm

RPE training range = 12–14*

Comments:

* *For patients with frequent ventricular beats that make HR measurement by palpitation or HR monitor invalid, a RPE corresponding to their 60–70% HRR or 4 beats below ventilatory threshold, whichever is lower, should be used.*

Inclusion/Exclusion Criteria Explanations

Inclusion Criterion #3: Must be on optimal heart failure therapy according to AHA/ACC and HFSA heart failure guidelines, including treatment with ACEI and beta-blocker therapy, or have documented rationale for variation, including intolerance, contraindication, patient preference, or personal physician's judgment. Patients will be on stable doses of medications for 6 weeks prior to enrollment.

Optimal heart failure therapy includes the use of ACEI and beta-blockers. Doses will be recorded for both ACEinhibitors and beta-blockers. Optimal dose will be consider 100% of maximal dose or highest dose tolerated.

Background diuretics will be allowed in a flexible dosing format as per the discretion of the primary physician. Digoxin use will be strongly suggested but not mandated and recommendations to limit the daily dose so as to achieve a trough level of < 1 ng/ml will be advised. The use of spironolactone will be suggested only in severe heart failure, based on the entry criteria of the RALES trial.

HMG-COA reductase (Statin) therapy and antiplatelet therapy will be strongly advised in all patients with underlying coronary artery disease. Anticoagulation will be advised based on standard guidelines that advocate use in situations such as atrial fibrillation, presence of mechanical valves and prior TIA or stroke. The routine use of amiodarone will be discouraged unless used for standard indications such as symptomatic arrhythmia control.

Based on recent trial evidence, we recognize that some patients may be candidates for ICD or cardiac resynchronization therapy. Any patient receiving an intracardiac device such as an ICD or a cardiac resynchronization therapy must demonstrate stability for 6 weeks post-procedure. Patients in whom the primary physician considers placement of an intracardiac device such as an ICD or a cardiac resynchronization therapy in the future should be excluded from trial entry until such device has been placed and a 6 weeks have passed.

Inclusion Criterion #4: Must be sufficiently stable, by investigator judgment, to begin an exercise program.
Specific issues to consider, but are not limited to, are: PND; recent change in orthopnea, weight gain or other signs indicative of worsening HF; unstable or crescendo angina/ischemia or

angina-equivalent pattern; neurologic symptoms suggestive of transient ischemic attack; blood glucose > 300 mg/dL (or > 240 mg/dL if ketones present); recent falling, especially if associated with pre-fall symptoms or post-fall injury; active wheezing; and resting BP >200/115.

Exclusion Criterion #2: Comorbid disease or behavioral or other limitations that: 1) interfere with performing exercise training, or 2) prevent completion of one year of exercise training.

Comorbid diseases covered by this exclusion criterion include, but are not limited to, endstage renal disease requiring dialysis (hemodialysis or peritoneal dialysis), non-skin cancers that are not in remission, endstage liver disease, and oxygen dependent COPD. Specific behavioral issues to consider include active alcoholism or illicit drug use and psychiatric disorders that could interfere with adherence to exercise training.

Exclusion Criterion #4: Major cardiovascular event or cardiovascular procedure within the prior 6 weeks.

This exclusion refers to any cardiovascular admission for the following reasons:

1. Acute myocardial infarction
2. Angina Pectoris/Chest pain
3. Cardiac arrest
4. Cardiac arrhythmia
5. Endocarditis
6. Heart failure
7. Hypertension requiring inpatient treatment
8. Peripheral vascular event*
9. Sudden death with resuscitation
10. Syncope
11. Stroke
12. TIA

* Peripheral vascular event includes embolus, infarct, new dermal lesion due to PV disease that requires systemic or continuous local wound therapy.

This exclusion criterion refers to any cardiovascular procedure including, but not limited to:

1. Any catheterization
2. PTCI or stent placement

3. Cardioversion
4. Pacemaker (including CRT)
5. ICD placement
6. EP study
7. Coronary artery bypass surger
8. Left ventricular assist device placement

Exclusion Criterion #5: Cardiovascular procedure, or hospitalization for any reason planned in the future. Cardiovascular procedures covered by this exclusion criterion are listed in the exclusion criterion 4 explanation. Any hospitalization that is planned in the future is covered by this exclusion criterion.

Exclusion Criterion #7: HF secondary to significant uncorrected primary valvular disease (except mitral regurgitation secondary to left ventricular dysfunction). If valve replacement has been performed, patient may not be enrolled for 12 months after this procedure.
Patients with significant (severe) aortic, pulmonary or tricuspic valvular disease (stenosis or insufficiency) or mitral stenosis that has been uncorrected should not be enrolled in HF-ACTION. If patients abnormal left ventricular systolic function prior to corrective valvular surgery, they should not be enrolled in HF-ACTION. Patients will not meet this exclusion criterion and will be considered potential candidates for enrollment in HF-ACTION if they had normal left ventricular function at the time of valvular repair and subsequently acquired left ventricular systolic dysfunction. If patients have mitral regurgitation (of any degree), it will be up to the PI of the regional center to determine if the mitral regurgitation is secondary to left ventricular systolic dysfunction and remodeling or if significant mitral regurgitation caused the left ventricular dysfunction and remodeling. If it is determinded that the mitral regurgitation proceeded and significantly contributed to the development of left ventricular dysfunction, the patient should not be enrolled in HF-ACTION.

If valve replacement (and in the spirit of this exclusion criterion, repair) has been performed, patients may not be enrolled for 12 months after the procedure and a repeat measurement of left ventricular function should be performed prior to screening.

Exclusion Criterion #10: Exercise testing results that would preclude safe exercise training as defined by the AACVPR guidelines, including abnormal blood pressure response, early ischemic changes, and unexpected life-threatening arrhythmia.

Exercise testing results that would preclude safe exercise training as defined by the AHA guidelines (Fletcher, et al. Exercise standards: a statement for health care professionals from the AHA. Circulation 1995;91:580-614). Of special note would be those patients that demonstrate an abnormal blood pressure response to exercise (drop in systolic BP of $\geq$ 10 mm Hg from baseline BP despite an increase in work rate and when accompanied by other evidence of ischemia); early and/or new onset ischemic changes; and new onset sustained ventricular tachycardia and/or symptomatic arrhythmia. See also Gibbons, et al. ACC/AHA 2002 guideline update for exercise testing. Circulation 2002;106:1883-1892. Full text available at www.acc.org or www.americanheart.org.

Randomization and the IVRS

The Interactive Voice Response System (IVRS)

The IVRS is an automated phone system used to gather and generate study-specific information. When calling the IVRS, the caller will be “asked” specific questions which can be “answered” by pressing buttons on the telephone. In addition to the main menu functions, the IVRS will allow callers to make practice calls using a “practice” site number and password. The practice site # is 999; the practice password is 9999. For HF-ACTION study, the IVRS main menu options are:

1	Enter non-registry screen fail patient
2	Enter a registry patient
3	Randomize a patient
4	Review patient information
Other options include:	
0	Exit the system
#	Return to the main menu

Press # at any time to return to the IVRS main menu. The IVRS and technical support are available 24 hours a day, 7 days a week.

The following basic site information must be entered at the beginning of **every** IVRS call:

- Study code (4 digits): 1436
- Site number (preassigned, 3 digits): __ __ __
- Site specific password (preassigned, 4 digits): __ __ __ __

Your site numbers and password will be pre-assigned and mailed directly to you from ICTI, the company providing the IVRS. If you cannot locate your site number and password, press zero after entering the study code (1436) to be transferred to the attendant.

After each IVRS call, a confirmation fax will be generated and sent to the site. File IVRS confirmation faxes in the correspondence section of your Regulatory Binder.

Refer to your IVRS Quick Reference Card when making calls.

ACCESSING TECHNICAL SUPPORT

IVRS Toll-Free Number: 1-877-695-4284

You can call the toll-free IVRS telephone number twenty-four hours per day, seven days per week to access the Technical Support option. When you access Technical Support, please have the following information available:

- Sponsor: Duke Clinical Research Institute
- Protocol: HF-ACTION
- Study Code (1436)
- Site Number
- Your Name
- Your Phone number
- Reason for Call

After hours, if your call is URGENT an ICTI project manager will be paged. Non-urgent calls will be returned the next business day.

Practicing with the System

- To practice using the IVRS, you may make test calls at any time using the access information provided below:

IVRS Toll Free Number	**1-877-695-4284**
Study Code Number	**1436**
Practice Site Number	**999**
Practice Password	**9999**

- Practice subjects are not registered to your site.
- You will not receive confirmation faxes for subjects registered in the IVRS practice site.

IVRS Toll-Free Number: 1-877-695-4284
Study Code: 1436

Race Description Codes for Options 1 3

Race	Code to ENTER
American Indian or Alaska Native	**1**
Asian	**2**
Black or African American	**3**
Native Hawaiian or Other Pacific Islander	**4**
White	**5**
Hispanic or Latino	**6**
Combination of Hispanic or Latino and another race	**6**

DUKE CLINICAL RESEARCH INSTITUTE

PROTOCOL HF-ACTION

IVRS QUICK REFERENCE CARD

IVRS Toll-Free Number: 1-877-695-4284
Study Code: 1436

ICTI
153 Townsend Street
Suite 560
San Francisco, CA 94107
Phone: (415) 777-4284
Fax: (415) 777-4285

Email: IVRSsupport@ICTI-GLOBAL.COM

ACCESSING THE IVRS

Call the IVRS Toll-Free Number:
1-877-695-4284

LOG ON

When you reach the IVRS, you will be prompted to enter the 4-digit IVRS study code (**1436)** your 3-digit site number and 4-digit password.

Insert user specific label here

You will hear:

"Welcome to the Centralized Patient Randomization System for the HF-ACTION protocol."

MAIN MENU

Main Menu

- To enter a non-registry screen fail patient, **press 1**.
- To enter a registry patient, **press 2**.
- To randomize a patient, **press 3**.
- To review patient information, **press 4**.
- To exit the system, **press 0**.
- You may press the pound [#] key at any time to return to this main menu.

OPTION 1: ENTER A NON REGISTRY SCREEN FAIL PATIENT

What you will need:

- Patient DOB *(format: dd/mm/yyyy)*
- Patient's gender
- Patient's race *(Please see Race description codes on back of card)*
- In order to qualify for trial entry, did the patient have a cardiac echo performed during screening?
- Did the patient have CPX during screening?

What you will Receive:

- A 7-digit non-registry screen fail number
- A Non-registry Screen Fail Confirmation Fax

OPTION 2: ENTER A REGISTRY PATIENT

What you will need:

- Patient DOB *(format: dd/mm/yyyy)*
- Patient's gender
- Patient's race *(Please see Race description codes on back of card)*
- In order to qualify for trial entry, did the patient have a cardiac echo performed during screening?
- Did the patient have CPX during screening?

What you will Receive:

- A 7-digit registry number
- A Registry Confirmation Fax

OPTION 3: RANDOMIZE A PATIENT

What you will need:

- Patient DOB *(format: dd/mm/yyyy)*
- Patient's gender
- Patient's race *(Please see Race description codes on back of card)*
- In order to qualify for trial entry, did the patient have a cardiac echo performed during screening?
- Did the patient have CPX during screening?
- Does the patient meet inclusion and exclusion criteria?
- Does the patient present with ischemic heart failure as defined by the protocol?

What you will Receive:

- Verbal confirmation that randomization has been completed
- A 7-digit patient number
- Treatment group assignment
- A Randomization Confirmation Fax

OPTION 4: REVIEW PATIENT INFORMATION

What you will need:

- 7-digit patient number

What you will receive:

All patient information available on an existing patient, such as:

- Patient DOB
- Race of patient
- Date of randomization
- Confirmation that a cardiac echo was or was not performed during screening
- Confirmation that a CPX study was or was not performed during screening
- Confirmation that the patient does or does not have Ischemic heart failure
- Confirmation of treatment group assignment

The Registry

Objective

The primary objective of the HF-ACTION registry is to provide an ongoing source of information regarding the baseline demographic and clinical characteristics of the outpatient heart failure population that does not enroll in the HF-ACTION trial.

Secondary objectives include:

1. To compare the demographic and clinical characteristics of patients enrolled in the HF-ACTION trial with patients who do not enroll in the HF-ACTION trial.
2. To track standard outpatient treatment regimens among ambulatory heart failure patients across time in a larger sample than the HF-ACTION trial itself can allow.
3. To identify demographic, clinical, and process of care characteristics that correlate with improvement of a patient's ejection fraction above 35 percent given a prior measurement of less than 35 percent.
4. To identify baseline demographic and clinical characteristics that correlate with the inability to safely exercise, as evidenced by failure of CPX testing.
5. To identify baseline demographic and clinical characteristics that are predictive of mortality.

Eligibility

Patients will be eligible for the HF-ACTION registry if they are approached for participation but fail to be enrolled in the trial. This may occur for three main reasons:

1. Patient or physician refusal
2. Ejection fraction greater than 35 percent on baseline echocardiogram
3. Failure of CPX testing (defined as the occurrence of unexpected or life-threatening arrhythmia or ischemia during testing).

In addition, the following trial-wide criteria apply to registry patients:

Inclusion Criteria:

a. LVEF < or = 35% at any time.

b. NYHA class II, III, or IV heart failure for the previous three months despite a minimum of 6 weeks of treatment.
c. Must be on optimal therapy according to AHA/ACC and HFSA heart failure guidelines, including treatment with ACEI and beta-blocker therapy, have documented rationale for variation, including intolerance, contraindication, patient preference, or personal physician's judgment. Patients will be on stable doses of medications for 6 weeks prior to enrollment.
d. Must be sufficiently stable, by investigator judgment, to begin an exercise program.
e. Able to give informed consent.

Exclusion Criteria:

a. Age less than 18.
b. Comorbid disease or behavioral or other limitations that: 1) interfere with performing exercise training, or 2) prevent completion of one year of exercise training.
c. Currently pregnant or intending to become pregnant in the next year.
d. Major cardiovascular event within the prior 6 weeks; cardiovascular procedure within the prior six weeks or planned in the next 6 months.
e. Cardiovascular procedure or hospitalization for any reason planned in the future.
f. Expectation of receiving a cardiac transplant in the next six months.
g. HF secondary to significant uncorrected primary valvular disease (except mitral regurgitation secondary to left ventricular dysfunction). If valve replacement has been performed, patient may not be enrolled for 12 months after this procedure.
h. Heart failure secondary to congenital heart disease or obstructive cardiomyopathy
i. Performance of exercise training at regular intervals (> once per week) at a moderate to vigorous intensity.
j. Fixed-rate pacemakers, pacemakers with inability to attain target heart rates, or patients with AICD devices with heart rate limits set below the target heart rate for exercise training.

k. Participation in HF-ACTION or in another clinical trial that may interfere with Registry follow up or data collection, or that may affect cardiovascular morbidity or mortality.

Methods

1. Identify a patient as a potential registry subject by merit of their inclusion in one of the three categories of patients above (enrollment refusal, EF>35, or CPX failure).
2. Review inclusion and exclusion criteria to ensure they are met.
3. If criteria are met, obtain informed consent. Note that in the case of patients who are included because of echo data or because they have failed a CPX test, even though they have already signed a consent for these studies, a separate Registry consent needs to be signed.
4. Call the interactive voice response system (IVRS) for assignment of a patient number. Note that subcontract sites will be reimbursed for echo/CPX studies that are performed as part of screening but that render subjects ineligible for the main trial; this data will be collected as part of the IVRS.
5. Complete the Registry CRF. Note that patients who enter the Registry because of enrollment refusal do NOT need echo or CPX testing performed.
6. Return the Registry CRF to DCRI data management as instructed on the bottom of the CRF.

Registry follow-up will take place annually, and will be done via the National Death Index and the Canadian equivalent of the National Death Index. Follow-up will be done by the DCRI.

Note: Informed consent will be obtained; demographic and clinical information as well as follow-up data will be collected, and the patient's medical record may be used by the investigator to obtain this information. However, the HF-ACTION registry does not involve experimental treatment or intervention. Thus, sites may request that the HF-ACTION Registry protocol be submitted for expedited review from their IRBs.

Echocardiography Core Laboratory

Background

All patients recruited into the HF-ACTION study will have a baseline echocardiogram performed at the regional centers or their satellites within 30 days prior to enrollment or at the time of enrollment. Echocardiograms will be recorded and stored digitally (on CD-R or magneto-optical disk) or on Super VHS (SVHS) videotape and sent for interpretation to the Core Echocardiography Laboratory (St. John Hospital, Detroit, Michigan). Measurements of left ventricular (LV) structure and function, principally ejection fraction (EF), will be made, as well as semi-quantitative scoring of the severity of mitral regurgitation (MR).

Objective

To determine whether patients meet the study entry criteria of systolic dysfunction (LV ejection fraction $\leq$ 35%).

Core Lab Responsibilities

Major Task

Perform measurements of LV structure and function and semi-quantitative color Doppler scoring of severity of mitral regurgitation from the baseline echocardiographic studies to be performed on 3,000 HF-ACTION participants over a three- year period.

Subtasks

Sonographer Training

The HF-ACTION Core Echocardiography Laboratory will produce a training videotape demonstrating the recording of an echocardiogram according to a standard protocol. Duplication and distribution of the tape will be arranged by the Coordinating Center. Telephone conference call(s) will be scheduled with the sonographers so that any questions or concerns can be addressed.

Data Transmission and Storage

Measurement data related to the left ventricle and mitral regurgitation will be transmitted to the Coordinating Center and other sites as designated.

The Core Echo Laboratory will store videotapes and/or disks, as necessary, until the end of the HF-ACTION study. They will be kept in a locked cabinet, accessible only by HF-ACTION study personnel.

Echocardiogram Processing

Upon receipt of the echocardiograms, they will be logged in, digitized if necessary, and reviewed for quality. The regional or satellite center ("Field Center") will be notified if the echocardiogram study is of suboptimal quality.
Within one week of receipt, all echocardiographic measurements will be performed. All data will be transmitted to the Coordinating Center within two weeks.

Field Center Responsibilities

Field Centers will be responsible for recording baseline echocardiograms according to a specified protocol developed by the Core Echocardiography Laboratory, as approved by the Executive Committee and/or Steering Committee. Initially, Field Center sonographers will receive and review a training tape so they will be able to perform echocardiograms according to the protocol. All sonographers performing echocardiograms for the HF-ACTION study will be required to sign a form stating they have reviewed the training tape and will perform the studies according to protocol. Echocardiograms should be recorded on SVHS videotape, magneto-optical disk, or CD-R (preferred). Field Centers will send studies to the Core Laboratory with a completed Sonographer Worksheet.

Echocardiography Performance Protocol

Parasternal Long-Axis View

- Obtain two-dimensional (2D) parasternal long-axis view (LAX) without color and then with color
- Obtain 2D LAX view of right ventricular (RV) inflow without color and then with color – then continuous wave (CW) Doppler if tricuspid regurgitation (TR) is present
- Obtain 2D guided M-mode through the aorta and left atrium, record full screen
- Obtain 2D guided M-mode through the left ventricle (LV) just below the mitral valve (MV) leaflet tips, record full screen

Parasternal Short-Axis View

- Obtain 2D of aorta and left atrium without color and then with color

- Obtain 2D guided M-mode of aorta and left atrium, record full screen
- Obtain 2D of the tricuspid valve (TV) without color and then with color – then CW Doppler if TR is present
- Obtain 2D of the pulmonic valve (PV) without color and with color – then CW Doppler through PV
- Obtain 2D of the LV at the mitral leaflet tips
- Obtain 2D of the LV at the papillary muscle level
- Obtain 2D guided M-mode of LV at chordae level, below MV leaflet tips, record full screen

Apical 4- and 5-Chamber Views

- Obtain 2D of apical four-chamber (A4C) without color with focus on good endocardial definition
- Record Color Doppler of MV to assess mitral regurgitation (MR)
- Record CW Doppler of MR jet (if present)
- Record pulsed wave (PW) Doppler at MV leaflet tips
- Have patient perform a 15-second Valsalva maneuver and record PW Doppler at MV leaflet tips
- Obtain PW Doppler of pulmonary veins
- Obtain tissue Doppler (TDI) of the mitral annulus at both the septal and lateral sides
- Obtain 2D of apical five-chamber (A5C) without color
- Record Color Doppler of aortic valve (AV) and CW Doppler of AV
- Record PW Doppler with sample volume in LV outflow tract (LVOT) .5 cm below AV annulus
- Record A4C with color Doppler of TV – then CW Doppler if TR is present

Apical Long-Axis and 2-Chamber Views

- Obtain 2D of apical long-axis (ALAX) without color
- Obtain 2D of ALAX with color focusing on AV and then MV
- Obtain 2D of apical two-chamber (A2C) view without color and then with color

Subcostal Views

- Obtain 2D of the inferior vena cava (IVC) with and without respiration
- Following are obtained only when parasternal and/or apical views are suboptimal
    - Obtain 2D 4-chamber view without color

GENERAL TECHNICAL POINTS

- Focus on good endocardial definition in apical 4- and 2-chamber views. Use harmonics if available.
- If the echo lab's standard procedure includes the use of a contrast injection for LV opacification in patients whom endocardial definition of the left ventricle is considered suboptimal for accurate measurements of LV ejection fraction, a contrast injection should be performed as part of the HF-ACTION echocardiogram protocol.
- Make every effort to obtain non-foreshortened images.
- Use sweep speed of 100mm/sec when recording spectral Doppler. Use a sweep speed of 50 mm/sec on freeze-frames, if necessary, to record at least 2 beats of spectral Doppler.
- If recording digitally (preferred), set system to acquire 3 R-R intervals
- If recording on SVHS video tape, acquire 10 beats of each view
- Place sample volume at the MV leaflet tips in diastole when recording PW Doppler of mitral inflow
- Place sample volume .5 to 1 cm below aortic annulus when recording LVOT velocities
- Tissue Doppler sample volume should be positioned in the septal and lateral regions at the mitral annular level in an apical 4-chamber view. Use a sample volume size of 5 mm.
- Be sure to include a high-quality ECG tracing with appropriate gain settings. Using a lead II is recommended.

Echocardiography Equipment

Because study quality is of such great importance, echocardiograms should be recorded with echocardiographic equipment that is as state-of the-art as possible, using harmonic imaging for the two-dimensional echocardiographic studies. Recordings of the left ventricle in the apical two-chamber, apical four-chamber, and parasternal views will be optimized as demonstrated in the training videotape. Color Doppler recordings for mitral regurgitation will be obtained from at least two imaging views.

Method of Measurement

Studies will be read using computerized algorithms on off-line analysis machines. Left ventricular ejection fraction will be measured using the modified biplane Simpson's algorithm and planimetered ventricular cavity areas in the apical four-chamber and two-chamber views, as recommended by the American Society of Echocardiography.

Mitral regurgitation will be quantified by measuring regurgitant jet area to left atrial area in the view demonstrating the largest consistent regurgitant jet area, similar to the method of Helmcke, et. al.[1] In addition, echo readers will score the severity of mitral regurgitation semiquantitatively based on Helmcke, et. al criteria as follows:

- Regurgitant jet area (RJA)/left atrial area (LAA) $\leq$ 5% = trace
- RJA/LAA 6% - 20% = mild
- RJA/LAA 21% - 40% = moderate
- RJA > 40% = severe

Core Lab Echocardiography Readers

Primary readers will include the lead research sonographer who is registered in both echocardiography and vascular sonography and a level III Echocardiography Research Fellow. Two level III senior physician echocardiography readers will review studies about which the primary readers have questions, or other random studies.

Quality Control Measures

1. A videotape outlining the standardized protocol will be distributed to all sonographers. Field Centers will receive verification by the Core Lab that echocardiograms are performed correctly.
2. The Core Lab will notify Field Center(s) and Coordinating Center of any centers consistently demonstrating echocardiography recording protocol deviations or otherwise sub-optimal recordings.
3. Strategies to optimize image quality will include use of harmonics and digital recording when possible.
4. There will be centralized reading of studies by 2 primary readers, with over-reading (as noted above) by 1 of 2 level III Physician Echocardiographers.
5. Blind duplicate readings for intra- and inter-reader variability will be performed.
6. Periodic reader review sessions will be conducted.

7. M-mode and Doppler measurements will be averaged from multiple beats
8. Measurements will be performed from 2-D when M-mode is unreliable.

Contact Information

Julius M. Gardin, MD
Principal Investigator, Core Echo Lab
St. John Hospital & Medical Center
22201 Moross, PB II, Suite 470
Detroit, MI 48236
(313) 343-6390
(313) 343-3912 (fax)
julius.gardin@stjohn.org

Renee L. Bess, BS, RDCS, RVT
Supervisor, Core Echo Lab
St. John Hospital & Medical Center
22151 Moross, PBI, Suite 135
Detroit, MI 48236
(313) 343-4811
(313) 417-1251 (fax)
renee.bess@stjohn.org

1. Helmcke F, Nanda NC, Hsiung MC, Soto B, Adey CK, Goyal RG, Garewood RP Jr. Color Doppler assessment of mitral regurgitation with orthogonal planes. *Circulation.* 1987; 75: 175-183.

Echocardiography/Sonographer Worksheet

Please complete this form and send it with each echocardiogram submitted. ***Remember to write legibly***. Keep a copy for your records.

Patient Information

Patient ID_____ Date of Birth_____ Age_____

Sex_____ Ht_____ Wt_____ BP_____

Date of Study_____

Study Quality _____excellent _____ good _____ fair _____ poor

Patient Status: (check one) Screen Failure ☐ Registry ☐ Randomized ☐

Site Information

Regional Center Site ID# _____

Site Name_____

Phone_____ Fax_____

Sonographer name_____

Echo manufacturer _____ Model_____

Media used to record study _____ CD _____ MOD _____ SVHS

Was harmonic imaging used for study? _____yes _____ no

Was contrast used for study? _____ yes _____ no

If yes, what contrast agent was used _____

Please mail completed form with study to:

HF-ACTION STUDY
Core Echocardiography Laboratory
St. John Hospital and Medical Center
22151 Moross, PB1 Suite 135
Detroit, MI 48236
Attn: Renee Bess

Biomarker Core Laboratory and DNA Bank

All patients participating in the HF-ACTION trial will have a biomarkers sample drawn. Consent for providing blood samples for the Biomarkers Core Lab is included in the informed consent form for the overall trial. Patients will be consented separately for the DNA Bank Genotyping Study.

The biomarkers analyses that are currently planned are in 3 categories:

- Measures of neurohormonal activation: BNP, nt-BNP, ANP
- Measures of myocyte necrosis: Troponin
- Measures of inflammation: IL6, TNF, CRP

Some serum will be stored for measurement of other biomarkers that may become of interest or be discovered in the future. These would be limited to biomarkers thought to be mediators of heart failure progression.

Site and Patient Preparation	
Biomarkers Core Lab	**DNA Bank**
For biomarker specimens, sites will need to provide: • A cold centrifuge (+4° C) for processing • A -70° C freezer for storage • Dry ice for shipping • All other supplies will be supplied to the sites. Consent is included in the HF-ACTION consent form.	For the genotyping study, the patient will be asked to sign a form to: • Consent to donate DNA to the bank for study as part of the HF-ACTION trial. • Consent to have DNA results and clinical data from the HF-ACTION study combined with results from other DNA bank studies. • Consent to be evaluated for participation in the Oregon Health and Science Family Study. All supplies are included in the DNA sampling kit.

Blood Sampling

Kits for obtaining and shipping the HF-ACTION Biomarkers Core Lab and DNA Bank samples will be supplied. Kits will contain detailed instructions, forms, and supplies for specimen processing, storage, and shipping.

Biomarkers Core Lab	DNA Bank
• Obtain **20** ml of blood by standard venipuncture at the baseline, 3 month, and 12 month visits using the provided vacutainer tubes. • Obtain biomarker samples **prior** to exercise testing if possible. *Note: If the sample is drawn after CPX testing at baseline, subsequent samples should be drawn after CPX testing for consistency.* • Process as soon as possible. • If it will be > 30 minutes before processing, place tubes in a standard freezer or ice bath. The delay between blood draw and processing should be **no more than 2 hours.**	• One Kit per patient • Obtain **30** ml of blood by standard venipuncture at any time after consent is obtained. Use **3** vacutainer tubes provided in the kit.

Processing and Storing Blood Samples

Biomarkers Core Lab	DNA Bank
• Spin samples for 15 minutes in a cold *(+4° C)* centrifuge at 2000g • Aliquot plasma into five 2cc cryovials(provided). • Label each vial with adhesive bar code tag. • Transfer vials to a -70° C freezer. • Specimens will be shipped in batches at 3 month intervals. More than one subject's samples can be included in 1 shipment.	• Mix each tube by inverting 4-5 times. • Label each tube with adhesive bar code tag. • Store sample at room temperature if shipping same day, or refrigerate if storing for more than 24 hours. • Ship on the same day when possible.

Note: If a biomarker sample is drawn and labeled but the patient is <u>not</u> randomized, the sample should be discarded.

Labeling Blood Samples

The sample acquisition form is a general form used for all studies at the Duke Center for Human Genetics, therefore some of the field titles may not make perfect sense in the context of HF-ACTION. This form should be filled out as follow:

Study: Fill in "ACTION"

Center: Fill in the 3 letter code for your site (see attached list—this same code will be used for both the Biomarkers and Genetics Core Labs in HF-ACTION).

Billing PI: Fill in GMF

Family: Fill in "1" for all subjects

DOB: Fill in

Individual: Fill in patient's HF-ACTION Patient number

Gender: Fill in

Local ID: Fill in patient's HF-ACTION Patient number

Individual's Name: Leave blank

Consent Box: Enter date and check box for consent form obtained. This box must be checked. Consent for participation in the HF-ACTION trial includes consent for participation in the Biomarkers Core Lab. Consent for the DNA bank is separate. Leave secondary use box blank.

Date Sample Collected: Fill in date and print your name

Comments Section: See below

- Use the bar code adhesive tags to label each specimen. Extra labels are provided on each form.
- Complete the Genotyping form for each patient and indicate their participation in the Genotyping study.
- **Fax the completed Sample Acquisition form and Genotyping form to Dawn Pickett at 919–490–8556.**

Biomarkers Core Lab	DNA Bank
• In the comments section, indicate the sample type and visit obtained: "Biomarkers – baseline", Biomarkers – 3", "Biomarkers – 12"	• In the comments section, indicate the number of tubes obtained.

Shipping Blood Samples	
Biomarkers Core Lab	**DNA Bank**
• Use the mailer provided and pack specimens from 1 patient into mailer. • Fill insulated dry ice shipment box with enough dry ice to fill the empty space in box.	• Place the tubes into the Styrofoam mailing container provided. • Put mailing container into FedEx diagnostic specimen envelope. No additional packing material is needed.
• Keep the Sample Acquisition Form with the patient study files. There is no need to send the original form with the samples. • Use the preprinted FedEx airbills with the core lab address and account number. Confirm that the shipping address is on the billing form and that FedEx priority overnight under section 4a is marked. • **Do not ship on Fridays or on the day prior to a holiday.** • Email signin@chg.duhs.duke.edu to notify that a sample has been sent.	

Ordering More Supplies:

Sites can order more supplies by contacting Dawn Pickett at email: dawn_pickett@med.unc.edu

The following forms are provided:

- **Sample Acquisition Form (Both Biomarkers and DNA):**
  This form provides the information needed by the Center for Human Genetics to process the patient's DNA sample and provides detachable bar code labels used to identify the patient sample. A patient acquisition number will be pre-printed on the form.

- **HF-ACTION Genotyping (DNA Study only):**
  This form will be completed on all HF-ACTION randomized patients. This form documents whether the patient will donate a blood sample for the DNA bank, and if so, in which aspects of the study the patient is willing to participate.
  1. If the patient is unwilling to donate blood to the DNA Bank, this refusal is indicated on the form and this single form is faxed to UNC.

2. If the patient consents to donate DNA, indicate on the form if they also consent to have their data from HF ACTION combined with other databases and if they are willing to be considered for enrollment in the Oregon family study.
3. If the patient is willing to be considered for the family study, complete the remainder of the form. A primary etiology of the patient's heart failure will be noted using the check box system on the form. Presence or absence of supporting data for determination of etiology (i.e. coronary angiography) will also be noted.
4. The remainder of the form provides for recording the contact information needed on patients consenting to be part of the family study.

UNC will transmit Ancillary forms on patients who agree to participate in the family study to investigators at the University of Oregon.

Contact Information

General questions:

(IRB, sample kits, and processing)

Dawn Pickett

Phone: 919–403–6572

Fax: 919–490–8556

dawn_pickett@med.unc.edu

Biomarker Core lab

Michael Felker, MD

Director, Biomarkers Core Lab

Phone: 919–668–8919

Fax: 919–668–7058

felke001@mc.duke.edu

DNA Core lab

Mark Donahue, MD

Director, DNA Core Lab

Phone (919) 286-0411 ext. 5221

Fax (919) 286-6821

mark.donahue@duke.edu

Shipping or final storage questions:

Jackie Rimmler

Center for Human Genetics

Building 7540, 595 LaSalle Street, Room 3027Durham, NC 27710

Phone: 919–681–5544

Fax: 919–684–0937

jackie@chg.duhs.duke.edu

HF-ACTION Genotyping

Patient Study Number: __ __ __ - __ __ __ __

Date: __ __ / __ __ __ / __ __ __ __
day month year

Complete and submit this form for each randomized HF-ACTION patient.

Did the patient sign an informed consent form for the genetics ancillary study? ❑ Yes ❑ No
If **No,** form is complete. Please fax to 919–490–8556.

If **Yes**: complete the following details.

Was a blood sample for DNA obtained? ❑ Yes ❑ No
Does the patient consent to data combining? ❑ Yes ❑ No
Does the patient consent to OHSU family history study? ❑ Yes ❑ No
→ If yes, please have patient complete contact information below

Indicate cause of heart failure:

❑ Ischemic → indicate cause:

❑ Myocardial Infarction (MI) ❑ CABG ❑ Stent/angioplasty

❑ Non-ischemic → Is the cause of underlying cardiomyopathy known? ❑ Yes ❑ No

If **Yes**, provide details:

❑ Idiopathic
→ Has the patient had a negative coronary angiogram? ❑ Yes ❑ No ❑ Unknown
❑ Valvular
→ Has the patient had (check all that apply): ❑ Aortic valve replacement
❑ Mitral valve replacement
❑ Hypertension
❑ Alcohol
❑ Adriamycin
❑ Radiation
❑ Other (specify): _____

HF-ACTION Genetic Ancillary Study - Family History

❑ I have indicated in the consent that I am willing to participate in the family history genetic study from the Oregon Health and Science University and am providing my contact information. I understand that I will be sent a questionnaire and may receive a follow up telephone call.

Name: _____

Address: _____

_____
City State/province Zip code

Home Phone: (___) _____ Work/other phone: (___) _____

I prefer to be contacted at ❑ Home phone ❑ Work/other phone

Signature: _____ Date: _____

Cardiopulmonary (CPX) Core Laboratory

CPX testing data must be collected on all patients who undergo exercise testing as part of the HF-ACTION trial. This includes patients that were not included in the study because the exercise test results deemed exercise training to be unsafe.

Randomized patients will perform CPX testing at baseline, 3, 12, and 24-months. Note: For some patients, two initial CPX tests must be performed—1 practice test and 1 baseline.

All exercise test results should be recorded on the HF-ACTION CPX Worksheet and faxed, along with the breath-by-breath analysis, and 15-second averaged analysis to the CPX Core Lab at 919-681-9274. CPX Worksheets, instructions, validation requirements, and the Borg RPE scale are included in this section, in the CPX binder, and on the web at http://members.hfaction.org.

Updated versions of the

CPX Worksheet and Instructions

are available on the HF-ACTION website:

http://members.hfaction.org.

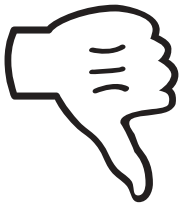
Borg Rating of Perceived Exertion (RPE) Scale

While doing this exercise, pay close attention to how hard **you** feel the exercise work rate is. This feeling should reflect your total amount of exertion and fatigue, combining all feelings of physical stress, effort, and fatigue. Don't concern yourself with any one factor such as leg pain, shortness of breath, or exercise intensity, but concentrate on your total, inner feeling of exertion. Try not to overestimate or underestimate your feelings of exertion; be as accurate as possible.

6	**No exertion at all**
7	**Very, very light**
8	
9	**Very light**
10	
11	**Fairly light**
12	
13	**Somewhat hard**
14	
15	**Hard**
16	
17	**Very hard**
18	
19	**Very, very hard**
20	**MAXIMAL EXERTION**

Hand Signals

Please do not talk during your exercise session. Use the following hand signals to communicate while you exercise:

	**Yes**
	**No**
	**I'm having chest pain**
	**I'm dizzy**
	**I'm finished**

Heart Rate Monitors and
Heart Rate/Compliance Core Laboratory (HR/CCL)

Background

Procedures for implementation of the HF-ACTION protocol call for the use of heart rate (HR) monitoring via chest strap type devices and home exercise compliance logs (diaries). The HR monitors will be used among experimental group subjects during both the supervised and home-based portions of the trial. One HR monitor will be used per exercise group subject, with device introduction and orientation occurring during week one or two of the supervised exercise sessions. Assuming that each subject in the experimental group completes 2.5 years in the trial and exercises 5 days per week, data from nearly one million exercise sessions will be recorded.

The purposes of the chest strap-type HR monitors:

A. Help subjects and HF-ACTION staff safely regulate exercise intensity, as well as assess compliance to the prescribed target HR training range during the 36 supervised visits.
B. Help subjects self-regulate exercise intensity during all training sessions conducted at home.

Goals for the HR/CCL:

A. Serve as a central resource center to help with distribution of HR monitors (as needed) and address/coordinate any technical problems/repairs associated with use of the HR monitoring devices, during the supervised and home-based exercise sessions.
B. Upon receipt of raw, de-identified data from DCRI, provide timely review of the Supervised Exercise Training Worksheets and Exercise Compliance CRF's completed by each site.
C. Provide individualized feedback to all regional centers and to the Executive, Steering, Intervention, Retention and QA committees relative to compliance to supervised and home-based training.
D. If feasible, develop and implement a strategy that uses a more sophisticated HR monitoring device to collect, store and download home-based exercise HR data. Using a representative sample of subjects, this would be done to validate the exercise diary information that is self-reported.

HR/CCL Contact Information:

Clinton A. Brawner
6525 Second Ave.
Detroit, MI 48202
Voice: (313) 972-4108
Fax: (313) 972-1921
Email: HFACTION@hfhs.org (preferred)

Start-Up for All Participating Regional Centers

1. Upon activation (i.e. completion of all start-up requirements), each site will receive the following:
   A. 3 Polar A1 HR monitors (shipped directly from manufacturer). Each unit includes both chest strap transmitter and wrist watch receiver.
   B. Hand out of site coordinator instructions on how to operate the monitors (Attachment A). Patient instructions are supplied with other patient materials.
   C. 3 pre-labeled shipping envelopes addressed to Polar to be used for any units that must be returned for repair or battery replacement.
2. Each site coordinator should test all Polar A1 units prior to distribution to subjects for proper operation and contact HR/CCL via email regarding any problem units. See Problem Resolution (Attachment B) below.
3. Each site coordinator should keep a log of serial numbers on all Polar A1 units they receive (log located in the Study Coordinator Tools Binder).

Requesting Re-Supply of Polar HR Monitors

When a regional site has but one Polar A1 unit left "in stock" they are to email the HR/CCL and request another shipment of three units. Be sure to indicate the name of the site coordinator at your regional site and the site number assigned to your site. HR/CCL will contact the assigned customer service representative at Polar and request that three units be drop shipped to the requesting site. Expect units to be shipped and delivered (via UPS) within 9 days of request. The customer service representative at Polar will be provided with an updated registry of all site coordinators, mailing addresses and site numbers. Polar will maintain and provide the HR/CCL with the serial number for each unit mailed to each site.

Resolution of Technical Problems

If a subject or site personnel identifies that a unit is not working and they have tried to resolve the problem using routine trouble shooting techniques (Attachment B), they should contact the HR/CCL for assistance. Please note that the frequency of technical problems for the Polar A1 unit requiring manufacturer repair is very low. There is, however, a chance that batteries will need to be replaced in the wrist watch receiver or the chest strap transmitter.

It should be emphasized to the subject that a non-working Polar HR monitor should not keep them from exercising. When a problem unit is identified the site coordinator should immediately provide the subject with a working unit.

1. If after communicating with the HR/CCL it is determined that battery replacement or repair requires manufacturer involvement, the site coordinator must:
   A. Contact Polar to receive prior authorization at Polar Electro Medical Division at (800) 290-6330, extension 3073 (attn. Dawn) or extension 3075 (attn. Allison).
   B. Ship to Polar both the wrist watch and telemetry strap using the pre-labeled shipping envelope. Write the authorization number on the mailing label.
   C. Notify the HR/CCL of this shipping and provide serial number of the watch.
2. Once the watch is repaired, Polar will ship to it to the HR/CCL where it will be held for future distribution within the trial.

When to Use the Polar A1 Unit

One HR monitoring unit (Polar A1) will be provided to each subject during her or his first, second or third day of supervised training. Operating instructions are provided and should be given to the subject. The unit will be worn by the subject throughout their participation in the trial -- during all supervised and home-based training sessions. Subjects can keep the HR monitoring unit when they complete the trial.

Polar A1 use during the supervised exercise sessions.

The HR monitors will be used to help guide exercise intensity during supervised exercise in accordance with the training recommendations stated in the protocol. During supervised training sessions rehabilitation staff should check HR during exercise by viewing the subject's wrist

watch unit. HR from the watch will be periodically viewed after steady state is achieved, some of these values should be recorded on the training sheets kept at the rehabilitation centers. HR data from any other source (e.g., exercise equipment that receives the standardized telemetry signal generated by the chest strap and displays HR) should not be used for data recording purposes.

Subjects should be able to demonstrate proficiency to independently operate the Polar A1 unit by their sixth supervised training session. This includes how to turn it on/off, collect total exercise time, and mean HR.

Polar A1 use while subject is training at home.

While training at home subjects should monitor their HR via the Polar to be sure they are within their prescribed HR range. At the end of each exercise session, and consistent with the instructions provided in the subject/site coordinator instructional handout, subjects will recall the total exercise time and average HR from their exercise session. These values are to be written on the Patient Diary.

Please be sure to instruct subjects that they are to contact their site coordinator if they have an inoperable unit. However, while this problem is being resolved they are still expected to maintain exercise compliance. An inoperable unit does not give them an excuse to not exercise. To facilitate this, while subjects are in the supervised program they must be taught how to guide intensity using pulse palpation, RPE or self-pacing, in order to avoid an excuse to not exercise.

Completing Case Report Forms for the Supervised Training Sessions

The Supervised Exercise Training Worksheet will be completed by the trainer after each supervised exercise training session. After every 3 sessions, the worksheets will be forwarded to the regional site coordinator, who will photocopy each worksheet and submit the copies with other CRF pages to the DCRI, where pertinent data will be entered into a database. Ideally all 36 sessions will be completed in 12 weeks. Raw, de-identified data will be forwarded to the HR/CCL, where site specific and aggregate reports will be regularly generated for view by sites and appropriate trial committees.

Home Exercise and the Patient Diary ("exercise diary")

Patient Diary use while in supervised exercise phase.

After completing 18 supervised exercise sessions (ideally completed in 6 weeks), each subject will begin his/her 2-day per week home-exercise program in accordance with the training section of the protocol. All home-exercise sessions should be recorded in the Patient Diary.

Patient Diary use while in the home–based training phase.

After completing all 36 supervised exercise sessions (ideally completed in 12 weeks), each subject will begin his/her home-based training phase of five days per week of walking or cycling and one day per week using a modality of his/her choice. Subjects will return for a follow-up clinic visit to meet with the site coordinator every three months for the first two years in the study and then yearly. Subjects are expected to bring their completed Patient Diary to the follow-up clinic visit for review by the site coordinator. Subjects will receive the next batch of diaries to cover the next follow-up period. Compliance issues should be addressed and barrier resolutions identified during the follow-up visit.

Completing the Exercise Compliance Case Report Form

General information.

An Exercise Compliance CRF page should be completed for each follow-up clinic visit. These CRFs must be mailed (fax not acceptable) to the DCRI.

Please refer to the HF-ACTION website to see a copy of the Exercise Compliance CRF page and to the Home Exercise Compliance Calculation Instructions *(located in the Study Coordinator Tools Binder)* for the steps required to calculate data for the CRF. Please double-check your work. Pay special attention to filling in the field "Compliance Comments" using one or more of the generic statements that summarize the nature of the recommendation that you gave to each subject during review of the exercise diary.

Following data-base entry of the Exercise Compliance CRFs, weekly site specific and "across the trial" reports will be used to evaluate compliance to the study-defined exercise prescription.

Aggregate reports of compliance will be provided to the Executive Committee, Steering Committee, Intervention Committee, Retention Committee and QA Committee.

Home exercise and use of the Patient Diary.

Subjects are expected to begin home-based exercise after their 18th supervised exercise session. At this point subjects should begin to record their home exercise in their Patient Diary. The diary should be reviewed during all follow up exercise and clinic visits.

The Polar S610 and Assessment of Home Exercise Accuracy

The HR/CCL will work with 10-15 regional centers to distribute a more sophisticated HR monitoring unit (Polar S610) for the purpose of collecting, storing and downloading actual home-based exercise HR data. Participating sites are yet to be identified but will be selected based on their willingness to participate and their ability to contribute subjects to a sample that is representative (demographically) of the HF-ACTION population.

Briefly, the core lab will train each center how to teach subjects to use the Polar S610 unit. Two to three units will be distributed to each participating site. Site coordinators will provide these to every subject for use during a one-month period of home-based exercise; sometime after their supervised exercise sessions are complete. Subjects will be instructed to send the Polar S610 unit via mail (mailer provided, directed to HR/CCL) after one month. A phone call to the subject is expected to facilitate this process. Units will be provided to subjects as they are available. Technical difficulties will be called into the HR/CCL as described above for the Polar A1 units.

Once the Polar S610 unit is received at the HR/CCL the respective site will be contacted and sent another Polar S610. Data will be downloaded from each unit at the HR/CCL. This data will provide a detailed analysis of HR response during home-based exercise, allowing more detailed inferences to be made about compliance. Reports will be sent to the Executive, Steering, Intervention, Retention, and QA committees.

Attachment A

Coordinator Instructions for Polar A1 Monitor Use

Each unit should have 3 pieces:

1. Wrist receiver ("watch")
2. Transmitter ("plastic chest band" with Polar logo)
3. Adjustable elastic strap

Instructions:

1. Attach the elastic strap to the transmitter ("chest band") and adjust strap length to fit around chest snuggly. Note that the elastic strap (not the transmitter) is machine washable and should be washed periodically.
2. Center the transmitter across the base of the sternum. The sides with the grooved areas ("electrodes") should be flat against the skin. The Polar logo must be face up (right-side up) so that someone looking at you could read it.
3. Moisten the two grooved electrode areas on the back of the transmitter. To do this, run a couple of fingers under water and then rub the grooved portion of the transmitter so that a little moisture remains between the skin and the transmitter. Note only a minimal amount of water will stay in place, but that is all that is needed to help with conduction. Or, the electrode areas can be made wet prior to putting the strap on.
4. Place the watch on your wrist comfortably. It should read "OFF" before the exercise session begins. **DO NOT start the watch until your exercise session has begun**.
5. Push the button once to start the watch.
6. The display will change from "OFF" to flashing heart symbol and the stop watch will start. After 15 seconds, your heart rate will be displayed
7. To see your total exercise time at any point during the session, hold the watch up to the Polar logo and it will appear on the watch for 3 seconds.
8. When the exercise session is complete, (or if you stop to take a break for a while), press the button on the watch. The total exercise time and the average heart rate will both be shown twice and then the watch will read "off."

9. Be sure to stop the watch as soon as you finish exercising. If you have stopped to take a break, record the time and heart rate and then restart the watch when you begin to exercise again.
10. If you missed the heart rate or total time and want to view it again, press and hold the button on the watch until it reads “FILE”. Total exercise time and average heart rate will again be shown. The time and heart rate will each be displayed for 3 seconds and they will both be displayed twice. This will be the information from your most recent exercise session only, so be sure to write it down in your diary. If you miss any of this information, just press and hold the button again to recall the information. Once you start and stop the watch again any information from the last session will be replaced.
11. When finished with your exercise remove the elastic strap from the transmitter and wipe it clean. Remove the watch from your wrist and wipe it clean. Store both pieces in a clean, dry place. Do NOT store it in non-breathable material like a plastic bag.

Attachment B

Resolving Common Problems with the Polar HR Monitor

1. The Polar watch does not have a display.
   a. Probable battery issue. Contact study coordinator _____ at _____.

2. Is the chest strap worn correctly?
   a. The chest strap should be flat and snug against the skin.
   b. The Polar logo should be right side up and in the middle of the chest.

3. Did you moisten the grooved electrode pads (to the sides of the Polo logo) on the chest strap?
   a. Water, saliva, or sweat should be applied between the electrode pads and the skin.
   b. Extra moisture may be needed for people with a lot of body hair.

4. Is the chest strap clean?
   a. The chest strap should be rinsed and wiped off after each use.

5. Watch display works but heart rate is erratic, high, or shows “0.”
   a. Be sure watch is within 3 feet of chest strap.
   b. Other devices can create interference. Move to another location.
   c. See below for possible sources of disturbance.

6. Have the buttons on the watch been pressed while under water?
   a. Although the Polar heart rate monitor is water-resistant and can be used while swimming, pressing the button on the watch while under water can cause water to leak into the watch.

7. Potential sources of disturbance or poor detection of HR by the watch:
   a. Another person wearing a chest strap-type HR monitor nearby
   b. ECG telemetry equipment
   c. Some exercise equipment

d. Some chemicals in swimming pools and seawater
e. Televisions
f. Computers
g. Cars
h. Electric motors
i. Mobile phones
j. Antennas
k. Power lines
l. Electric fences

Attachment B, Continued:

Resolving Common Problems with the Polar Heart Rate Monitor

Problem	Possible Solutions and Sources of Error
1. The watch display is blank- does not say "OFF" and there are no numbers displayed.	1A. The battery needs to be replaced in the watch.
2. The watch is not showing my heart rate. "OFF" is displayed on the watch.	2A. Press the button on the watch to start recording. The display should immediately change to a clock. In 15 seconds the display should change again to show your heart rate. 2B. There may be something wrong with the watch.
3. The watch is not displaying my heart rate correctly. The display shows "00."	3A. Are you wearing the chest strap? 3B. The Polar logo should appear right side up and centered on your chest. 3C. The chest strap should not be loose. It should flat and snug to your skin. 3D. The grooved portions on the back of the chest strap should be flat against your skin and they should be wet. 3E. Move to another area. You may be near something that is causing interference. 3F. The battery in the chest strap may need to be replaced.
4. The watch is not displaying my heart correctly. The numbers appear to go high and then low and the watch may sometimes show "00".	4A. Attempt possible solutions 3A-3E. 4B. While watching the flashing heart symbol on the watch feel your pulse. Does the heart symbol appear to flash with each beat of your pulse? If yes, then the Polar heart rate monitor is probably working fine. It is just having a hard time picking up your heart rate. 4C. There may be a problem with the Polar heart rate monitor.
5. The watch is not displaying my heart rate correctly. The numbers are much higher or lower than usual.	5A. Attempt possible solutions 3A-3E. 5B. While watching the flashing heart symbol on the watch feel your pulse. Does the heart symbol appear to flash with each beat of your pulse? If yes, then the Polar heart rate monitor is probably working fine. It is showing changes in your heart rate. 5C. There may be a problem with the Polar heart rate monitor.
6. The heart rate shown on the watch is sometimes much higher or lower, but quickly returns to my normal heart rate.	6A. If this only happens now and then and is brief, it is probably just interference and is not a concern. 6B. If this happens often during an exercise session and/or remains higher or lower than usual, attempt possible solutions 3A-3E.

Exercise Training Manual

Version 7-11-03

Table of Contents

Cardiac Rehabilitation Centers in HF-ACTION

Cardiac rehabilitation centers will play a critical role helping patients begin exercise training, increasing the training intensity, transitioning participants from the supervised training environment to home, and maintaining appropriate training intensity with supervised sessions at set intervals.

Consent for Enrollment in Rehabilitation

All patients referred for exercise training as part of the HF-ACTION study have been previously consented by the Principal Investigator. These patients demonstrate an understanding of the purpose and procedures associated with the HF-ACTION study, including that of the supervised and home-based exercise training portions. A separate consent for supervised exercise training is not required.

Overview of Exercise Training

The HF-ACTION exercise training program is comprised of the following components:

Initial evaluation and goal setting: An initial evaluation of HF-ACTION patient will be *performed by the study coordinator at the site.* The initial evaluation will include a variety of assessments such as:

- 6-minute walk test
- CPX testing (a maximal exercise test with breath-by-breath expired gas measurements)
- Quality-of-life measurements
- Physical assessment

The goal of this initial evaluation is to—

- Assess the patient's needs
- Define the goals for the rehabilitation
- Obtain an appropriate exercise prescription (target training heart rate) for the patient
- Establish a positive relationship between the patient and the site

A Supervised Exercise Training Prescription will be based on CPX testing results and will be provided to the cardiac rehabilitation program by the site at the time of cardiac rehabilitation

enrollment. The first session at the cardiac rehabilitation program should occur within 1 week of randomization. The supervised exercise component includes a total of 36 exercise sessions.

Supervised exercise training – sessions 1-18: During the first 18 sessions, patients will exercise 3 times per week in the cardiac rehabilitation program and not perform any other exercise. The patients will be given specific instructions regarding home exercise at the end of the 18th session.

Supervised exercise training – sessions 19-36: During the second half of the supervised exercise training, patients will be asked to exercise 2 days a week at home in addition to the 3 sessions per week of supervised training.

Home exercise program: After completion of the 36-session supervised rehabilitation, patients will be asked to exercise at home 5 days a week (with encouragement to exercise a 6th day per week). The instructions for this will be reinforced prior to their discharge from the cardiac rehabilitation program. At 6 months, patients will return to the cardiac rehabilitation program for one supervised exercise session every 3 months for the duration of the HF-ACTION study.

Supervised Exercise Training

The purpose of the supervised exercise training program is to provide the following to the patient and family or significant other:

- A prescription program for exercise
- Education on all aspects of the HF-ACTION supervised training program (using the Exercise Patient Education Manual as a guide)
- Development of a relationship between the patient, rehab program, and site

Exercise Training

Exercise Prescription

Each HF-ACTION site is responsible for providing the cardiac rehab centers with the patient's exercise prescription. The primary method for guiding exercise intensity will be the patient's target training heart rate, refined by the RPE. However, for certain patients with an irregular heart rate which makes heart rate measurement by palpation or the Heart Rate Monitor invalid,

the primary method for intensity levels will have to be the RPE range. As the study progresses, results from periodic exercise testing may require a follow-up exercise prescription. Cardiac rehabilitation centers are responsible for ensuring that the most recent exercise prescription is being utilized.

Mode: Aerobic exercise will be performed via treadmill, stationary bicycle, or both. The choice of equipment should be based upon available exercise equipment at the patient's home or his/her preference. This is to improve compliance once discharged to the home program component. It is important to ascertain which exercise equipment the patient will be working on primarily and whether they have this equipment at home. If they do not have equipment, the HF-ACTION program will provide either a treadmill or bicycle (patient preference) for the duration of the study.

Patients should avoid upper body exercises such as arm ergometers, rowers, and swimming. Once a particular session's exercise goals are achieved on the treadmill or bicycle, patients are permitted to continue exercise using the preferred mode. Free walking is appropriate as long as the patient achieves the target heart rate/RPE goals. Patients may be initiated on a recumbent bicycle for the first 2 weeks, with a goal to progress to upright cycling by week 3 of the program. There may be circumstances when the recumbent bike should continue to be used – please contact the Principal Investigator. Please note that strength training is not permitted as part of the HF-ACTION study.

Initial aerobic intensity: This initial exercise intensity will be provided in the exercise prescription from the site and may be modified based on the CPX test.

The starting point is 60% of heart rate reserve (HRR) unless modified for special circumstances.

HRR = Peak exercise HR – Resting HR

Resting heart rate is obtained after 5 minutes of rest in a quiet sitting or standing position.

Initial Training HR = [(0.6 x HRR) + Resting HR]

Upper heart rate training intensity: Upper heart rate will not be allowed to exceed the heart rate corresponding to 4 beats below the ventilatory threshold (VT) as determined by the exercise test. If VT could not be determined, then patients will not be permitted to exceed 65% of HR reserve, with the use of a Borg Rating of Perceived Exertion (RPE) ranging from 12 and 14. Copies of the RPE scale will be provided to cardiac rehab centers or may be retrieved off the HF-ACTION website at http://members.hfaction.org/. Patients with ischemia during exercise

testing will have a maximum HR 10 bpm below the onset of ischemic EKG changes or angina. Appropriate training HR ranges will be provided by the site (with oversight from CPX Core Lab).

Initial conditioning: This will occur during sessions 1-6, and will consist of a 10 minute warm up, 15-30 minute aerobic phase, and a 10 minute cool down with a total time of 35 to 50 minutes.

Improvement phase: Sessions 7-36 will be the improvement phase of the training program. The aerobic portion of this phase will be 30-35 minutes, with a 10 minute warm up and 10 minute cool down for a total time of 50-55 minutes. Using the *Patient Diary,* the exercise physiologist and study coordinator should discuss the exercise plan with the patient to be sure he/she understands the frequency of the home-based exercise sessions. This will establish a contract with the patient.

Frequency of supervised exercise: Beginning at session 19, patients will be asked to exercise independently 2 times a week in addition to the 3 sessions per week supervised training

Although patients should already be familiar with the Exercise Patient Education Manual, assess the patient's knowledge on the topics addressed. Refer to the sample materials provided as needed to review the information with the patient. This phase will help patients transition to the maintenance phase of the program. After the completion of the 36 supervised sessions of training, patients will exercise at home in the maintenance phase and will return only on a periodic basis for supervised training.

Overview of HF-ACTION Supervised Exercise Program					
Training Program Stage	Sessions	Sessions of Supervised Training (per week)	Exercise Intensity	Exercise Duration (minutes)	Sessions of Home-Based Exercise (per week)
Initiation	1-3	3	60%	15-30	
	4-6	3	60%	15-30	
Improvement	7-9	3	70%	30-35	
	10-12	3	70%	30-35	
	13-15	3	70%	30-35	
	16-18	3	70%	30-35	
	19-21	3	70%	30-35	2
	22-24	3	70%	30-35	2
	25-27	3	70%	30-35	2
	28-30	3	70%	30-35	2
	31-33	3	70%	30-35	2
	34-36	3	70%	30-35	2
Maintenance *(Home Program)*	37- end of study	Once every 3 months	60-70%	40	5-6

Warm up and cool down: A warm up period will be performed 10 minutes immediately prior to the exercise program at an intensity of approximately 50% of the training intensity. The cool down will be performed for 10 minutes immediately following exercise at an intensity of approximately 50% of the training intensity.

Progression of the exercise training during rehabilitation:

i) Exercise session duration, intensity, and progression are symptom-limited.

ii) Increase session duration to the goal of 30-35 minutes of continuous exercise.

iii) Once the session duration reaches 30-35 minutes, increase the exercise intensity by increasing the watts if using a stationary bicycle, or the speed/incline if using a treadmill.

iv) Increase intensity gradually to build tolerance and confidence, with the goal of reaching a maximum tolerated workload during each period of exercise.

v) If the patient cannot perform continuous exercise for the designated duration, interval training should be used with rest periods not exceeding 5 minutes and a goal of 50% HRR and 15-30 minutes of total exercise time. However, the patient should also work toward the goal of 40 minutes of continuous exercise at 60-70% HRR by the end of the 36 session program.

Maintenance visits: Beginning at month 6, maintenance visits will be required every 3 months until the completion of the HF-ACTION program. During these visits, patients should perform 40 minutes of aerobic exercise with a target HR of 60-70% of HRR, unless the site provides a new target training HR. Ten minutes of warm-up and cool down at 50% of the training exercise intensity should be completed. If the patients have not been exercising at home, or if they had recent heart failure exacerbation, they may not be able to exercise at the same intensity as at the end of the 36 session supervised training. In that case, exercise intensity should be adjusted to achieve target HR without untoward symptoms. Please refer to the section on patient safety for further information.

Equipment and exercises permitted: Please note that treadmill and bicycle are the **ONLY** pieces of equipment allowed for use in the HF-ACTION program. This means that stair-steppers, dual action bicycles, free or machine weights, wall pulleys, or resistive bands are **NOT** allowed as part of this program, either during the supervised or home-based phases of this program.

Patients are asked to select a preference for exercise equipment after the first 3 training sessions (bike or treadmill). The majority of supervised exercise time should be on this preferred equipment. If a patient weighs 250-300 pounds and chooses the bike for their home equipment, she/he will be required to substitute a recumbent bicycle for an upright bicycle. If a patient weighs 250-300 pounds and chooses the treadmill for their home equipment, the treadmill must be ordered by the coordinating center and will not be available from the study website. The study will only supply one piece of exercise equipment per patient. If a patient weights >300 pounds, the study strongly recommends that exercise training be performed at a gym or cardiac rehabilitation center that has appropriate equipment.

Education: The exercise sessions should include instruction about the nature of the exercise, patient safety during the exercise, and self monitoring, including pulse assessment, use of the Borg RPE scale, and proper use of the heart rate monitors. Refer to the sample Exercise Patient Education Manual for specific information to be covered.

Important note: The Pro Form User Manual contains generic *Conditioning Guidelines* for exercise. Patients should be instructed to follow the HF-ACTION exercise program prescribed and to disregard the standard *Pro Form Conditioning Guidelines*.

Timing of medications: All patients should be instructed to take beta-blockers between 3 and 10 hours before the beginning of exercise, as beta-blockers can affect the training HR response.

Patient Monitoring

While telemetric monitoring is commonly utilized in cardiac rehabilitation programs, this is not required by the HF-ACTION study. Telemetry may be utilized if available in your program. The goal of HF-ACTION is to provide the patients with an independent assessment of the exercise intensity, both through the use of the RPE scale (12-14), as well as the use of heart rate monitors (60-70% HRR).

At each supervised exercise session, the following should be obtained and recorded on a Supervised Exercise Training Worksheet:

a. Weight before starting exercise
b. Resting pulse and blood pressure
c. Pulse and RPE during each mode of exercise (treadmill, bicycle, free walk)
d. Duration of exercise during each mode of exercise (treadmill, bicycle, free walk)
e. Symptoms limiting exercise

Fax completed Supervised Exercise Training Worksheets to the site after every 3 sessions or as specified by the Study Coordinator. **IMPORTANT:** Cardiac rehabilitation personnel must carefully and legibly complete these worksheets. Data recorded on these worksheets will be used for study analysis.

Each HF-ACTION study patient will be provided with a heart rate monitor. The following goals will enhance the successful utilization of the heart rate monitors:

a. Patient will be taught how to connect, start and stop the HR monitoring device during sessions 1-5.
b. Patient will be taught during sessions 1-5 how to collect total exercise time and mean HR during exercise.
c. Patient will be proficient with a and b by the 6th session.
d. Patient will be taught about the typical device operational problems and how to trouble-shoot.
e. Patient will learn to record HR during each phase of exercise using the wristwatch.
f. Patient will learn how to count pulse by palpation if the HR monitoring device is not working or unavailable. **It is important to stress that a nonfunctional device is not a reason to miss an exercise session.**
g. During sessions 19-36 of supervised rehabilitation, patients will begin home exercise 2 days a week. They are expected to fill out their Patient Diary for each home exercise session. Patients are expected to bring this record to the cardiac rehabilitation program once a week for review with the rehabilitation staff.
h. Patients must demonstrate proficiency with these tasks at the completion of 36 sessions before discharge from the supervised rehabilitation program.

Resuming Exercise After an Extended Interruption

HF-ACTION patients may develop intervening medical/surgical/musculoskeletal disorders which interrupt their exercise training process. **It is important to notify the study coordinator promptly if a patient misses 2 consecutive sessions**. The Principal Investigator at the site will determine if continued training is medically advisable. Depending on the length of interruption, the patient may be allowed to resume exercise at the level immediately before interruption, or the exercise intensity may be reduced according to the Principal Investigator's discretion, and according to HF-ACTION guidelines. Before exercise can be resumed, the site will provide another exercise prescription (with or without another exercise test) to the cardiac rehabilitation program.

Patient Safety and Reporting

Though previous studies have demonstrated the safety and efficacy of exercise training in patients with NYHA class II-IV heart failure, the applicability of this to a larger, unselected population of heart failure patients is unknown. Since telemetry will not be available at all HF-ACTION training sites, the following are simplified guidelines that apply to all programs.

Exercise sessions should be interrupted if a patient develops 1 or more of the following:

a. Symptomatic hypotension or decrease in systolic blood pressure > 10 mmHg from resting blood pressure.
b. Hypertension (systolic blood pressure > 250 mmHg or diastolic blood pressure > 115 mmHg)
c. Moderate to severe angina
d. Severe dyspnea
e. Severe palpitations, with associated lightheadedness
f. Defibrillator discharge
g. Moderate to Severe Claudication
h. Disabling knee/ankle pain

The Study Coordinator should be contacted for any of the following problems:

- Patient did not show up for any 2 consecutive sessions.
- Exercise session was interrupted for any reason.
- Patient not able/willing to keep up with training goals.

- Any adverse event which necessitated an emergency room visit or hospitalization.
- Any questions about protocol, procedures, or training intensity.

The primary care physician/cardiologist should be contacted for any of the following problems:

- Significant weight gain of ≥5 pounds between exercise sessions.
- Other medical-related events.

Heart Rate Monitors

One HR monitoring unit will be provided to each patient randomized to exercise. Verbal operating instructions given to the patient should follow the written instructions provided in the patient materials. The unit will be worn by the patient throughout their participation in the trial—during all supervised and home based training sessions. Patients may keep the HR monitoring unit when they complete the trial.

While the patient is in the trial, the HR monitors will be used to help guide exercise intensity during both supervised and in-home training sessions in accordance with the training recommendations provided in the protocol. HR data needs to be recorded on either the training sheet used by the rehabilitation centers (for supervised exercise training sessions) or the patient's diary (for home exercise sessions). Patients should be able to demonstrate proficiency to independently operate the unit by their sixth supervised training session. This includes how to turn it on/off, collect total exercise time, and mean heart rate during total exercise time.

Please be sure to instruct patients to contact their Study Coordinator if they have an inoperable unit. However, while this problem is being resolved, they are still expected to maintain exercise compliance. **An inoperable unit does not give them an excuse to not exercise**. While patients are in the supervised program, they must be taught how to monitor intensity using palpated heart rate, RPE, and self-pacing to use if their HR monitor malfunctions.

During supervised training sessions, rehabilitation staff can check heart rates during exercise by viewing a patient's own wrist watch unit, using the display on machines that link machine-based heart rate displays to the standardized telemetry signal generated by the chest strap, or a wrist watch worn on their own wrist. **Record HR data only from the subject's wrist watch unit for study records.**

Checklist for Cardiac Rehabilitation Centers

Patient Name: _____ **Patient Number:** ___ ___ ___ – ___ ___ ___ ___

Each study center will establish contact when a patient is randomized to exercise training. The first training session should be scheduled within 1 week of randomization. Complete a Supervised Exercise Training Worksheet at each session and use this checklist to be sure all educational topics are reviewed and procedures followed.

☐ **Initial exercise training session scheduled for:** ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (day / month / year)

☐ **Exercise Training Prescription received from study center**
(Note: A follow-up training prescription may also be sent after CPX Core Lab evaluation).

Using the Exercise Patient Education Manual, review the following topics:

- ☐ **How to use the Borg RPE** *(Rating of Perceived Exertion)* **scale**
- ☐ **How to count HR by palpation if HR monitor is not working or is unavailable**
- ☐ **How to properly use the HR monitor:**
  - ☐ **Connecting, starting, and stopping the HR monitor**
  - ☐ **Collecting and recording total exercise time and mean HR**
  - ☐ **Troubleshooting common problems**
- ☐ **Date of proficiency with HR monitor:** ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (day / month / year)
- ☐ **Benefits of exercise:**
  - ☐ **Cardiovascular** *(improves functional capacity, lipids, & body fat/muscle composition, lowers resting/exercise HR and BP)*
  - ☐ **Musculoskeletal** *(increases: muscle strength/endurance, bone mass, & coordination/balance; improves: flexibility & insulin sensitivity; prevents injury)*
- ☐ **Importance of exercise safety:**
  - ☐ **Warm-up and cool-down**
  - ☐ **Proper attire/shoes**
  - ☐ **Eating before exercise**
  - ☐ **Timing of cardiac medications** *(3–10 hrs before exercise)*
  - ☐ **Outdoor conditions** *(avoiding excessive heat/humidity/cold/pollutants)*
- ☐ **Proper intensity of exercise:**
  - ☐ **Purpose of training HR**
  - ☐ **Improvement of exercise HR response with conditioning**
  - ☐ **Need for increasing workload to maintain training HR**
  - ☐ **Importance of maintaining training HR for prescribed duration**
  - ☐ **Role of interval training**
- ☐ **Normal responses to exercise** *(shortness of breath, diaphoresis, leg fatigue/soreness, arthralgias/joint stiffness)*
- ☐ **Abnormal responses to exercise** *(angina, chest pain, severe shortness of breath)*

After completion of 15 sessions, assess the following:

- ☐ **Patient preference for exercise equipment:** ☐ TM ☐ Bike
- ☐ **Does patient have TM or bike at home?** ☐ Yes ☐ No
  → *If no, coordinate with Study Coordinator to arrange delivery of exercise equipment to patient's home.*
- ☐ **Home exercise equipment plan confirmed on:** ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (day / month / year)

At completion of 18 sessions, confirm completion of the following:

- ☐ **Provided appropriate Home Exercise Guide**

At completion of 36 sessions, confirm completion of the following:

- ☐ **Instructed patient in expectations for compliance with home exercise regimen and provided Home Exercise Guide**
- ☐ **Reviewed HR palpation**
- ☐ **Reviewed RPE scale**
- ☐ **Reviewed HR monitor use**
- ☐ **Completed educational topics**
- ☐ **Appointment for next follow-up session:** ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (day / month / year)
- ☐ **Faxed this completed form to study center at** ___ ___ ___ – ___ ___ ___ – ___ ___ ___ ___

Training Sessions

1	___ ___ / ___ ___ ___ / ___ ___ ___ ___	19	___ ___ / ___ ___ ___ / ___ ___ ___ ___
2	___ ___ / ___ ___ ___ / ___ ___ ___ ___	20	___ ___ / ___ ___ ___ / ___ ___ ___ ___
3	___ ___ / ___ ___ ___ / ___ ___ ___ ___	21	___ ___ / ___ ___ ___ / ___ ___ ___ ___
4	___ ___ / ___ ___ ___ / ___ ___ ___ ___	22	___ ___ / ___ ___ ___ / ___ ___ ___ ___
5	___ ___ / ___ ___ ___ / ___ ___ ___ ___	23	___ ___ / ___ ___ ___ / ___ ___ ___ ___
6	___ ___ / ___ ___ ___ / ___ ___ ___ ___	24	___ ___ / ___ ___ ___ / ___ ___ ___ ___
7	___ ___ / ___ ___ ___ / ___ ___ ___ ___	25	___ ___ / ___ ___ ___ / ___ ___ ___ ___
8	___ ___ / ___ ___ ___ / ___ ___ ___ ___	26	___ ___ / ___ ___ ___ / ___ ___ ___ ___
9	___ ___ / ___ ___ ___ / ___ ___ ___ ___	27	___ ___ / ___ ___ ___ / ___ ___ ___ ___
10	___ ___ / ___ ___ ___ / ___ ___ ___ ___	28	___ ___ / ___ ___ ___ / ___ ___ ___ ___
11	___ ___ / ___ ___ ___ / ___ ___ ___ ___	29	___ ___ / ___ ___ ___ / ___ ___ ___ ___
12	___ ___ / ___ ___ ___ / ___ ___ ___ ___	30	___ ___ / ___ ___ ___ / ___ ___ ___ ___
13	___ ___ / ___ ___ ___ / ___ ___ ___ ___	31	___ ___ / ___ ___ ___ / ___ ___ ___ ___
14	___ ___ / ___ ___ ___ / ___ ___ ___ ___	32	___ ___ / ___ ___ ___ / ___ ___ ___ ___
15	___ ___ / ___ ___ ___ / ___ ___ ___ ___	33	___ ___ / ___ ___ ___ / ___ ___ ___ ___
16	___ ___ / ___ ___ ___ / ___ ___ ___ ___	34	___ ___ / ___ ___ ___ / ___ ___ ___ ___
17	___ ___ / ___ ___ ___ / ___ ___ ___ ___	35	___ ___ / ___ ___ ___ / ___ ___ ___ ___
18	___ ___ / ___ ___ ___ / ___ ___ ___ ___	36	___ ___ / ___ ___ ___ / ___ ___ ___ ___

(day / month / year)

Supervised Exercise Training Worksheet

For Cardiac Rehabilitation Programs

Patient Number: ___ ___ ___ – ___ ___ ___ ___ (*site # / patient #*) **Patient's Initials:** ___ ___ ___ (*first middle last*)

Session #: _____ *(1–36 of the initial supervised training sessions)*

OR Visit: ☐ 6-Month ☐ 9-Month ☐ 12-Month ☐ 15-Month ☐ 18-Month ☐ 21-Month ☐ 24-Month
☐ 27-Month ☐ 30-Month ☐ 33-Month ☐ Year 3 ☐ 39-Month ☐ 42-Month ☐ 45-Month ☐ Final

(Protocol requires supervised exercise training sessions to be held once every three months, beginning at month 6.)

OR ☐$_1$ Additional supervised session *(per MD discretion)*

Visit date and time: ___ ___ / ___ ___ ___ / ___ ___ ___ ___ (*day / month / year*) ___ ___ : ___ ___ (*00:00 to 23:59*)

1 Weight: _____ ☐$_1$ lb **OR** ☐$_2$ kg

2 Training heart rate range *(assigned by CPX Core Lab)*: _____ to _____ bpm

OR RPE target training range*: _____ to _____ *(if applicable)*

3 Resting heart rate: _____ bpm

4 Resting BP: ___ ___ ___ / ___ ___ ___ (*systolic / diastolic*)

5 Warm up: ☐$_0$ Yes ☐$_1$ No

6 Exercise(s) performed *(check all that apply)*:

☐ **Treadmill exercise**
Total exercise duration:
___ ___ min**
Speed: ___.___ mph
Incline: ___ ___.___ %
Heart rate: ___ ___ ___ bpm‡
Borg RPE: ___ ___ *(6–20)*

☐ **Bicycle exercise†**
Total exercise duration:
___ ___ min**
___ ___ Watts **OR** ___ ___ ___ ___ kpm/min
Heart rate: ___ ___ ___ bpm‡
Borg RPE: ___ ___ *(6–20)*

☐ **Free walk exercise**
Total exercise duration:
___ ___ min**
Heart rate: ___ ___ ___ bpm‡
Borg RPE: ___ ___ *(6–20)*

* *For special circumstances making measurement of target heart rate invalid, record RPE range.*
** *Total exercise duration does not include time for warm up and cool down.*
† *Recumbent bike allowed only during 1st 2 weeks of training unless prescribed.*
‡ *Heart rate should be obtained using Polar heart rate monitor.*

7 Cool down: ☐$_0$ Yes ☐$_1$ No

8 Did patient achieve and maintain training heart rate? ☐$_0$ Yes ☐$_1$ No → **Record reason below.**

9 Did patient achieve exercise duration? ☐$_0$ Yes ☐$_1$ No → **Record reason below.**

10 If patient did not achieve and maintain training heart rate or exercise duration, check all that apply to indicate the reason(s):

☐ Angina ☐ ICD discharge ☐ Leg fatigue ☐ Lack of motivation
☐ Dyspnea ☐ Presyncope/syncope ☐ Fatigue ☐ Exercise-related fall or injury
☐ Arrhythmia ☐ Claudication ☐ Musculoskeletal complaint ☐ Hypoglycemia
☐ Other *(please specify)*: _____

Cardiac Rehab Staff Signature: _____ **Facility Name:** _____

Cardiac Rehab Staff:

Batch in sets of 3 and forward or fax completed forms to: _____ (*Study Coordinator and fax number*)

HF-ACTION Study Coordinator: Submit a copy of each completed worksheet to the DCRI with the CRFs.

HF ACTION

Certificate of Completion

is hereby granted to:

_____

to certify completion of

18 Exercise Training Sessions

On this day: _____

_____

{name, title}

HF ACTION

Certificate of Completion

is hereby granted to:

_____

to certify completion of

36 Exercise Training Sessions

On this day: _____

_____

{name, title}

Home Exercise Guide

2 Days Per Week

Congratulations! You have successfully completed the first half of your supervised exercise training! Now you will be entering the second phase of your training program. This involves exercising at home 2 days a week while you are still undergoing supervised exercise training.

While you are exercising at home, it is important to choose an activity which you enjoy. For this part of the program, you have a choice of 3 types of exercise:

1. Motorized treadmill
2. Stationary bicycle
3. Walking outside, or walking in a gym/mall

You will do this exercise for 30–35 minutes each session. Whichever activity you choose, you must use the heart rate monitor, the Borg RPE scale, and take your exercise heart rate (pulse), just as you do during your supervised exercise training.

Each day please remember to use your Patient Diary to record:

- your weight
- your resting and exercise heart rates
- the type of exercise performed
- how long you exercised

Place an "X" over days you did not exercise. Place an "S" over the days you have a supervised exercise training session.

Please remember to bring your diary with you to each supervised exercise training session and study visit.

Your heart rate at the peak of your exercise should be between _____ and _____ beats per minute.

You may also use the Borg RPE scale with an exertion of 12–14. Remember to warm up and cool down for 10 minutes each time you exercise to avoid muscle and joint injury. This warm up/cool down time should not be included in your 30–35 minute exercise time.

Remember: Do not perform any weight lifting or strength training during your participation in the HF-ACTION Trial.

Home Exercise Guide

6 Days Per Week
Maintenance Phase

Congratulations! You have successfully completed your cardiac rehabilitation program! Now you will be entering the maintenance phase of your training program. This phase will enable you to continue the healthy habits you learned during the program, and will help maintain your fitness level.

This maintenance phase involves:

- Exercising at home 5–6 days a week
- One cardiac rehabilitation session every 3 months. Attending cardiac rehabilitation on a periodic basis will enable the rehabilitation staff to ensure that you are exercising properly and at the correct intensity.

While you are exercising at home, it is important to choose an exercise activity which you will enjoy doing for 40 minutes.

For 5 days a week, you have a choice of 3 types of exercise:

1. Motorized treadmill
2. Stationary bicycle
3. Walking outside, or walking in a gym/mall

On a 6th day, you may choose any exercise you enjoy, such as swimming or biking outside. Whichever activity you choose, you must use the heart rate monitor, the Borg RPE scale, and take your exercise heart rate (pulse), just as you do during your supervised exercise training.

Remember: Do not perform any weight lifting or strength training during your participation in the HF-ACTION Trial.

Each day please remember to use your Patient Diary to record:

- your weight
- your resting and exercise heart rates
- the type of exercise performed
- how long you exercised

Place an "X" over days you did not exercise. Place an "S" over the days you have a supervised training session.

Please remember to bring your diary with you to each supervised exercise training session and study visit.

Your heart rate at the peak of your exercise should be between _____ and _____ beats per minute.

You may also use the Borg RPE scale with an exertion of 12–14. Remember to warm up and cool down for 10 minutes each time you exercise to avoid muscle and joint injury. This warm up/cool down time should not be included in your 40 minute exercise time.

Your next supervised exercise training session will be: __ __ /__ __ __ /__ __ __ __ @ _____
day *month* *year*

How to Deal With Special Situations That May Arise During Exercise Training

Guidelines for Resumption of Training After Exercise Interruption *(due to CHF exacerbation/admission, cardiac event, orthopedic trauma, or other factors)*

Although each individual patient must be treated on a case by case basis, there will be general guidelines which HF-ACTION will follow.

Considerations-Interruption Occurs During the Period of 36 Supervised Sessions

Patients will be contacted after missing 2 consecutive supervised exercise sessions. This represents < 1 week of exercise training. This will help quickly identify why the interruption occurred, ensure a prompt return to exercise sessions, and discover possible endpoints.

If the patient has had a serious CHF exacerbation, requiring a hospitalization, or an ischemic event the PCP (Primary Care Provider) must be consulted and included in the decision making process. Outcome data (if appropriate) must be documented and sent to the DCRI via the CRF (e.g. hospital admission, ER visit, event, etc). A "holding period" may be desirable in order to allow a new stable baseline to be realized depending on the severity of exacerbation. An additional exercise test prior to resumption of exercise may be required in this scenario for patients with ischemic cardiomyopathy to determine if the event has altered exercise induced ST segment changes, exercise symptom status or potential changes to the heart rate training zone. **This additional exercise test will likely be clinically indicated and ordered by the PCP. In the unlikely scenario that an additional exercise test is not ordered by the PCP, the PI will consult with the PCP and strongly recommend an additional exercise test be performed.** Please note that a CPX with gas analysis will NOT be required. Patients with non-ischemic cardiomyopathy **will resume exercise training, if the stoppage is < 2 weeks, by re-starting exercise at the training level that they were at prior to the interruption. If they had been out of exercise training for > 2 weeks, the RPE scale will be used to resume exercise with a gradual ramp back to the previous exercise level prior to exacerbation.**

If the PCP recommends reimbursed cardiac rehabilitation (CR) for a newly qualified patient, the patient will enter an appropriate CR program. Therefore, it is possible that a patient will have more than 36 supervised sessions prior to starting their home based exercise program. The HF-ACTION protocol will not interfere with the clinical management of the patient. The patient will have their next CPX at the end of 12 weeks, as stated in the HF-ACTION protocol.

In contrast, if the reason for missing exercise sessions is motivational, not medically related, or of lesser clinical importance (non-cardiac chest pain), the patient will be encouraged and coached to return to regular supervised exercise sessions as soon as possible.

Considerations-Interruption Occurs During the Period Home Exercise

During the home-based exercise training, patients will receive telephone calls once every 2 weeks for the first 9 months of HF-ACTION. Telephone calls will be made monthly between follow-up months 10 and 24. After 24 months of follow-up, calls will be made every 3 months. Patients will also return for a facility based exercise session 1x every 3 months starting at 6 months. If patients complete the 36 supervised sessions in < 5 months, they will return at the 6 month time point for a supervised exercise session and 1x every 3 months thereafter. Patients extending the 36 sessions to 5 months will return at 9 months and 1 x per 3 month thereafter.

If, at any of these time points a CHF exacerbation or ischemic event is identified, it will be the responsibility of the Study Coordinator or other personnel from the rehabilitation center to contact the PI and PCP. Based on these contacts, a clinical strategy will be developed for each patient using an individual case by case management plan. Depending on the case (e.g. ischemic event), it is possible that the patient will be required to attend a series (e.g. 1-3) of supervised exercise sessions before being cleared to resume home-based exercise. In the case of a serious event, it will be the responsibility of the site HF-ACTION team (PI, study coordinator, exercise physiologist, nurse and PCP) to triage the patient and decide to what extent addition follow-up is needed (ETT, clinic visit, changes in exercise Rx, etc) **similar to ordering an additional clinically indicated exercise test as stated previously**.

Other scenarios will allow the patient to resume without returning to supervised sessions (e.g. MI rule-out, non-cardiac related illness). In patients with non-ischemic cardiomyopathy, a resumption of exercise at the same level prior to interruption will be recommended IF the

stoppage was **< 2 weeks.** If exercise training has been disrupted **for > 2 weeks**, the initial re-starting of exercise should be based on RPE before returning to previous exercise levels.

Guidelines for Management of Ischemia Noted During Training

If a patient reports chest pain (CP) during exercise or has ECG changes (on an interpretable tracing) during a follow-up CPX testing the PI and PCP must be notified. At this time, a decision will be made whether to order an additional **clinically indicated functional test** or decrease exercise Rx below the ischemic threshold by 10 bpm as stated in the HF-ACTION protocol. If a patient's ECG tracing is uninterpretable due to device, meds, hypertrophy, etc., it will be the clinical judgment of the PI and PCP as to the appropriate next step. It will be important for the phone contact person to ask each patient if they are experiencing CP during the home portion of training. If a patient admits to CP, an out of cycle clinical visit may be appropriate to further evaluate the problem.

Outline for Procedures Involved Following an Event and Interruption of Exercise Training

Serious Cardiac Related Event (ischemic event, hospitalization, ER visit) During 36 Supervised Exercise Sessions

- Documentation and Contacts
    - Recognize interruption and contact patient after 2 consecutive missed exercise sessions
    - Record date, reason for interruption
    - Obtain ER, clinic notes, etc. (if appropriate)
    - Contact P.I. and study coordinator
    - Complete CRF for endpoint (if appropriate)
    - Fax CRF to DCRI
- Partner with Primary Care Physician (PCP)
    - Discuss event and interplay between clinical management and HF-ACTION protocol-cardiac rehab, additional testing
    - Include in clinical decision making along with P.I.
    - Forward/acquire known information

    - Set-up PCP office visit (if necessary) or suggest follow-up clinically indicated exercise test or clinic visit
- Re-evaluation and Clinical Decision Strategy
    - Based on PI and PCP and follow-up visit(s)
    - Evaluate functional changes—Determine necessity (clinical indication) to perform additional exercise test (without gas analysis) for patients with ischemic cardiomyopathy.
    - Consider a hold period/stabilization prior to re-start
    - Still meet HF-ACTION inclusion/exclusion criteria? If discontinue with study, complete forms and submit to DCRI
- Re-start exercise training
    - Re-evaluate symptoms and exercise training prescription based on clinic visit/exercise test: consider ST changes via exercise ECG, symptoms (SOB, RPE, chest pain, leg fatigue) during exercise, changes in pharm Rx
    - Consider implications for HR training zone (e.g. new meds, ischemic threshold)
    - Patients with nonischemic cardiomyopathy will resume exercise training, if the stoppage is < 2 weeks, by re-starting exercise at the training level that they were at prior to the interruption. If they had been out of exercise training for > 2 weeks the RPE scale will be used to resume exercise with a gradual ramp back to the previous exercise level prior to event.
    - Potential for entry into cardiac rehabilitation

Non-Cardiac Related Event (illness, motivation, orthopedic injury, transportation, etc) During 36 Supervised Exercise Sessions

- Documentation and Contacts
    - Recognize interruption and contact patient after 2 consecutive missed exercise sessions
    - Trouble-shoot why sessions were missed and encourage continuation as soon as possible
- Return to Exercise Training
    - Resume exercise at the same level prior to interruption

Serious Cardiac Related Event (ischemic event, hospitalization, ER visit) During Home-Based Exercise Sessions

- Documentation and Contacts
    - Interruption will be identified during phone follow-up or via phone contact from patient
    - Record date of event and reason
    - Obtain ER, clinic notes, etc. (if appropriate)
    - Contact PI and Study Coordinator
    - Complete CRF for endpoint (if appropriate)
    - Submit CRF to DCRI
- Partner with Primary Care Physician (PCP)
    - Discuss event and interplay between clinical management and HF-ACTION protocol-cardiac rehab, additional testing
    - Include in clinical decision making along with PI
    - Forward/acquire known information
    - Set-up PCP office visit (if necessary) or suggest follow-up HF-ACTION exercise test or clinic visit
- Re-evaluation and Clinical Decision Strategy
    - Based on PI and PCP and follow-up visit(s)
    - Evaluate functional changes--Necessity to perform additional exercise test (without gas analysis) for patients with ischemic cardiomyopathy
    - Consider a hold period/stabilization prior to re-start
    - Still meet HF-ACTION inclusion/exclusion criteria? If discontinue with study, complete CRFs and submit to DCRI
- Re-start exercise training
    - Re-evaluate symptoms and exercise training prescription based on clinic visit/exercise test: consider ST changes via exercise ECG, symptoms (SOB, RPE, chest pain, leg fatigue) during exercise, changes in pharm Rx
    - Consider implications for HR training zone (e.g. new meds, ischemic threshold)
    - Patients with nonischemic cardiomyopathy will resume exercise training, if the stoppage is < 2 weeks, by re-starting exercise at the training level that they were at prior to the interruption. If they have been out of exercise training for > 2 weeks, the RPE scale will be used to resume exercise with a gradual ramp back to the previous exercise level prior to event.

    - Potential for entry into cardiac rehabilitation
    - Make decision whether patient should have a series of supervised-exercise sessions prior to re-starting home program.

Non-Cardiac Related Event (illness, motivation, orthopedic injury, transportation, etc.) During Home-Based Exercise Sessions

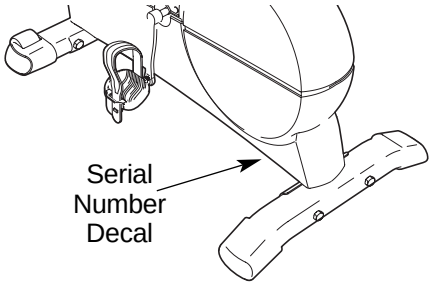
- Documentation and Contacts
    - Recognize interruption via phone follow-up or from patient initiated phone contact
    - Troubleshoot why sessions were missed and encourage continuation as soon as possible
- Return to Exercise Training
    - Resume exercise at the same level prior to interruption if stoppage < 2 weeks.
    - If exercise training has been disrupted for > 2 weeks, an initial re-starting of exercise based on RPE is advised followed by a gradual return to previous exercise levels.
    - Study Coordinator/exercise physiologist will decide (with PI approval) an appropriate RPE and timeline for the gradual return to the pre-interrupted exercise level.

PRO-FORM®

920 S EKG

USER'S MANUAL

Model No. PFEX17910
Serial No. _____



QUESTIONS?

If you have questions, or if there are missing or damaged parts, we will guarantee complete satisfaction through direct assistance from our factory.

TO AVOID UNNECESSARY DELAYS, PLEASE CALL DIRECT TO OUR TOLL-FREE CUSTOMER HOT LINE. The trained technicians on our customer hot line will provide immediate assistance, free of charge to you.

CUSTOMER HOT LINE:
1-800-999-3756
Mon.–Fri., 6 a.m.–6 p.m. MST

⚠ CAUTION

Read all precautions and instructions in this manual before using this equipment. Keep this manual for future reference.

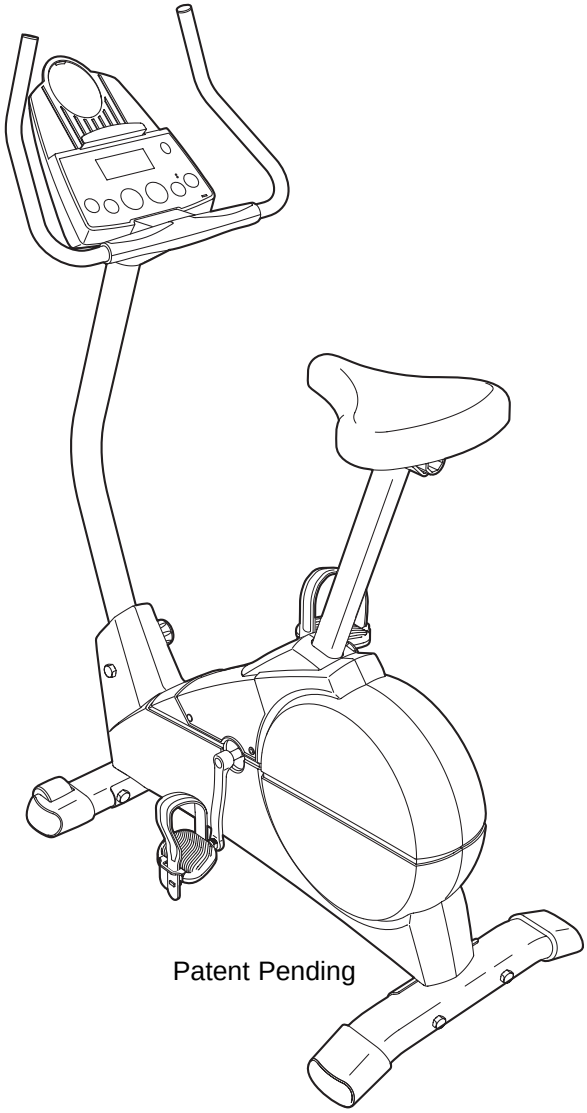


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TABLE OF CONTENTS

IMPORTANT PRECAUTIONS

⚠ WARNING: To reduce the risk of serious injury, read the following important precautions before using the exercise cycle.

1. **Read all instructions in this manual before using the exercise cycle.**
2. **It is the responsibility of the owner to ensure that all users of the exercise cycle are adequately informed of all precautions. Use the exercise cycle only as described in this manual.**
3. **Use the exercise cycle indoors on a level surface. Keep the exercise cycle away from moisture and dust. Place a mat under the exercise cycle to protect the floor.**
4. **Inspect and properly tighten all parts regularly. Replace any worn parts immediately.**
5. **Keep children under the age of 12 and pets away from the exercise cycle at all times.**
6. **Wear appropriate clothing when exercising; do not wear loose clothing that could become caught on the exercise cycle. Always wear athletic shoes for foot protection.**
7. **The exercise cycle should not be used by persons weighing more than 250 pounds.**
8. **Always keep your back straight when using the exercise cycle; do not arch your back.**
9. **If you feel pain or dizziness while exercising, stop immediately and cool down.**
10. **The exercise cycle does not have a freewheel; the pedals will continue to move until the flywheel stops.**
11. **The pulse sensor is not a medical device. Various factors, including the user's movement, may affect the accuracy of heart rate readings. The pulse sensor is intended only as an exercise aid in determining heart rate trends in general.**
12. **The exercise cycle is intended for home use only. Do not use the exercise cycle in a commercial, rental, or institutional setting.**

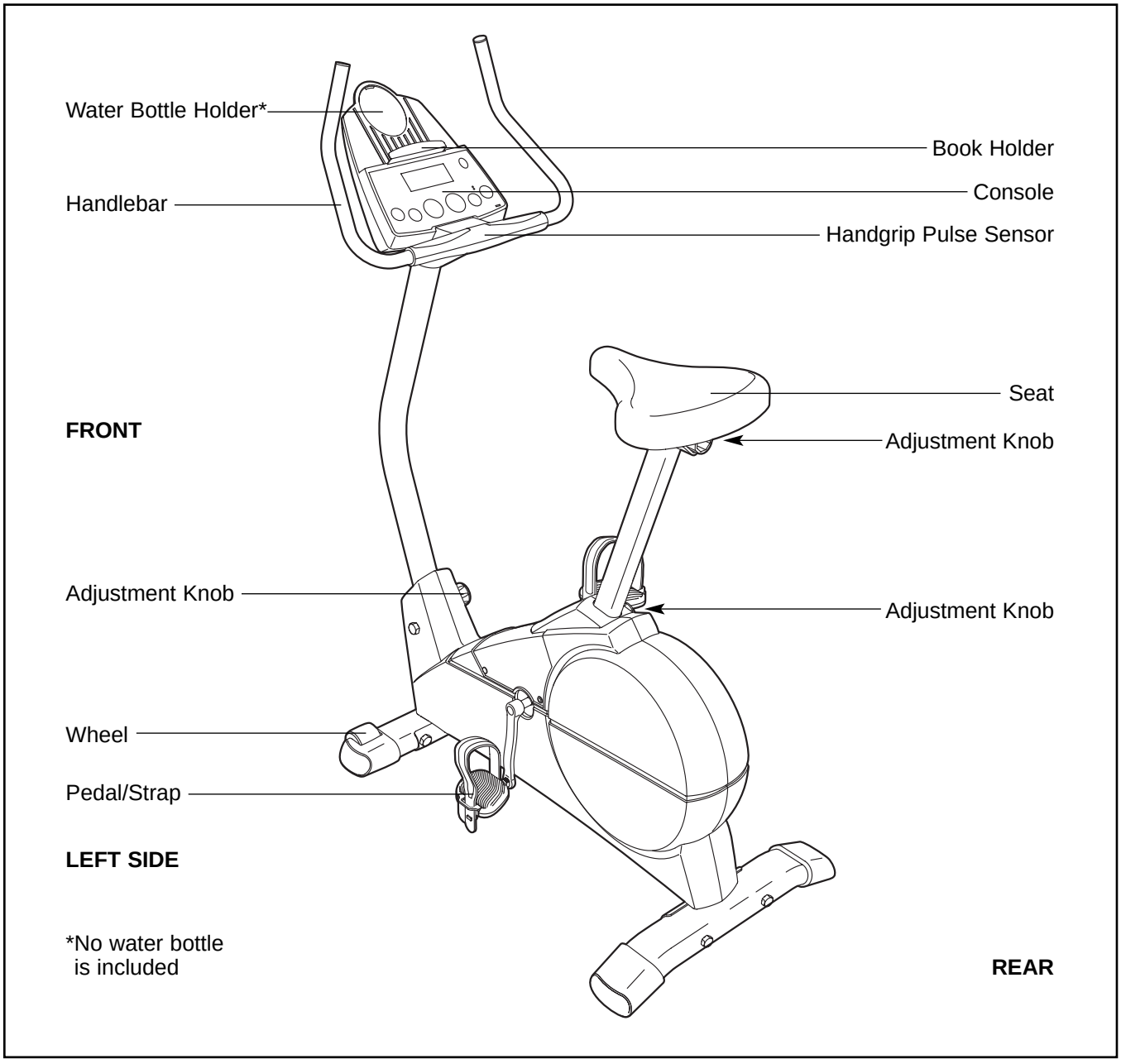
⚠ WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for persons over the age of 35 or persons with pre-existing health problems. Read all instructions before using. ICON assumes no responsibility for personal injury or property damage sustained by or through the use of this product.

BEFORE YOU BEGIN

Congratulations for selecting the new PROFORM® 920 S EKG exercise cycle. Cycling is one of the most effective exercises for increasing cardiovascular fitness, building endurance, and toning the entire body. The PROFORM® 920 S EKG offers an impressive array of features to let you enjoy this healthful exercise in the convenience and privacy of your home.

For your benefit, read this manual carefully before you use the exercise cycle. If you have additional questions, please call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). To help us assist you, please note the product model number and serial number before calling. The model number is PFEX17910. The serial number can be found on a decal attached to the exercise cycle (see the front cover of this manual).

Before reading further, please familiarize yourself with the parts that are labeled in the drawing below.

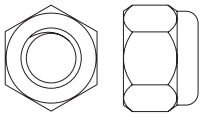


ASSEMBLY

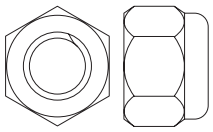
Assembly requires two persons. Place all parts of the exercise cycle in a cleared area and remove the packing materials. Do not dispose of the packing materials until assembly is completed.

Assembly requires the included tools and your own adjustable wrench  **and Phillips screwdriver** 

Use the part drawings below to identify the small parts used in assembly. The number in parenthesis below each drawing refers to the key number of the part, from the PART LIST on page 14. The second number refers to the quantity needed for assembly. **Note: Some small parts may have been pre-attached for shipping. If a part is not in the parts bag, check to see if it has been pre-attached.**

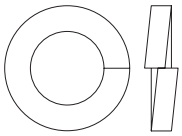


M8 Nylon
Locknut (10)–4

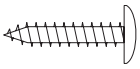


M10 Black Nylon
Locknut (63)–4

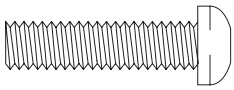
M8 Split
Washer (70)–4



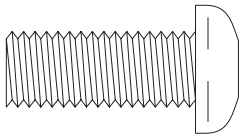
M10 Black Split
Washer (50)–3



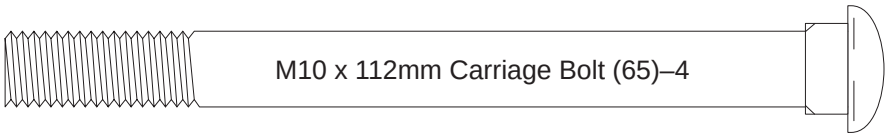
M4 x 16mm
Screw (66)–1



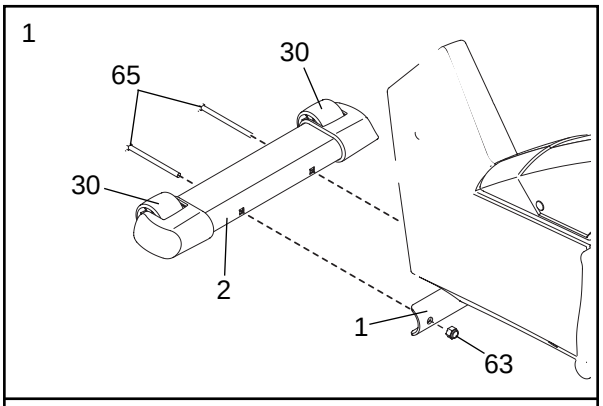
M6 x 25.4mm Button
Screw (33)–1



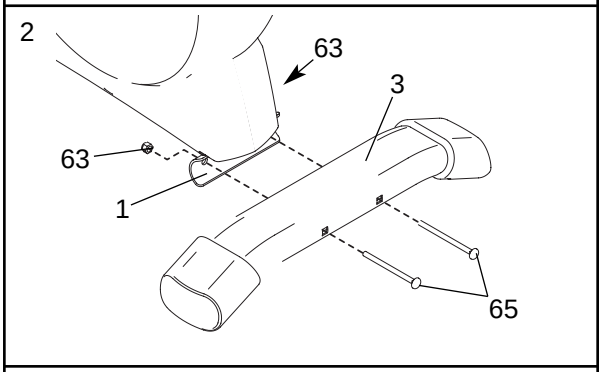
M10 x 27mm Button
Screw (51)–3



1. Identify the Front Stabilizer (2), which has Wheels (30) on the ends. While another person lifts the front of the Frame (1) slightly, attach the Front Stabilizer to the Frame with two M10 x 112mm Carriage Bolts (65) and two M10 Black Nylon Locknuts (63). **Make sure that the Front Stabilizer is turned so the Wheels are not touching the floor.**



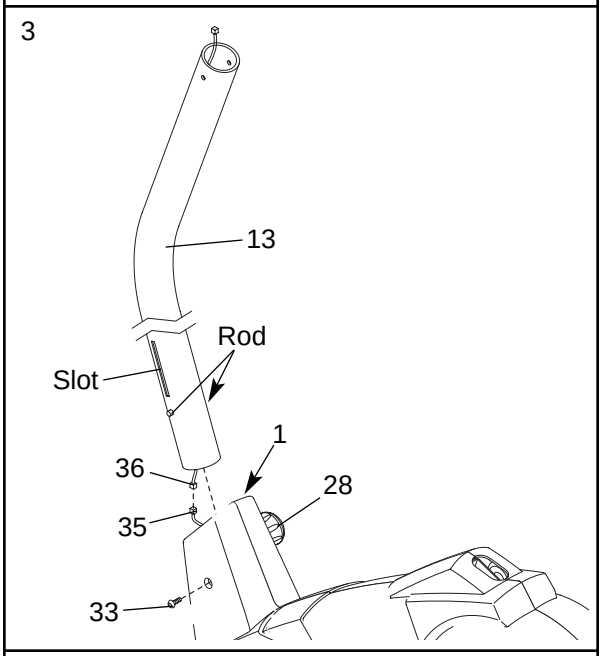
2. While another person lifts the back of the Frame (1) slightly, attach the Rear Stabilizer (3) to the Frame with two M10 x 112mm Carriage Bolts (65) and two M10 Black Nylon Locknuts (63).



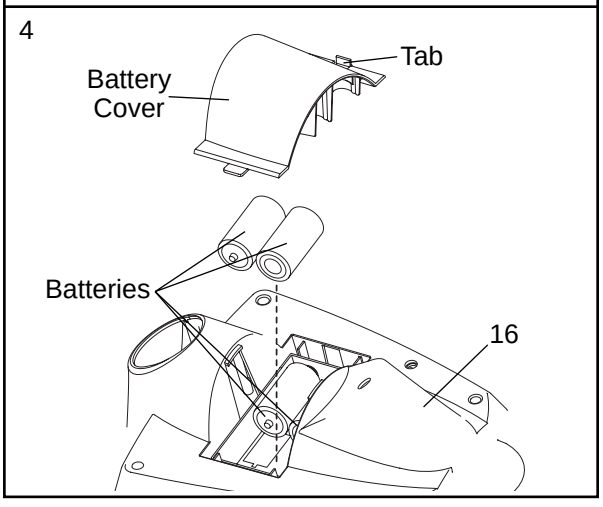
3. While another person holds the Upright (13) in the position shown, connect the Upper Wire Harness (36) to the Lower Wire Harness (35). **Carefully pull the upper end of the Upper Wire Harness to remove any slack from the Wire Harnesses; make sure that the connectors do not catch on the indicated rod.**

   Turn the indicated Adjustment Knob (28) counterclockwise two or three turns to loosen it. Next, pull the Knob, insert the Upright (13) into the Frame (1), and then release the Knob. **Be careful to avoid pinching the Wire Harnesses (35, 36). Move the Upright up and down slightly until the pin on the Knob snaps into one of the holes in the Upright.** Then, turn the Knob clockwise until it is tight.

   Tighten the M6 x 25.4mm Button Screw (33) into the Frame (1) and into the slot in the side of the Upright (13).

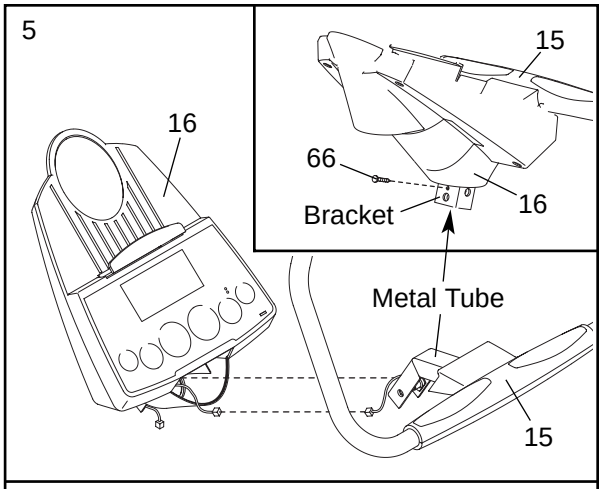


4. The Console (16) requires four “D” batteries (not included); alkaline batteries are recommended. Press the tab on the battery cover, and lift off the battery cover. Insert four batteries into the battery compartment. **Make sure that the batteries are oriented as shown by the markings inside the battery compartment.** Reattach the battery cover.



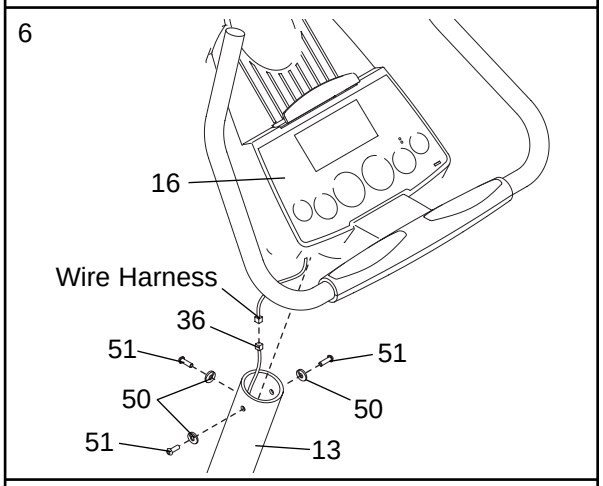
5. Connect the wire harness on the Handgrip Pulse Sensor (15) to the indicated wire harness on the Console (16). Insert both wire harnesses into the opening in the bottom of the Console. Then, insert the metal tube on the Handgrip Pulse Sensor into the opening in the bottom of the console. **Be careful not to pinch the wire harnesses.**

   Refer to the inset drawing. Tighten an M4 x 16mm Screw (66) into the indicated bracket on the Console (16) and into the metal tube on the Handgrip Pulse Sensor (15).

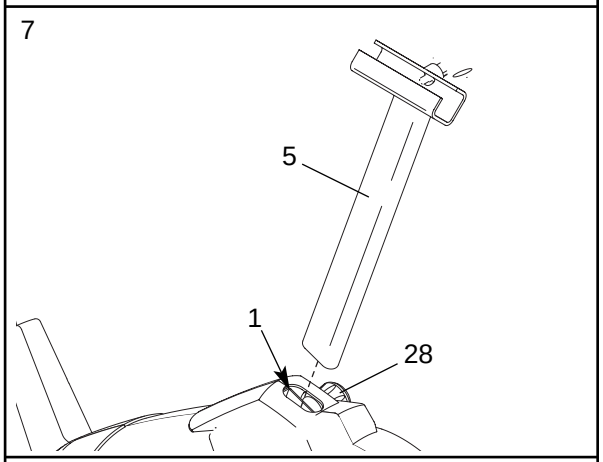


6. While another person holds the Console (16) in the position shown, connect the wire harness on the Console to the Upper Wire Harness (36). Insert the excess wire harness into the Upright (13).

   Attach the Console (16) to the Upright (13) with three M10 x 27mm Button Screws (51) and three M10 Black Split Washers (50). **Be careful to avoid pinching the wire harnesses.**

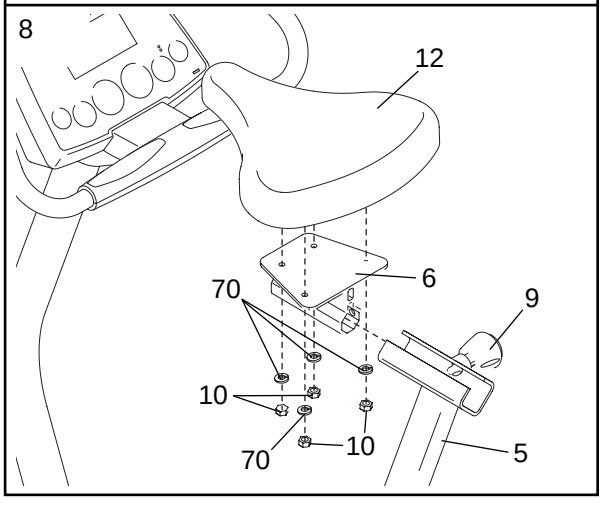


7. Turn the indicated Adjustment Knob (28) counterclockwise two or three turns to loosen it. Next, pull the Knob, insert the Seat Post (5) into the Frame (1), and then release the Knob. **Move the Seat Post up and down slightly until the pin on the Knob snaps into one of the holes in the Seat Post.** Then, turn the Knob clockwise until it is tight.



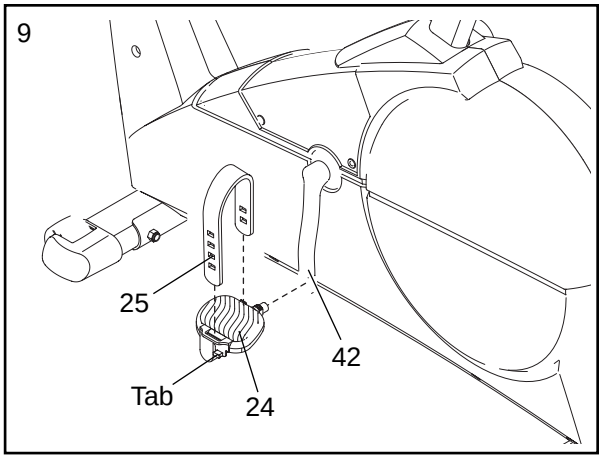
8. Attach the Seat (12) to the Seat Bracket (6) with four M8 Nylon Locknuts (10) and four M8 Split Washers (70). Note: The Nylon Locknuts and the Split Washers may be pre-attached to the underside of the Seat.

   Turn the Seat Adjustment Knob (9) counterclockwise two or three turns to loosen it. Next, pull the Knob, slide the Seat Bracket (6) into the top of the Seat Post (5), and then release the Knob. **Move the Seat Bracket forward and backward slightly until the pin on the Knob snaps into one of the holes in the Seat Bracket.** Then, turn the Knob clockwise until it is tight.



9. Identify the Left Pedal (24), which is marked with an "L." Using an adjustable wrench, **firmly tighten** the Left Pedal *counterclockwise* into the Left Crank Arm (42). Tighten the Right Pedal (not shown) *clockwise* into the Right Crank Arm. **Important: Tighten both Pedals as firmly as possible. After using the exercise cycle for one week, retighten the Pedals. For best performance, the Pedals must be kept tightened.**

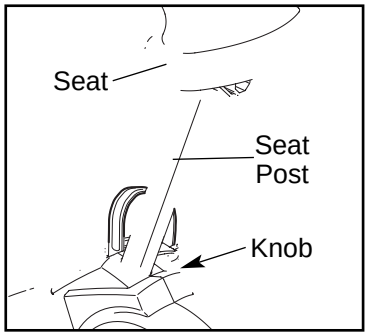
   Adjust the Left Pedal Strap (25) to the desired position, and press the end of the Pedal Strap onto the tab on the Left Pedal (24). Adjust the Right Pedal Strap (not shown) in the same way.



10. **Make sure that all parts are properly tightened before you use the exercise cycle.** Note: After assembly is completed, some extra parts may be left over. Place a mat beneath the exercise cycle to protect the floor.

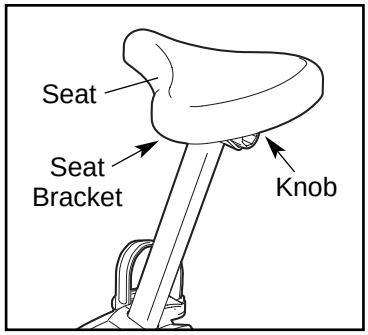
HOW TO OPERATE THE EXERCISE CYCLE

HOW TO ADJUST THE SEAT POST



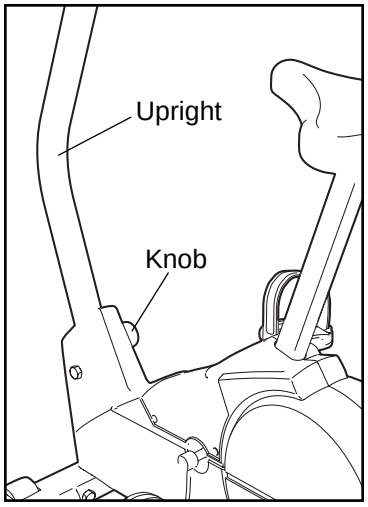
For effective exercise, the seat should be at the proper height. As you pedal, there should be a slight bend in your knees when the pedals are in the lowest position. To adjust the height of the seat, first turn the indicated knob counterclockwise two or three turns to loosen it (if the knob is not loosened enough, it may scratch the seat post). Next, pull the knob, slide the seat post to the desired height, and then release the knob. **Move the seat post up and down slightly until the pin on the knob snaps into one of the holes in the seat post.** Then, turn the knob clockwise until it is tight.

HOW TO ADJUST THE SEAT



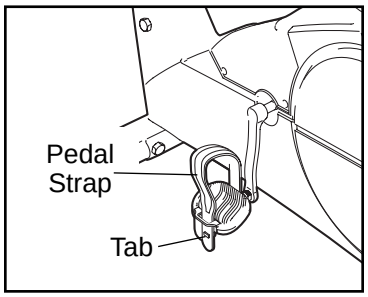
The seat can be adjusted to the position that is the most comfortable for you. **Before adjusting the seat, dismount the exercise cycle; do not adjust the seat while you are sitting on it.** To adjust the seat, first turn the indicated knob counterclockwise two or three turns to loosen it (if the knob is not loosened enough, it may scratch the seat bracket). Next, pull the knob, slide the seat to the desired position, and then release the knob. **Move the seat bracket forward and backward slightly until the pin on the knob snaps into one of the holes in the seat bracket.** Then, turn the knob clockwise until it is tight.

HOW TO ADJUST THE UPRIGHT

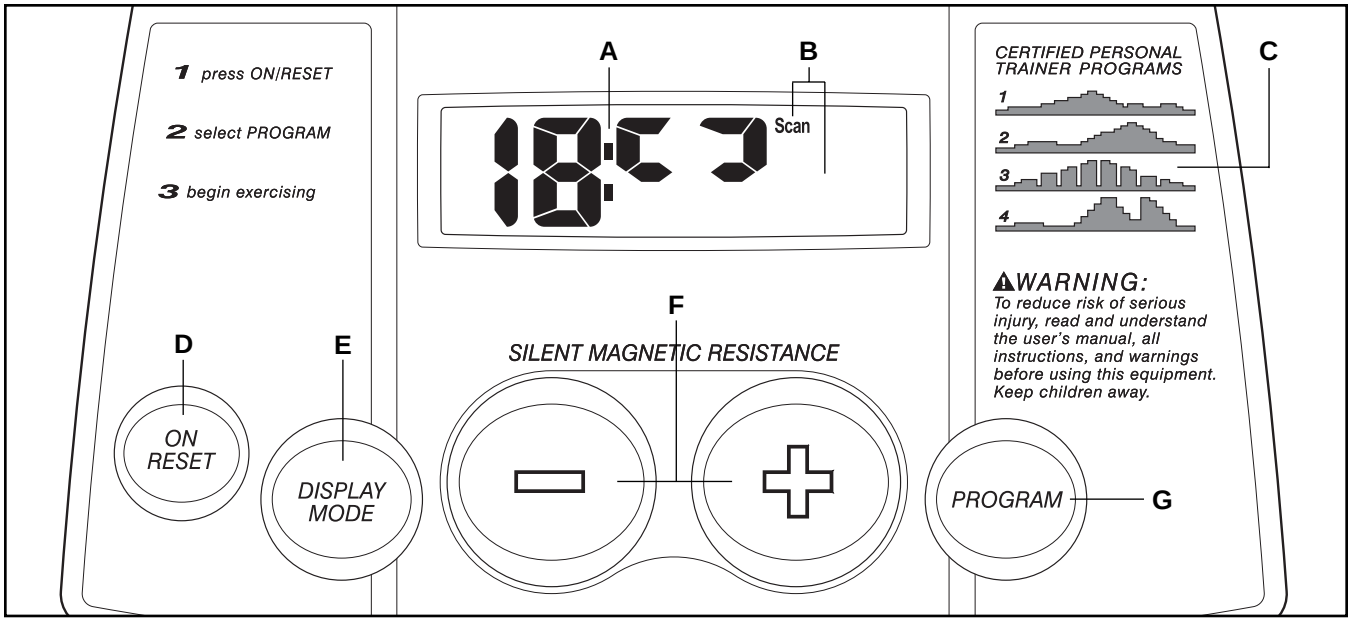


The upright can be adjusted to the height that is the most comfortable for you. To adjust the upright, first turn the indicated knob counterclockwise two or three turns to loosen it (if the knob is not loosened enough, it may scratch the upright). Next, pull the knob, slide the upright to the desired height, and then release the knob. **Move the upright up and down slightly until the pin on the knob snaps into one of the holes in the upright.** Then, turn the knob clockwise until it is tight.

HOW TO ADJUST THE PEDAL STRAPS



To adjust the pedal straps, first pull the ends of the straps off the tabs on the pedals. Adjust the straps to the desired position, and press the ends of the straps back onto the tabs.



FEATURES OF THE CONSOLE

The easy-to-use console offers a selection of features designed to help you get the most from your workouts. When the manual mode of the console is selected, the resistance of the exercise cycle can be adjusted with a touch of a button. As you exercise, the console will provide continuous exercise feedback. You can even measure your heart rate using the handgrip pulse sensor. The console also offers four certified personal trainer programs. Each program automatically controls the resistance of the exercise cycle as it guides you through an effective workout.

CONSOLE DESCRIPTION

Refer to the drawing above. **Note: If there is a thin sheet of plastic on the face of the console, remove it.**

A. Display—The display features seven modes that show your current speed, the elapsed time (or the time remaining in a personal trainer program), the distance that you have pedaled, the resistance level, the approximate numbers of calories and fat calories you have burned (see FAT BURNING on page 13), and your heart rate (when you use the handgrip pulse sensor).

Note: The console can show speed and distance in either miles or kilometers. To change the unit of measurement, hold down the On/Reset button for six seconds. The mode indicators (see B at the right) will show which unit of measurement is selected. When the batteries are replaced, it may be necessary to reselect the desired unit of measurement.

B. Display mode indicators—These indicators show which display mode is currently shown (scan, speed, time, distance, resistance level, calories, fat calories, or heart rate). Note: When the distance is shown, the word Miles or the letters Kms will appear; when your speed is shown, the letters MPH or Km/H will appear.

C. Program profiles—These profiles show how the resistance of the exercise cycle will change during personal trainer programs.

D. On/Reset button—When the console is off, pressing this button will turn on the display. When the console is on, pressing this button will reset the display. This button is also used to select the unit of measurement for speed and distance (see A at the left).

E. Display Mode button—This button is used to select the display modes. The modes will be selected in the following order: scan, speed, time, distance, resistance level, calories, fat calories, and heart rate (when the handgrip pulse sensor is used).

F. + and – buttons—These buttons control the resistance of the exercise cycle.

G. Program button—This button is used to select the manual mode and personal trainer programs.

HOW TO USE THE MANUAL MODE

1 **Turn on the console.**

Note: The console requires four “D” batteries (not included). If you have not installed batteries, refer to step 4 on page 5 and install batteries.

To turn on the console, press the On/Reset button or begin pedaling.

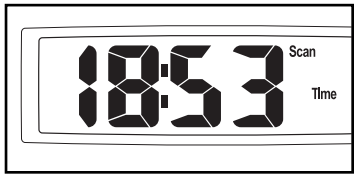
2 **Select the manual mode.**

Each time the console is turned on, the manual mode will automatically be selected. If a personal trainer program has been selected, you can select the manual mode by pressing the Program button repeatedly until a “P 4” appears in the display and then pressing the Program button once more.

3 **Begin exercising and adjust the resistance of the exercise cycle.**

As you exercise, adjust the resistance of the exercise cycle as desired by pressing the + and – buttons. There are ten resistance levels; level 10 is the most challenging. Note: After the buttons are pressed, it will take a few seconds for the selected setting to be reached.

4 **Follow your progress with the display.**

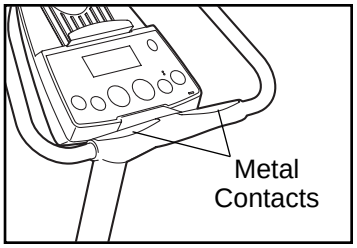


When the console is turned on, the scan mode will be selected. As you exercise, the display will show your current speed, the elapsed time, the distance that you have pedaled, the current resistance level, and the approximate numbers of calories and fat calories you have burned (see FAT BURNING on page 13). In addition, your heart rate will be shown when you use the handgrip pulse sensor (refer to step 5 at the right). The display will change from one mode to the next every six seconds. Note: Each time the resistance level changes, the console will show the resistance level for six seconds. When a personal trainer program is selected, the display will show the *time remaining* in the program instead of the elapsed time.

If desired, you can select a single mode for continuous display. Press the Display Mode button repeatedly until only the MPH (or Km/H), Time, Miles (or Kms), Resist., Cals., or Fat Cals. indicator appears in the display. Make sure that the Scan indicator does not appear.

5 **Measure your heart rate if desired.**

Note: If there are thin sheets of plastic on the metal contacts on the handgrip pulse sensor, peel off the plastic.



To use the handgrip pulse sensor, place your hands on the metal contacts. Your palms must be on the upper contacts and your fingers must be touching the lower contacts. Avoid moving your hands. When your pulse is detected, the heart-shaped indicator in the display will flash each time your heart beats. After a moment, two dashes (– –) will appear and then your heart rate will be shown.

For the most accurate heart rate reading, continue to hold the handgrips for about 15 seconds. Note: When you first hold the handgrips, the display will show your heart rate continuously for 15 seconds. The display will then show your heart rate along with the other feedback modes.

6 **When you are finished exercising, the console will automatically turn off after five minutes.**

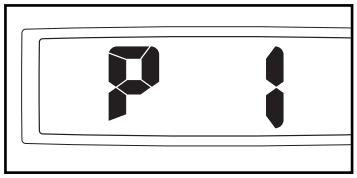
If the pedals are not moved and the console buttons are not pressed for five minutes, **the console will automatically turn off to conserve the batteries.**

HOW TO USE A PERSONAL TRAINER PROGRAM

1 Turn on the console.

Refer to step 1 on page 10.

2 Select one of the four personal trainer programs.



Each time the console is turned on, the manual mode will be selected. To select a personal trainer program, press the Program button repeatedly until a “P 1,” “P 2,” “P 3,” or “P 4” appears in the display.

The four profiles on the right side of the console show how the resistance of the exercise cycle will change during the personal trainer programs. For example, profile number 3 shows that the resistance will alternately increase and decrease throughout program 3.

3 Start the program.

To start the program, simply begin exercising. Each personal trainer program consists of thirty, one-minute periods. One resistance setting is programmed for each period. (The same resistance setting may be programmed for consecutive periods.)

During the program, the resistance of the exercise cycle will automatically change as shown by the applicable profile on the console. If the current resistance level is too high or too low, you can change the resistance level by pressing the + and – buttons. However, when the current period of the program is completed, the resistance level will automatically change if a different resistance setting is programmed for the next period.

During the program, the display will show the time remaining in the program. If you continue exercising after the program is completed, the display will continue to show your exercise feedback.

4 Follow your progress with the display.

Refer to step 4 on page 10.

5 Measure your heart rate if desired.

See step 5 on page 10.

6 When you are finished exercising, the console will automatically turn off after five minutes.

Refer to step 6 on page 10.

MAINTENANCE AND TROUBLESHOOTING

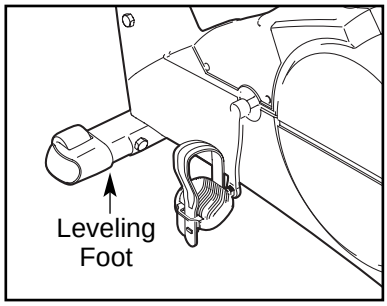
Inspect and tighten all parts of the exercise cycle regularly. Replace any worn parts immediately.

To clean the exercise cycle, use a damp cloth and a small amount of mild soap. **Important: To avoid damage to the console, keep liquids away from the console and keep the console out of direct sunlight.**

BATTERY REPLACEMENT

If the console display becomes dim, the batteries should be replaced; most console problems are the result of low batteries. Refer to assembly step 4 on page 5 for replacement instructions. Note: The console requires four “D” batteries.

HOW TO LEVEL THE EXERCISE CYCLE



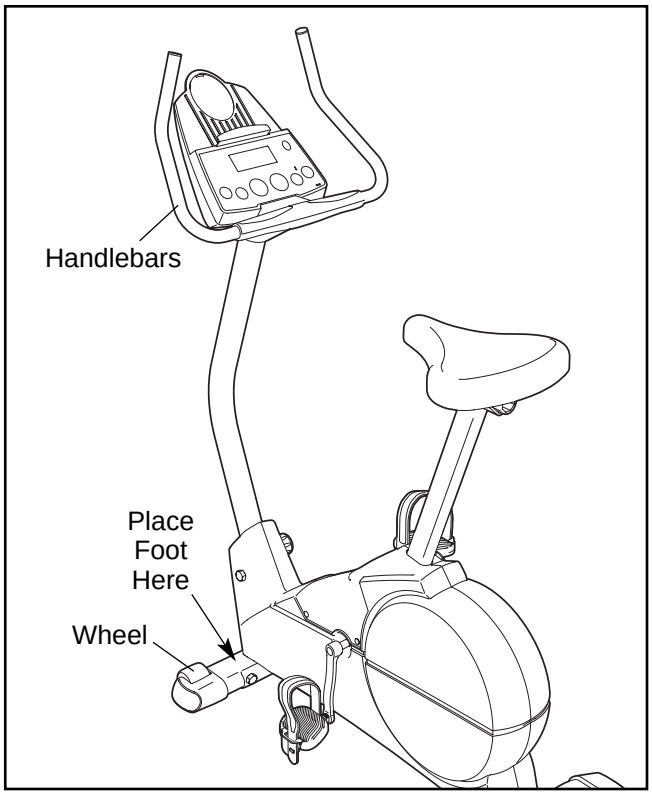
After the exercise cycle has been moved to the location where it will be used, make sure that both ends of front stabilizer are touching the floor. If the exercise cycle rocks slightly during use, turn one or both of the leveling feet under the front stabilizer until the rocking motion is eliminated.

HANDGRIP PULSE SENSOR TROUBLE-SHOOTING

- Avoid moving your hands while using the handgrip pulse sensor. Excessive movement may interfere with heart rate readings.
- Do not hold the metal contacts too tightly; doing so may interfere with heart rate readings.
- For the most accurate heart rate reading, hold the metal contacts for about 15 seconds.
- For optimal performance of the handgrip pulse sensor, keep the metal contacts clean. The contacts can be cleaned with a soft cloth—never use alcohol, abrasives, or chemicals.

HOW TO MOVE THE EXERCISE CYCLE

To move the exercise cycle, first stand in front of the exercise cycle, hold the handlebars, and place one foot on the front stabilizer. Pull the handlebars until the exercise cycle can be moved on the front wheels. Carefully move the exercise cycle to the desired location and then lower it.



CONDITIONING GUIDELINES

The following guidelines will help you to plan your exercise program. Remember that proper nutrition and adequate rest are essential for successful results.

⚠ WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for persons over the age of 35 or persons with pre-existing health problems.

The pulse sensor is not a medical device. Various factors may affect the accuracy of heart rate readings. The pulse sensor is intended only as an exercise aid in determining heart rate trends in general.

EXERCISE INTENSITY

Whether your goal is to burn fat or to strengthen your cardiovascular system, the key to achieving the desired results is to exercise with the proper intensity. The proper intensity level can be found by using your heart rate as a guide. The chart below shows recommended heart rates for fat burning, maximum fat burning, and cardiovascular (aerobic) exercise.

165	*155*	*145*	*140*	*130*	*125*	*115*	♥
145	*138*	*130*	*125*	*118*	*110*	*103*	♥
125	*120*	*115*	*110*	*105*	*95*	*90*	♥
20	*30*	*40*	*50*	*60*	*70*	*80*	

To find the proper heart rate for you, first find your age at the bottom line of the chart (ages are rounded off to the nearest ten years). Next, find the three numbers above your age. The three numbers are your “training zone.” The lowest number is the recommended heart rate for fat burning; the middle number is the recommended heart rate for maximum fat burning; the highest number is the recommended heart rate for aerobic exercise.

Fat Burning

To burn fat effectively, you must exercise at a relatively low intensity level for a sustained period of time. During the first few minutes of exercise, your body uses easily accessible *carbohydrate* calories for energy. Only after the first few minutes of exercise does your body begin to use stored *fat* calories for energy. If your goal is to burn fat, adjust the intensity of your exercise until your heart rate is near the lowest number in your training zone as you exercise. For maximum fat burning, adjust the intensity of your exercise until your heart rate is near the middle number in your training zone as you exercise.

Aerobic Exercise

If your goal is to strengthen your cardiovascular system, your exercise must be “aerobic.” Aerobic exercise is activity that requires large amounts of oxygen for prolonged periods of time. This increases the demand on the heart to pump blood to the muscles, and on the lungs to oxygenate the blood. For aerobic exercise, adjust the intensity of your exercise until your heart rate is near the highest number in your training zone.

WORKOUT GUIDELINES

Each workout should include the following three parts:

A warm-up, consisting of 5 to 10 minutes of stretching and light exercise. A proper warm-up increases your body temperature, heart rate, and circulation in preparation for exercise.

Training zone exercise, consisting of 20 to 30 minutes of exercising with your heart rate in your training zone. (During the first few weeks of your exercise program, do not keep your heart rate in your training zone for longer than 20 minutes.)

A cool-down, with 5 to 10 minutes of stretching. This will increase the flexibility of your muscles and will help to prevent post-exercise problems.

EXERCISE FREQUENCY

To maintain or improve your condition, plan three workouts each week, with at least one day of rest between workouts. After a few months of regular exercise, you may complete up to five workouts each week, if desired. Remember, the key to success is make exercise a regular and enjoyable part of your everyday life.

EXPLODED DRAWING—Model No. PFEX17910

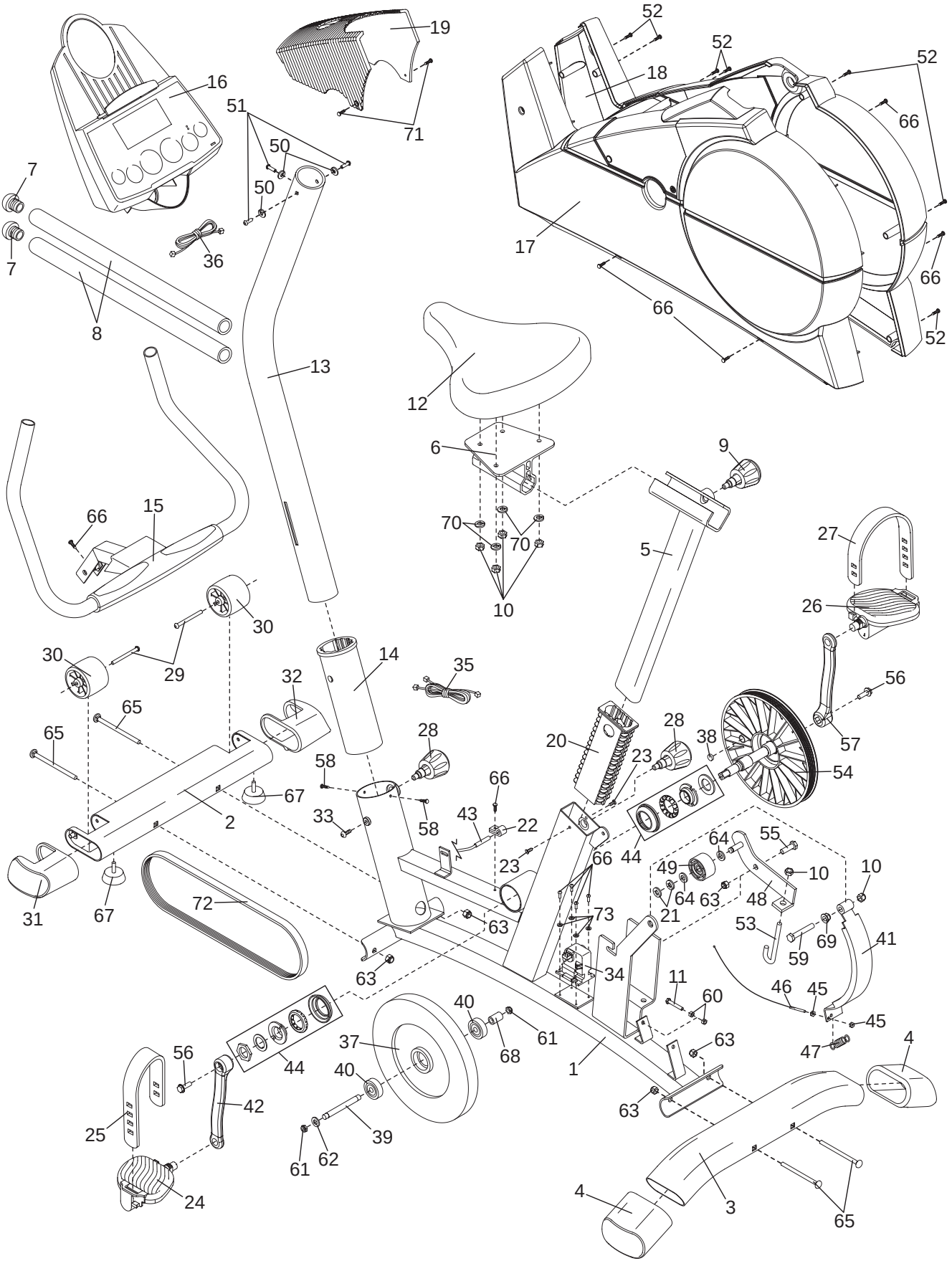
R1201A

Key No.	Qty.	Description
1	1	Frame
2	1	Front Stabilizer
3	1	Rear Stabilizer
4	2	Rear Endcap
5	1	Seat Post
6	1	Seat Bracket
7	2	Handlebar Endcap
8	2	Foam Grip
9	1	Seat Adjustment Knob
10	6	M8 Nylon Locknut
11	1	M6 x 38mm Screw
12	1	Seat
13	1	Upright
14	1	Upright Bushing
15	1	Handgrip Pulse Sensor/Handlebar
16	1	Console
17	1	Left Side Shield
18	1	Right Side Shield
19	1	Side Shield Cover
20	1	Seat Upright Bushing
21	2	M8 Push Nut
22	1	Reed Switch Clamp
23	2	M4 x 5mm Screw
24	1	Left Pedal
25	1	Left Pedal Strap
26	1	Right Pedal
27	1	Right Pedal Strap
28	2	Adjustment Knob
29	2	M6 x 72mm Button Screw
30	2	Wheel
31	1	Left Front Endcap
32	1	Right Front Endcap
33	1	M6 x 25.4mm Button Screw
34	1	Adjustment Motor
35	1	Lower Wire Harness
36	1	Upper Wire Harness
37	1	Flywheel
38	1	Magnet
39	1	Flywheel Axle
40	2	Flywheel Bearing
41	1	“C” Magnet
42	1	Left Crank Arm
43	1	Reed Switch/Wire
44	1	Crank Bearing
45	2	M5 Nut
46	1	Adjustment Cable
47	1	Return Spring
48	1	Idler Arm
49	1	Idler Wheel w/Bearing
50	3	M10 Black Split Washer
51	3	M10 x 27mm Button Screw
52	7	M4 x 25mm Screw
53	1	“J” Bolt
54	1	Pulley
55	1	M10 x 25mm Flat Bolt
56	2	Flange Screw
57	1	Right Crank Arm
58	2	M4 x 7mm Screw
59	1	M8 x 47mm Button Bolt
60	2	M6 Nut
61	2	M8 Nylon Jam Nut
62	1	Flywheel Washer
63	5	M10 Black Nylon Locknut
64	2	Idler Washer
65	4	M10 x 112mm Carriage Bolt
66	11	M4 x 16mm Screw
67	2	Leveling Foot
68	1	Flywheel Spacer
69	1	M8 Flange Nut
70	4	M8 Split Washer
71	2	M4 x 12mm Round Head Screw
72	1	Belt
73	4	Motor Washer
#	1	User’s Manual
#	2	Allen Wrench

Note: “#” indicates a non-illustrated part. Specifications are subject to change without notice. See the back cover of this manual for information about ordering replacement parts.

EXPLODED DRAWING—Model No. PFEX17910

R1201A



HOW TO ORDER REPLACEMENT PARTS

To order replacement parts, call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). To help us assist you, please be prepared to give the following information:

- The MODEL NUMBER of the product (PFEX17910)
- The NAME of the product (PROFORM® 920 S EKG exercise cycle)
- The SERIAL NUMBER of the product (see the front cover of this manual)
- The KEY NUMBER and DESCRIPTION of the part(s) (see the PART LIST on page 14 of this manual).

LIMITED WARRANTY

ICON Health & Fitness, Inc. (ICON), warrants this product to be free from defects in workmanship and material, under normal use and service conditions, for a period of ninety (90) days from the date of purchase. This warranty extends only to the original purchaser. ICON's obligation under this warranty is limited to replacing or repairing, at ICON's option, the product through one of its authorized service centers. All repairs for which warranty claims are made must be pre-authorized by ICON. This warranty does not extend to any product or damage to a product caused by or attributable to freight damage, abuse, misuse, improper or abnormal usage or repairs not provided by an ICON authorized service center, products used for commercial or rental purposes, or products used as store display models. No other warranty beyond that specifically set forth above is authorized by ICON.

ICON is not responsible or liable for indirect, special or consequential damages arising out of or in connection with the use or performance of the product or damages with respect to any economic loss, loss of property, loss of revenues or profits, loss of enjoyment or use, costs of removal, installation or other consequential damages of whatsoever nature. Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above limitation may not apply to you.

The warranty extended hereunder is in lieu of any and all other warranties and any implied warranties of merchantability or fitness for a particular purpose is limited in its scope and duration to the terms set forth herein. Some states do not allow limitations on how long an implied warranty lasts. Accordingly, the above limitation may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

ICON HEALTH & FITNESS, INC., 1500 S. 1000 W., LOGAN, UT 84321-9813

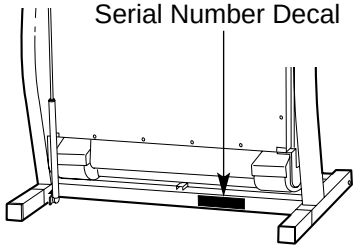
Part No. 179379 R1201A

PRO-FORM 995 SEL

USER'S MANUAL

Model No. PFTL99600
Serial No. _____

Find the serial number in the location shown below. Write the serial number in the space above for reference.

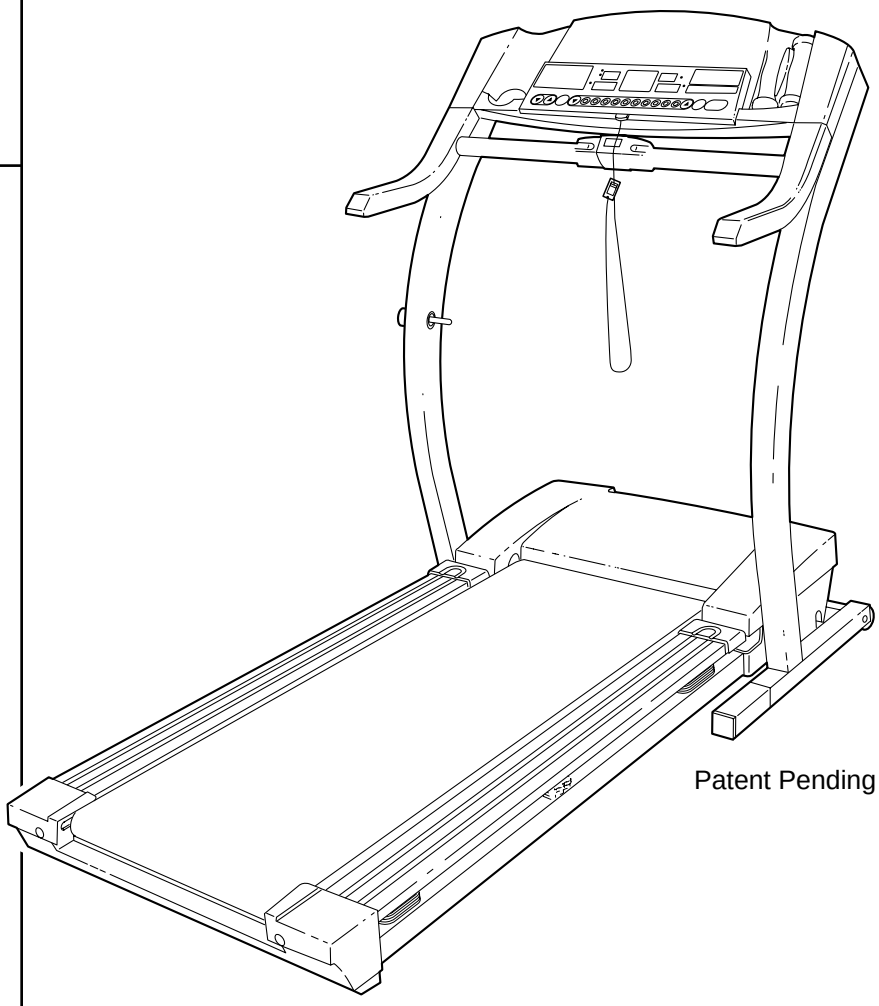


QUESTIONS?

If you have questions, or if there are missing parts, we will guarantee complete satisfaction through direct assistance from our factory.

TO AVOID UNNECESSARY DELAYS, PLEASE CALL DIRECT TO OUR TOLL-FREE CUSTOMER HOT LINE. The trained technicians on our Customer Hot Line will provide immediate assistance, free of charge to you.

CUSTOMER HOT LINE:
1-800-999-3756
Mon.–Fri., 6 a.m.–6 p.m. MST



Patent Pending

⚠ CAUTION

Read all precautions and instructions in this manual before using this equipment. Save this manual for future reference.

Visit our website at

www.proform.com

new products, prizes, fitness tips, and much more!

PRO-FORM 995 SEL

TABLE OF CONTENTS

Note: An EXPLODED DRAWING is attached in the center of this manual.

IMPORTANT PRECAUTIONS

⚠ WARNING: To reduce the risk of burns, fire, electric shock, or injury to persons, read the following important precautions and information before operating the treadmill.

1. **It is the responsibility of the owner to ensure that all users of this treadmill are adequately informed of all warnings and precautions.**

2. **Use the treadmill only as described in this manual.**

3. **Place the treadmill on a level surface, with at least eight feet of clearance behind it. Do not place the treadmill on any surface that blocks air openings. To protect the floor or carpet from damage, place a mat under the treadmill.**

4. **Keep the treadmill indoors, away from moisture and dust. Do not put the treadmill in a garage or covered patio, or near water.**

5. **Do not operate the treadmill where aerosol products are used or where oxygen is being administered.**

6. **Keep children under the age of 12 and pets away from the treadmill at all times.**

7. **The treadmill should not be used by persons weighing more than 250 pounds.**

8. **Never allow more than one person on the treadmill at a time.**

9. **Wear appropriate exercise clothing when using the treadmill. Do not wear loose clothing that could become caught in the treadmill. Athletic support clothes are recommended for both men and women. Always wear athletic shoes. Never use the treadmill with bare feet, wearing only stockings, or in sandals.**

10. **When connecting the power cord (see page 8), plug the power cord into a surge suppressor (not included) and plug the surge suppressor into a grounded circuit capable of carrying 15 or more amps. No other appliance should be on the same circuit. Do not use an extension cord.**

11. **Use only a single-outlet surge suppressor that meets all of the specifications described on page 8. To purchase a surge suppressor, see your local PROFORM dealer or call 1-800-806-3651 and order part number 146148.**

12. **Failure to use a properly functioning surge suppressor could result in damage to the control system of the treadmill. If the control system is damaged, the walking belt may change speed or stop unexpectedly, which may result in a fall and serious injury.**

13. **Keep the power cord and the surge suppressor away from heated surfaces.**

14. **Never move the walking belt while the power is turned off. Do not operate the treadmill if the power cord or plug is damaged, or if the treadmill is not working properly. (See BEFORE YOU BEGIN on page 5 if the treadmill is not working properly.)**

15. **Never start the treadmill while you are standing on the walking belt. Always hold the handrails while using the treadmill.**

16. **The treadmill is capable of high speeds. Adjust the speed in small increments to avoid sudden jumps in speed.**

17. **The pulse sensor is not a medical device. Various factors, including the user's movement, may affect the accuracy of heart rate readings. The pulse sensor is intended only as an exercise aid in determining heart rate trends in general.**

18. **Using the included hand weights and not holding the handrails may compromise your ability to maintain your balance. Exercises using hand weights should be attempted only by experienced users.**

19. **Never leave the treadmill unattended while it is running. Always remove the key, unplug the power cord and move the on/off switch to the off position when the treadmill is not in use. (See the drawing on page 5 for the location of the on/off switch.)**

20. **Do not attempt to raise, lower, or move the treadmill until it is properly assembled. (See ASSEMBLY on page 6, and HOW TO FOLD AND MOVE THE TREADMILL on page 19.) You must be able to safely lift 45 pounds (20 kg) in**

21. **Do not change the incline of the treadmill by placing objects under the treadmill.**

22. **When folding or moving the treadmill, make sure that the storage latch is fully closed.**

23. **When using iFIT.com CD's and videos, an electronic "chirping" sound will alert you when the speed and/or incline of the treadmill is about to change. Always listen for the "chirp" and be prepared for speed and/or incline changes. In some instances, the speed and/or incline may change before the personal trainer describes the change.**

24. **When using iFIT.com CD's and videos, you can manually override the speed and incline settings at any time by pressing the speed and incline buttons. However, when the next "chirp" is heard, the speed and/or incline will change to the next settings of the CD or video program.**

25. **Always remove iFIT.com CD's and videos from your CD player or VCR when you are not using them.**

26. **Inspect and tighten all parts of the treadmill regularly.**

27. **Never insert or drop any object into any opening.**

28. **DANGER: Always unplug the power cord immediately after use, before cleaning the treadmill, and before performing the maintenance and adjustment procedures described in this manual. Never remove the motor hood unless instructed to do so by an authorized service representative. Servicing other than the procedures in this manual should be performed by an authorized service representative only.**

29. **This treadmill is intended for in-home use only. Do not use this treadmill in any commercial, rental, or institutional setting.**

⚠WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for persons over the age of 35 or persons with pre-existing health problems. Read all instructions before using. ICON assumes no responsibility for personal injury or property damage sustained by or through the use of this product.

SAVE THESE INSTRUCTIONS

The decals shown below have been placed on your treadmill. If the decal is missing, or if it is not legible, please call our Customer Service Department, toll-free, to order a free replacement decal (see ORDERING REPLACEMENT PARTS on the back cover of this manual). Apply the decal in the location shown.

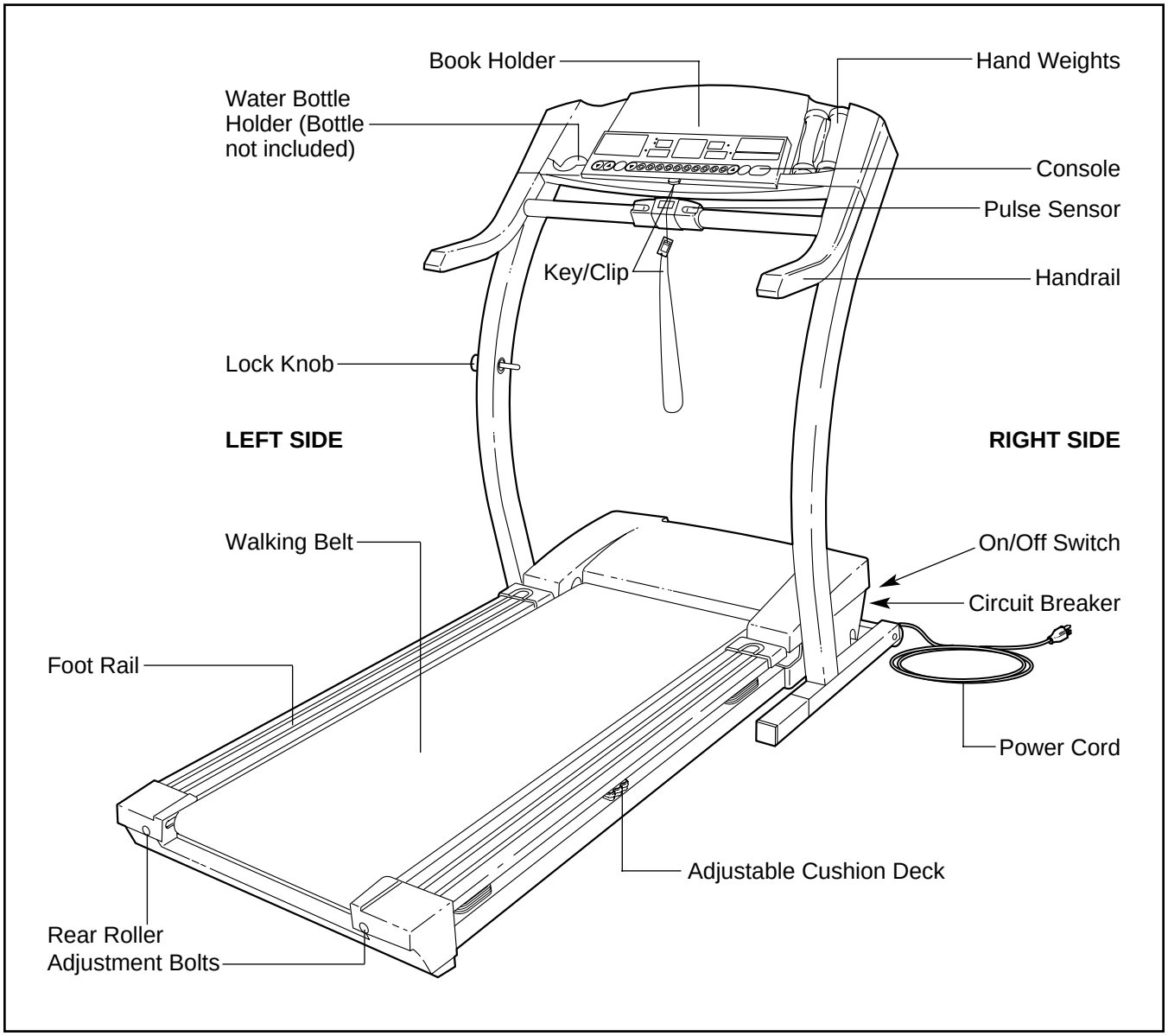
Note: This decal is shown at 38% of actual size.

BEFORE YOU BEGIN

Thank you for selecting the revolutionary PROFORM® 995 SEL treadmill. The 995 SEL treadmill combines advanced technology with innovative design to help you get the most from your exercise program in the convenience of your home. And when you're not exercising, the unique 995 SEL can be folded up, requiring less than half the floor space of other treadmills.

For your benefit, read this manual carefully before using the treadmill. If you have additional questions, please call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). To help us assist you, please note the product model number and serial number before calling. The model number of the treadmill is PFTL99600. The serial number can be found on a decal attached to the treadmill (see the front cover of this manual for the location).

Before reading further, please familiarize yourself with the parts that are labeled in the drawing below.



ASSEMBLY

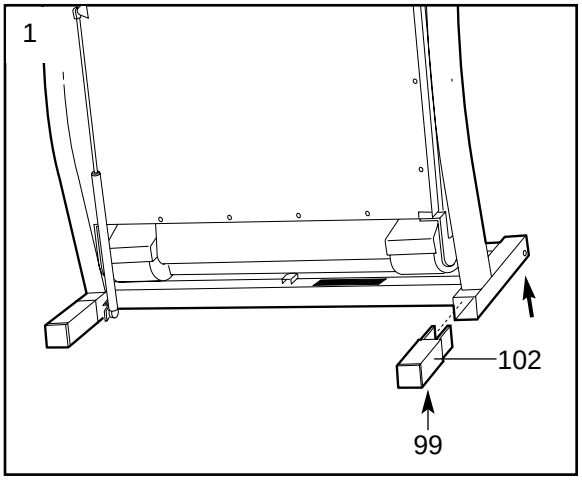
Assembly requires two people. Set the treadmill in a cleared area and remove all packing materials. Do not dispose of the packing materials until assembly is completed. **Assembly requires your own phillips screwdriver and rubber mallet .**

Note: The underside of the treadmill walking belt is coated with high-performance lubricant. During shipping, a small amount of lubricant may be transferred to the top of the walking belt or the shipping carton. This is a normal condition and does not affect treadmill performance. If there is lubricant on top of the walking belt, simply wipe off the lubricant with a soft cloth and a mild, non-abrasive cleaner.

1. With the help of a second person, carefully raise the treadmill to the upright position as shown.

   While a second person tips the treadmill to one side and holds it, insert one of the Extension Legs (102) into the treadmill as shown. Make sure that the Extension Leg is turned so the Base Pad (99) is on the bottom.

   Next, tip the treadmill to the other side and insert the other Extension Leg (not shown) in the same way. Lower the side of the treadmill so that both Extension Legs (102) are resting flat on the floor.

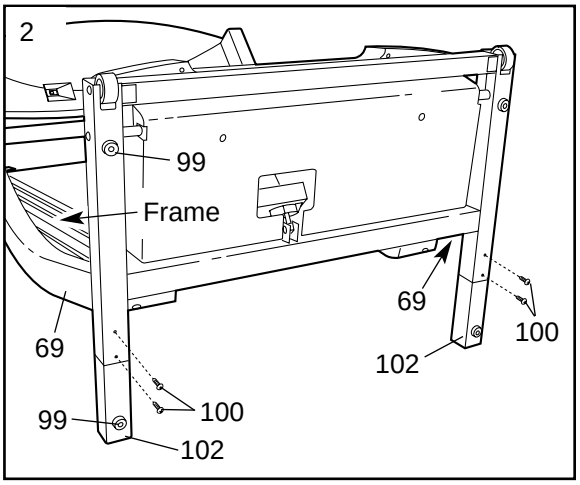


2. With the help of a second person, carefully lower the treadmill frame and then tip the Uprights (69) down as shown. **Make sure that the Extension Legs (102) remain in the Uprights.**

   Attach each Extension Leg (102) with two of the six 3/4" Screws (100) as shown.

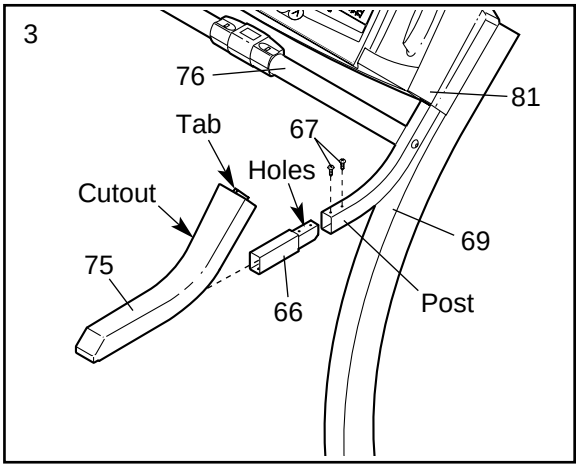
   With the help of a second person, carefully tip the Uprights (69) back to the vertical position.

   Note: One replacement Base Pad (99) may be included. Use the extra Base Pad if one becomes worn or needs to be replaced.



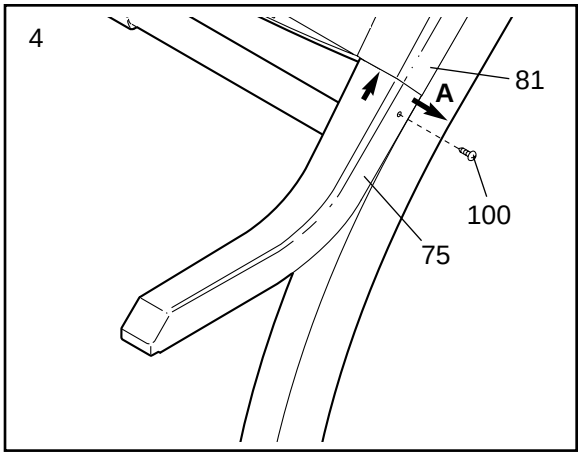
3. Insert a Handrail Extension (66) into the post on the right Upright (69) as shown; make sure that the indicated holes are on top. Tap the Handrail Extension with a rubber mallet to fully insert it. Attach the Handrail Extension with two 1/2" Screws (67) as shown.

   Identify the Right Foam Grip (75), which has a **large** cutout in the left side for the Pulse Bar (76). Slide the Right Foam Grip as far as possible onto the post on the right Upright (69). (Note: It may be helpful to apply soapy water to the Handrail Extension [66].) Make sure that the tab on the Foam Grip is inserted into the Console Base (81).



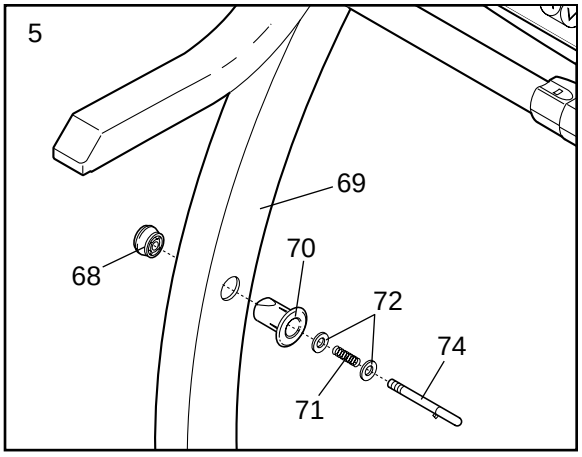
4. Make sure that the front edge of the Right Foam Grip (75) is under the Console Base (81) as shown. Tighten a 3/4" Screws (100) into the side of the Right Foam Grip as shown. Note: It may be necessary to pull the Foam Grip out slightly (see arrow A) to align the Screw with the hole in the post.

   Attach the other Handrail Extension (not shown) and the Left Foam Grip (not shown) as described in step 3 and this step.



5. Press the Lock Knob Sleeve (70) into the left Upright (69).

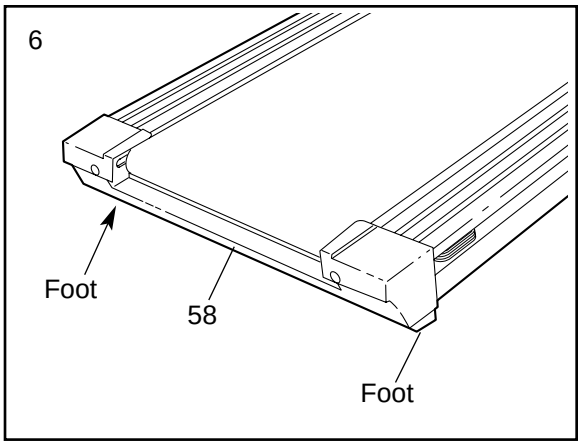
   Make sure that the two Lock Pin Collars (72) and the Spring (71) are on the Lock Pin (74). Insert the Lock Pin into the Lock Knob Sleeve (70) and the left Upright (69). Tighten the Lock Knob (68) onto the Lock Pin.



6. Look at the Endcap (58). If the left or right foot on the Endcap does not touch the floor, the included thick base pads should be attached to the treadmill as described below.

   Refer to assembly step 2. Lower the treadmill frame and the Uprights (69) as shown. If the **left** foot of the Endcap (58) was off the ground, remove the two Base Pads (99) from the **right** Upright (69). Attach the included thick base pads to the right Upright. If the **right** side of the Endcap was off the ground, attach the thick base pads to the **left** Upright.

   If either side of the Endcap (58) lifts off the floor when the treadmill is used, attach the thick base pads as described.



7. **Make sure that all parts are tightened before you use the treadmill.** Keep the included allen wrench in a secure place. The allen wrench is used to adjust the walking belt (see page 21). To protect the floor or carpet from damage, place a mat under the treadmill.

OPERATION AND ADJUSTMENT

THE PERFORMANT LUBE™ WALKING BELT

Your treadmill features a walking belt coated with PERFORMANT LUBE™, a high-performance lubricant. **IMPORTANT: Never apply silicone spray or other substances to the walking belt or the walking platform. Such substances will deteriorate the walking belt and cause excessive wear.**

HOW TO PLUG IN THE POWER CORD

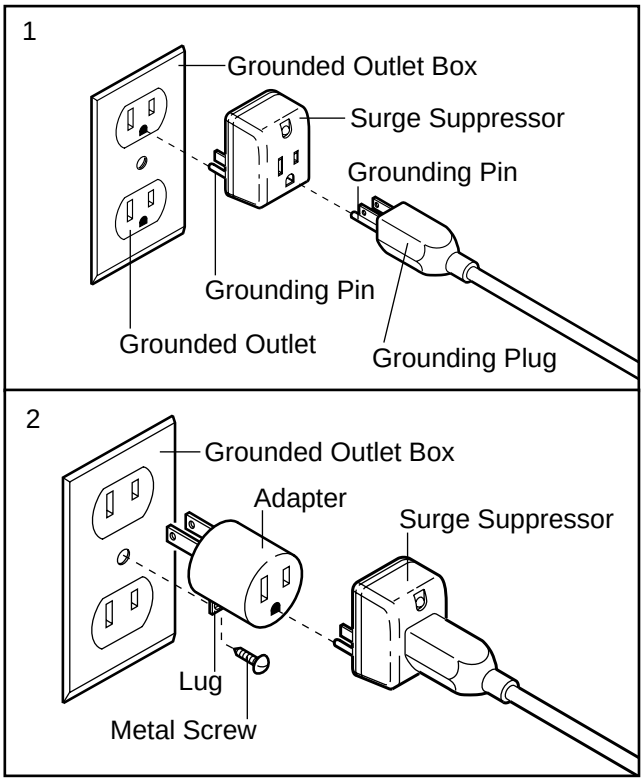
⚠ DANGER: Improper connection of the equipment-grounding conductor can result in an increased risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product—if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Your treadmill, like any other type of sophisticated electronic equipment, can be seriously damaged by sudden voltage changes in your home's power. Voltage surges, spikes, and noise interference can result from weather conditions or from other appliances being turned on or off. **To decrease the possibility of your treadmill being damaged, always use a surge suppressor with your treadmill (see drawing 1 at the right). To purchase a surge suppressor, see your local PROFORM dealer or call 1-800-806-3651 and order part number 146148.**

Use only a single-outlet surge suppressor that is UL 1449 listed as a transient voltage surge suppressor (TVSS). The surge suppressor must have a UL suppressed voltage rating of 400 volts or less and a minimum surge dissipation of 450 joules. The surge suppressor must be electrically rated for 120 volts AC and 15 amps. There must be a monitoring light on the surge suppressor to indicate whether it is functioning properly. Failure to use a properly functioning surge suppressor could result in damage to the control system of the treadmill. If the control system is damaged, the walking belt may change speed or stop unexpectedly, which may result in a fall and serious injury.

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. **Plug the power cord into a surge suppressor, and plug the surge suppressor into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. Important: The treadmill is not compatible with GFCI-equipped outlets.**

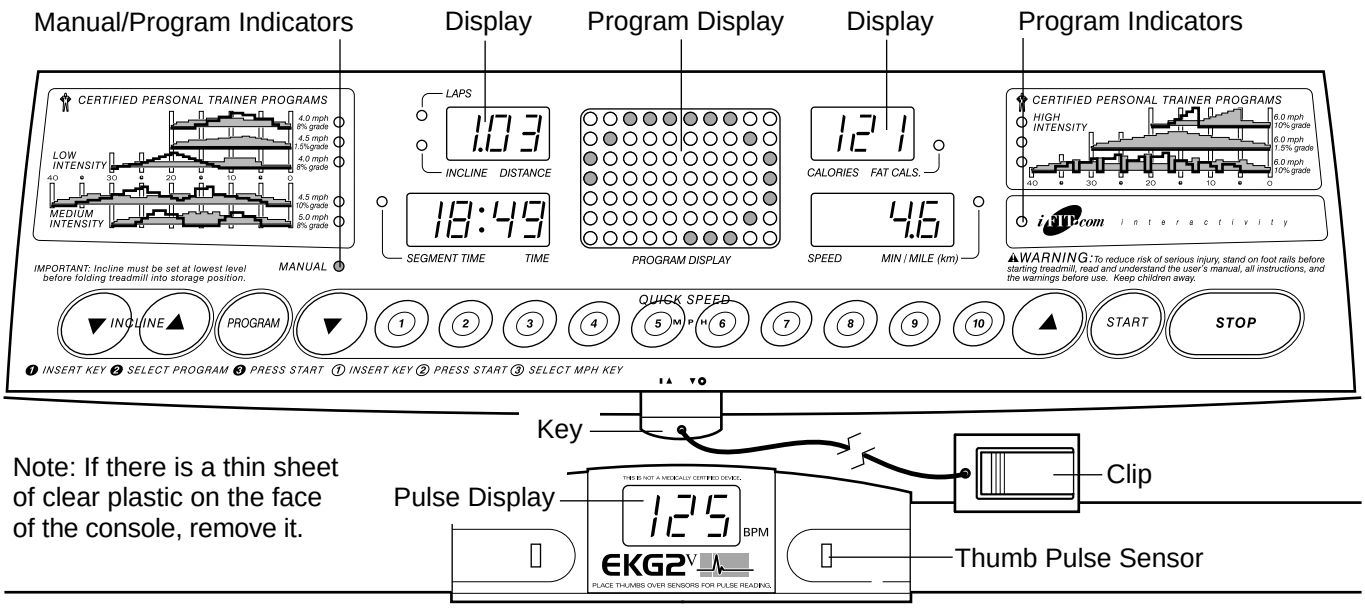
This product is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in drawing 1 below. A temporary adapter that looks like the adapter illustrated in drawing 2 may be used to connect the surge suppressor to a 2-pole receptacle as shown in drawing 2 if a properly grounded outlet is not available.



The temporary adapter should be used only until a properly grounded outlet (drawing 1) can be installed by a qualified electrician.

The green-colored rigid ear, lug, or the like extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used it must be held in place by a metal screw. **Some 2-pole receptacle outlet box covers are not grounded. Contact a qualified electrician to determine if the outlet box cover is grounded before using an adapter.**

CONSOLE DIAGRAM



Note: If there is a thin sheet of clear plastic on the face of the console, remove it.

⚠ CAUTION: Before operating the console, read the following precautions.

- **Do not stand on the walking belt when turning on the power.**
- **Always wear the clip (see the drawing above) while operating the treadmill.**
- **Adjust the speed in small increments to avoid sudden jumps in speed.**
- **To reduce the possibility of electric shock, keep the console dry. Avoid spilling liquids on the console and place only a sealed water bottle in the water bottle holder.**

FEATURES OF THE CONSOLE

The advanced console offers an impressive array of features to help you get the most from your exercise. When the console is in the manual mode, the speed and incline of the treadmill can be changed with a touch of a button. As you exercise, the console will display continuous exercise feedback. You can even measure your heart rate using the built-in thumb pulse sensor. Note: See page 18 for information about the optional chest pulse sensor.

Eight certified personal trainer programs are also offered. Each program automatically controls the speed and incline of the treadmill to give you an effective low-, medium-, or high-intensity workout. The included hand weights can be used to add upper-body exercise to your workouts as well.

The console also features new iFIT.com interactive technology. iFIT.com technology is like having a personal trainer right in your home. Using the included audio cable, you can connect the treadmill to your home stereo, portable stereo, or computer and play special iFIT.com CD programs (CD's are available separately). iFIT.com CD programs automatically control the speed and incline of the treadmill as a personal trainer guides you through every step of your workout. High-energy music provides added motivation. Each CD features two programs designed by certified personal trainers.

In addition, you can connect the treadmill to your VCR and TV and play iFIT.com video programs (videocassettes are available separately). Video programs offer the same benefits as iFIT.com CD programs, but add the excitement of working out with a class and an instructor—the hottest new trend at health clubs.

With the treadmill connected to your computer, you can also go to our Web site at www.iFIT.com and access basic programs, audio programs, and video programs directly from the internet. Additional options are soon to be available. See www.iFIT.com for details.

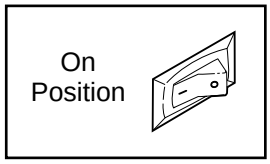
To purchase iFIT.com CD's or videocassettes, call toll-free 1-800-735-0768.

To use the manual mode of the console, follow the steps beginning on page 10. **To use a personal trainer program**, see page 11. **To use an iFIT.com CD or video program**, refer to page 15. **To use an iFIT.com program directly from our internet site**, see page 17.

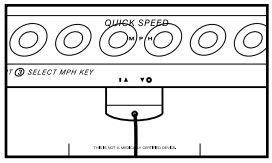
HOW TO TURN ON THE POWER

1 Plug in the power cord (see HOW TO PLUG IN THE POWER CORD on page 8).

2 Locate the on/off switch on the treadmill near the power cord. Move the on/off switch to the on position.



3 Stand on the foot rails of the treadmill. Find the clip attached to the key and slide the clip onto the waistband of your clothing. Next, insert the key into the console. After a moment, the displays and various indicators will light. **Test the clip by carefully taking a few steps backward until the key is pulled from the console. If the key is not pulled from the console, adjust the position of the clip as needed.**



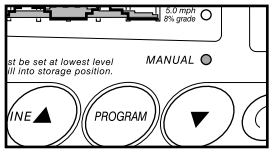
HOW TO USE THE MANUAL MODE

1 **Insert the key fully into the console.**

See HOW TO TURN ON THE POWER above.

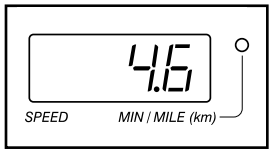
2 **Select the manual mode.**

When the key is inserted, the manual mode will be selected and the Manual indicator will light. If a program has been selected, press the Program button repeatedly to select the manual mode.



3 **Press the Start button or the Speed △ button to start the walking belt.**

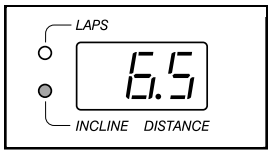
A moment after the button is pressed, the walking belt will begin to move at 1 mph. Hold the handrails and begin walking. As you exercise, change the speed of the walking belt as desired by pressing the Speed buttons. Each time a button is pressed, the speed setting will change by 0.1 mph; if a button is held down, the speed setting will change in increments of 0.5 mph. To change the speed setting quickly, press the Quick Speed buttons.



To stop the walking belt, press the Stop button. The Time/Segment Time display will begin to flash. To restart the walking belt, press the Start button or the Speed △ button.

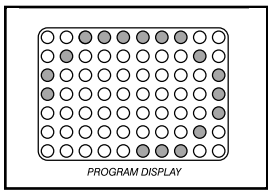
4 **Change the incline of the treadmill as desired.**

To change the incline of the treadmill, press the Incline buttons. Each time one of the buttons is pressed, the incline will change by 0.5%. Note: After the buttons are pressed, it may take a moment for the treadmill to reach the selected incline setting.

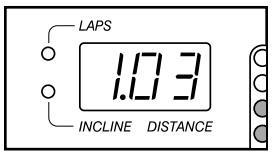


5 **Follow your progress with the LED track and the displays.**

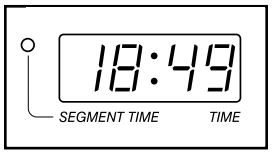
The LED Track—When the manual mode or an iFIT.com program is selected, the program display will show an LED track representing 1/4 mile. As you exercise, the indicators around the track will light in sequence until you have completed 1/4 mile. A new lap will then begin.



Distance/Incline/ Laps display—This display shows the distance that you have walked, the incline level of the treadmill, and the number of 1/4-mile laps you have completed. The display will change from one number to the next every seven seconds. The Incline indicator or the Laps indicator will light when the incline level or the number of laps is shown. Note: Each time the Incline buttons are pressed, the display will show the current incline setting for several seconds.

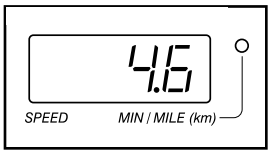


Time/Segment Time display—When the manual mode or an iFIT.com program is selected, this display will show the elapsed time. When a personal trainer program is selected, the display will show both the time remaining in the program and the time remaining in the current segment of the program. The display will alternate between one number and the other every seven seconds. The Segment Time indicator will light when the segment time is shown.

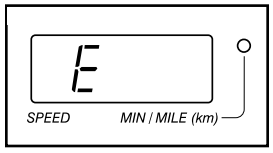


Calories/Fat Calories display—This display shows the approximate numbers of calories and fat calories you have burned (see FAT BURNING on page 22). Every seven seconds, the display will change from one number to the other. The Fat Cals. indicator will light when the number of fat calories is shown.

Speed/Min-Mile display—This display shows the speed of the walking belt and your current pace (pace is measured in minutes per mile). Every seven seconds, the display will change from one number to the other. The Min/Mile indicator will light when your pace is shown.



Note: The console can display speed and distance in either miles or kilometers. To find which unit of measurement is selected, hold down the Stop button while inserting the key into the console. An "E," for English miles, or an "M," for metric kilometers, will appear in the display. Press the Speed △ button to change the unit of measurement. When the desired unit of measurement is selected, remove the key and then reinsert it. Note: For simplicity, all instructions in this manual refer to miles.

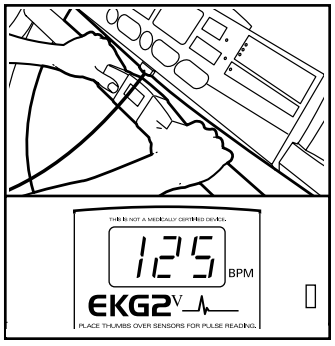


To reset the displays, press the Stop button, remove the key, and then reinsert the key.

6 Measure your heart rate, if desired.

Note: Before using the pulse sensor, make sure that your hands are clean.

To measure your heart rate, stand on the foot rails and place **both thumbs** on the pulse sensor as shown. **Do not press too hard, or the circulation in your thumbs will be restricted and your heart rate will not be detected.** After a few seconds, one or two dashes will appear in the Pulse display and then your heart rate will be shown. Hold your thumbs on the sensor for another 15 seconds for the most accurate reading. If the displayed heart rate appears to be too high or too low, or if your heart rate is not displayed, lift your thumbs off the sensor and allow the display to reset. Then, place your thumbs on the sensor as described above. Remember to stand still while measuring your heart rate. Note: If the optional chest pulse sensor is worn, your heart rate will be displayed in the Pulse display.



7 When you are finished, remove the key.

Step onto the foot rails, press the Stop button, and **adjust the incline of the treadmill to the lowest setting. The incline must be at the lowest setting when the treadmill is folded to the storage position or the treadmill will be damaged.** Next, remove the key from the console and put it in a secure place. **Note: If the displays and various indicators on the console remain lit after the key is removed, the console is in the "demo" mode. See page 18 and turn off the demo mode.**

When you are finished using the treadmill, move the on/off switch near the power cord to the off position and unplug the power cord.

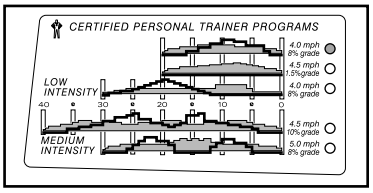
HOW TO USE PERSONAL TRAINER PROGRAMS

1 Insert the key fully into the console.

See HOW TO TURN ON THE POWER on page 10.

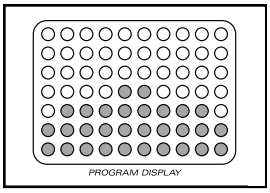
2 Select one of the personal trainer programs.

When the key is inserted, the manual mode will be selected and the Manual indicator will light. To select one of the personal trainer programs, press the Program button repeatedly until one of the eight personal trainer program indicators lights.



The console features three low-intensity programs, two medium-intensity programs, and three high-intensity programs. The profiles on the console show how the speed and incline of the treadmill will change during the programs. The numbers beside the profiles show the maximum speed and incline settings for the programs. For example, the upper left profile shows that the treadmill will reach a maximum speed of 4 mph and a maximum incline of 8% during the first program.

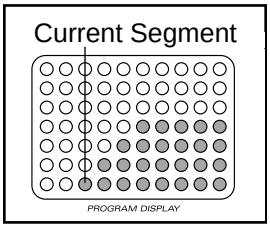
The program display will show a simplified profile of the program you have selected. The Time/Segment Time display will show how long the program will last.



3 Press the Start button or the Speed △ button to start the program.

A moment after the button is pressed, the treadmill will automatically adjust to the first speed and incline settings for the program. Hold the handrails and begin walking.

Each program is divided into several time segments of different lengths. The Time/Segment Time display shows both the time remaining in the program and the time remaining in the current segment. One speed setting and one incline setting are programmed for each segment. The speed setting for the first segment will be shown in the flashing Current Segment column of the program display. (The incline settings are not shown in the program display.) The speed settings for the next seven segments will be shown in the seven columns to the right.



When only three seconds remain in the first segment of the program, both the Current Segment column and the column to the right will flash, a series of tones will sound, and all speed settings will move one column to the left. The speed setting for the second segment will then be shown in the flashing Current Segment column and the treadmill will automatically adjust to the speed and incline settings for the second segment.

The program will continue in this way until the speed setting for the last segment is shown in the Current Segment column and no time remains in the Time/Segment Time display. The walking belt will then slow to a stop.

Note: Each time a segment ends and the speed settings move one column to the left, if all of the indicators in the Current Segment column are lit, the speed settings will move downward so that only the highest indicators in the columns will appear in the program display. When the speed settings move to the left again and not all of the indicators in the Current Segment column are lit, the speed settings will move back up.

If the speed or incline setting for the current segment is too high or too low, you can manually override the setting by pressing the Speed or Incline buttons on the console. Every few times one of the Speed buttons is pressed, an additional indicator will light or darken in the Current Segment column. If any of the columns to the right of the Current Segment column have the same number of lit indicators as the Current Segment column, an additional indicator may light or darken in those columns as well. Note: If you manually adjust the speed setting so that all of the indicators in the Current Segment column are lit, the speed settings in the program display will not move downward as described above. **When the current segment of the program ends, the treadmill will automatically adjust to the speed and incline settings for the next segment.**

To stop the program temporarily, press the Stop button. The Time/Segment Time display will begin to flash. To restart the program, press the Start button or the Speed △ button. To end the program, press the Stop button, remove the key, and then reinsert the key.

4 Follow your progress with the displays.

Refer to step 5 on page 10.

5 Measure your heart rate, if desired.

See step 6 on page 11.

6 When the program is completed, remove the key from the console.

When the program has ended, **make sure that the incline of the treadmill is at the lowest setting.** Next, remove the key from the console and put it in a safe place.**Note: If the displays and various indicators on the console remain lit after the key is removed, the console is in the "demo" mode. Refer to page 18 and turn off the demo mode.**

When you are finished using the treadmill, move the on/off switch near the power cord to the off position and unplug the power cord.

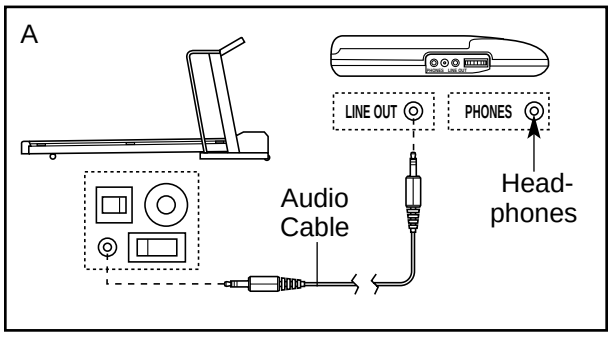
HOW TO CONNECT THE TREADMILL TO YOUR CD PLAYER, VCR, OR COMPUTER

To use iFIT.com CD's, the treadmill must be connected to your portable CD player, portable stereo, home stereo, or computer with CD player. See pages 13 and 14 for connecting instructions. **To use iFIT.com videocassettes**, the treadmill must be connected to your VCR. See page 15 for connecting instructions. **To use iFIT.com programs directly from our internet site**, the treadmill must be connected to your home computer. See page 14 for connecting instructions.

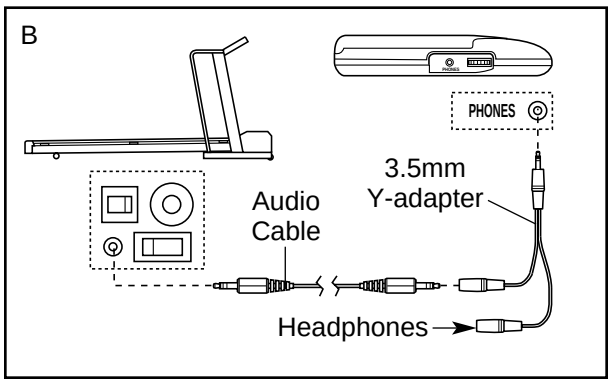
HOW TO CONNECT YOUR PORTABLE CD PLAYER

Note: If your CD player has separate LINE OUT and PHONES jacks, see instruction A below. If your CD player has only one jack, see instruction B.

A. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the LINE OUT jack on your CD player. Plug your headphones into the PHONES jack.



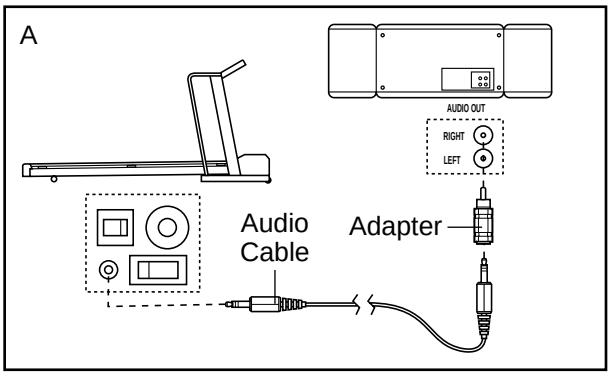
B. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into a 3.5mm Y-adapter (available at electronics stores). Plug the Y-adapter into the PHONES jack on your CD player. Plug your headphones into the other side of the Y-adapter.



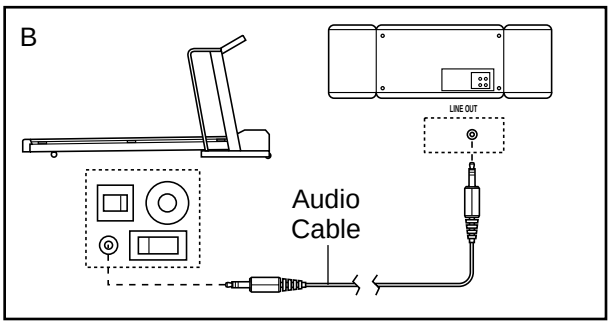
HOW TO CONNECT YOUR PORTABLE STEREO

Note: If your stereo has an RCA-type AUDIO OUT jack, see instruction A below. If your stereo has a 3.5mm LINE OUT jack, see instruction B. If your stereo has only a PHONES jack, see instruction C.

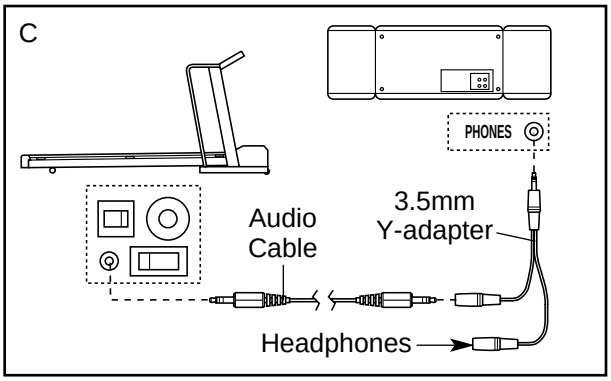
A. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the included adapter. Plug the adapter into an AUDIO OUT jack on your stereo.



B. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the LINE OUT jack on your stereo.



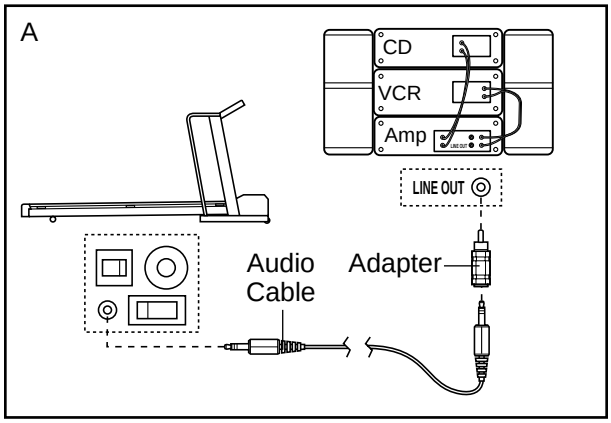
C. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into a 3.5mm Y-adapter (available at electronics stores). Plug the Y-adapter into the PHONES jack on your stereo. Plug your headphones into the other side of the Y-adapter.



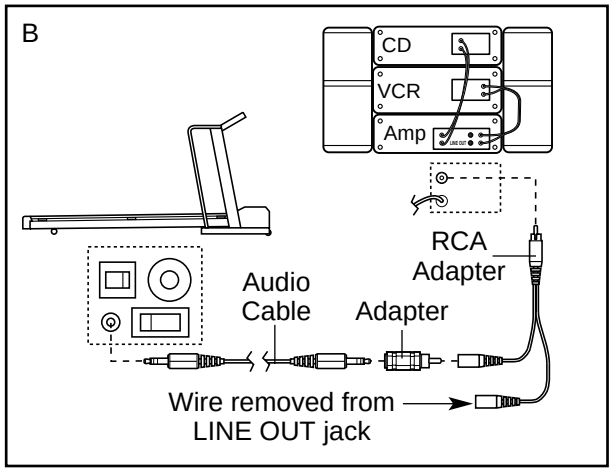
HOW TO CONNECT YOUR HOME STEREO

Note: If your stereo has an unused LINE OUT jack, see instruction A below. If the LINE OUT jack is being used, see instruction B.

A. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the included adapter. Plug the adapter into the LINE OUT jack on your stereo.



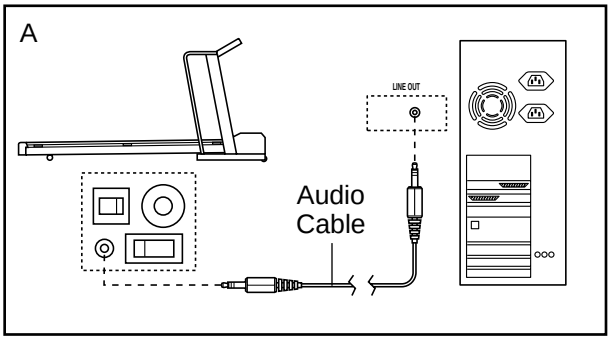
B. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the included adapter. Plug the adapter into an RCA adapter (available at electronics stores). Next, remove the wire that is currently plugged into the LINE OUT jack on your stereo and plug the wire into the unused side of the RCA adapter. Plug the RCA adapter into the LINE OUT jack on your stereo.



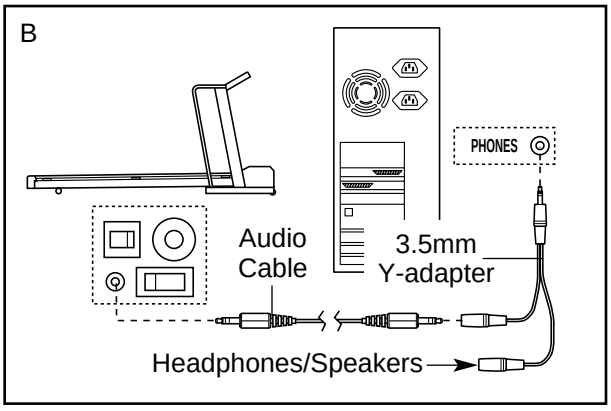
HOW TO CONNECT YOUR COMPUTER

Note: If your computer has a 3.5mm LINE OUT jack, see instruction A. If your computer has only a PHONES jack, see instruction B.

A. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the LINE OUT jack on your computer.



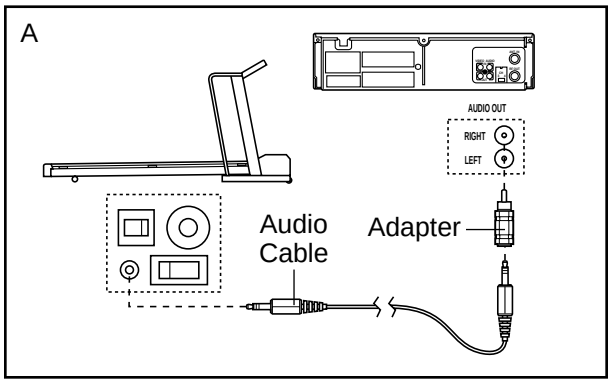
B. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into a 3.5mm Y-adapter (available at electronics stores). Plug the Y-adapter into the PHONES jack on your computer. Plug your headphones or speakers into the other side of the Y-adapter.



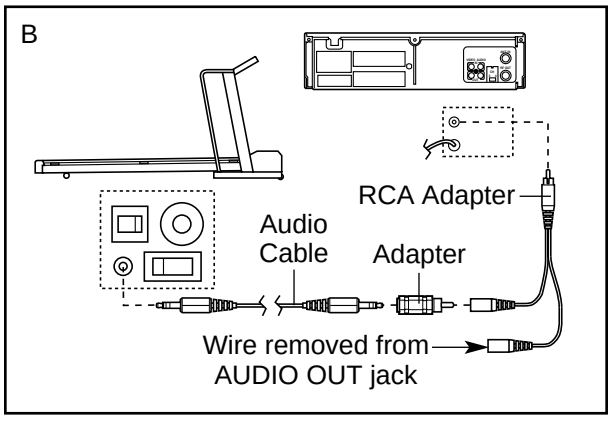
HOW TO CONNECT YOUR VCR

Note: If your VCR has an unused AUDIO OUT jack, see instruction A below. If the AUDIO OUT jack is being used, see instruction B. If you have a TV with a built-in VCR, see instruction B. If your VCR is connected to your home stereo, see HOW TO CONNECT YOUR HOME STEREO on page 14.

A. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the included adapter. Plug the adapter into the AUDIO OUT jack on your VCR.



B. Plug one end of the audio cable into the jack on the front of the treadmill near the power cord. Plug the other end of the cable into the included adapter. Plug the adapter into an RCA adapter (available at electronics stores). Next, remove the wire that is currently plugged into the AUDIO OUT jack on your VCR and plug the wire into the unused side of the RCA adapter. Plug the RCA adapter into the AUDIO OUT jack on your VCR.



HOW TO USE IFIT.COM CD AND VIDEO PROGRAMS

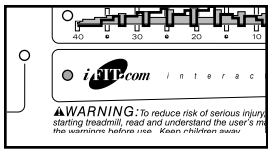
To use iFIT.com CD's or videocassettes, the treadmill must be connected to your portable CD player, portable stereo, home stereo, computer with CD player, or VCR. See HOW TO CONNECT THE TREADMILL TO YOUR CD PLAYER, VCR, OR COMPUTER on pages 13 and 14. **Note: To purchase iFIT.com CD's or videocassettes, call toll-free 1-800-735-0768.**

Follow the steps below to use an iFIT.com CD or video program.

1 Insert the key into the console.

See HOW TO TURN ON THE POWER on page 10.

2 Select the iFIT.com mode.



When the key is inserted, the manual mode will be selected and the Manual indicator will light. To use iFIT.com CD's or videocassettes, press the Program button repeatedly until the iFIT.com indicator lights.

3 Insert the iFIT.com CD or videocassette.

If you are using an iFIT.com CD, insert the CD into your CD player. If you are using an iFIT.com videocassette, insert the videocassette into your VCR.

4 Press the PLAY button on your CD player or VCR.

A moment after the button is pressed, your personal trainer will begin guiding you through your workout. Simply follow your personal trainer's instructions. Note: If the Time/Segment Time display is flashing, press the Start button or the Speed △ button on the console. The treadmill will not respond to a CD or video program when the Time/Segment Time display is flashing.

During the CD or video program, an electronic "chirping" sound will alert you when the speed and/or incline of the treadmill is about to change. **CAUTION: Always listen for the "chirp" and be prepared for speed and/or incline changes. In some instances, the speed and/or incline may change before the personal trainer describes the change.**

If the speed or incline settings are too high or too low, you can manually override the settings at any time by pressing the Speed or Incline buttons on the console. However, **when the next "chirp" is heard, the speed and/or incline will change to the next settings of the CD or video program.**

To stop the walking belt at any time, press the Stop button on the console. The Time/Segment Time display will begin to flash. To restart the program, press the Start button or the Speed △ button. After a moment, the walking belt will begin to move at 1.0 mph. **When the next "chirp" is heard, the speed and incline will change to the next settings of the CD or video program**. The program can also be stopped by pressing the Stop button on your CD player or VCR.

When the CD or video program is completed, the walking belt will stop and the Time/Segment Time display will begin to flash. Note: To use another CD or video program, press the Stop button or remove the key and go to step 1 on page 15.

Note: If the speed or incline of the treadmill does not change when a "chirp" is heard:

- **make sure that the iFIT.com indicator is lit and that the Time/Segment Time display is not flashing. If the Time/Segment Time display is flashing, press the Start button or the Speed △ button on the console**
- **adjust the volume of your CD player or VCR. If the volume is too high or too low, the console may not detect the program signals**
- **make sure that the audio cable is properly connected, that it is fully plugged in, and that it is not wrapped around a power cord**
- **if you are using your portable CD player and the CD skips, set the CD player on the floor or another flat surface instead of on the console.**

5 **Follow your progress with the LED track and the displays.**

See step 5 on page 10.

6 **Measure your heart rate, if desired.**

Refer to step 6 on page 11.

7 **When the program is completed, remove the key.**

See step 6 on page 12.

CAUTION: Always remove iFIT.com CD's and videocassettes from your CD player or VCR when you are finished using them.

HOW TO USE PROGRAMS DIRECTLY FROM OUR INTERNET SITE

Our Web site at www.iFIT.com allows you to access basic programs, audio programs, and video programs directly from the internet. Additional options are soon to be available. See www.iFIT.com for details.

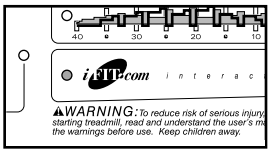
To use programs from our Web site, the treadmill must be connected to your home computer. See HOW TO CONNECT YOUR COMPUTER on page 14. In addition, you must have an internet connection and an internet service provider. A list of specific system requirements will be found on our Web site.

Follow the steps below to use a program from our Web site.

1 **Insert the key into the console.**

See HOW TO TURN ON THE POWER on page 10.

2 **Select the iFIT.com mode.**



When the key is inserted, the manual mode will be selected and the Manual indicator will light. To use a program from our internet site, press the Program button repeatedly until the iFIT.com indicator lights.

3 **Go to your computer and start an internet connection.**

4 **Start your web browser, if necessary, and go to our internet site at www.iFIT.com.**

5 **Follow the desired links on our internet site to select a program.**

Read and follow the on-line instructions for using a program.

6 **Follow the on-line instructions to start the program.**

When you start the program, an on-screen countdown will begin.

7 **Return to the treadmill and stand on the foot rails. Find the clip attached to the key and slide the clip onto the waistband of your clothing.**

When the on-screen countdown ends, the program will begin and the walking belt will begin to move. Hold the handrails, step onto the walking belt, and begin walking. During the program, an electronic "chirping" sound will alert you when the speed and/or incline of the treadmill is about to change. **CAUTION: Always listen for the "chirp" and be prepared for speed and/or incline changes.**

If the speed or incline settings are too high or too low, you can manually override the settings at any time by pressing the Speed or Incline buttons on the console. **However, when the next "chirp" is heard, the speed and/or incline will change to the next settings of the program.**

To stop the walking belt at any time, press the Stop button on the console. The Time/Segment Time display will begin to flash. To restart the program, press the Start button or the Speed △ button. After a moment, the walking belt will begin to move at 1.0 mph. **When the next "chirp" is heard, the speed and incline will change to the next settings of the program**.

When the program is completed, the walking belt will stop and the Time/Segment Time display will begin to flash. Note: To use another program, press the Stop button and go to step 5.

Note: If the speed or incline of the treadmill does not change when a "chirp" is heard, make sure that the iFIT.com indicator is lit and that the Time/Segment Time display is not flashing. In addition, make sure that the audio cable is properly connected, that it is fully plugged in, and that it is not wrapped around a power cord.

8 **Follow your progress with the LED track and the displays.**

See step 5 on page 10.

9 **When the program has ended, remove the key.**

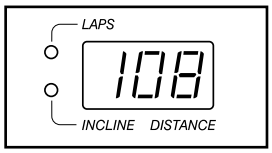
See step 6 on page 12.

THE INFORMATION MODE/DEMO MODE

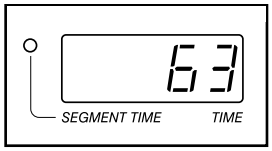
The console features an information mode that keeps track of the total number of hours that the treadmill has been operated and the total number of miles that the walking belt has moved. The information mode also allows you to switch the console from miles per hour to kilometers per hour. In addition, the information mode allows you to turn on and turn off the demo mode.

To select the information mode, hold down the Stop button while inserting the key into the console. When the information mode is selected, the following information will be shown:

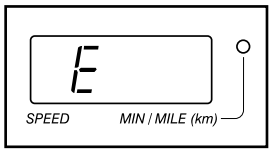
The Distance/Incline/Laps display will show the total number of miles that the walking belt has moved.



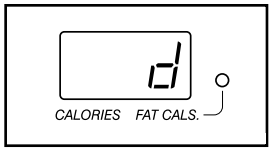
The Time/Segment Time display will show the total number of hours the treadmill has been used.



An “E,” for english miles, or an “M,” for metric kilometers, will appear in the Speed/ Min-Mile display. Press the Speed △ button to change the unit of measurement.



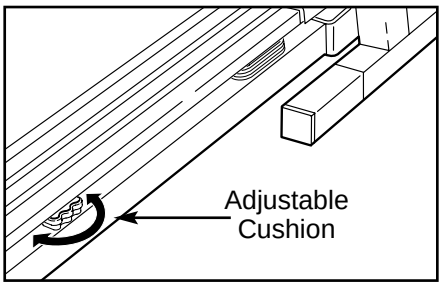
IMPORTANT: The Calories/Fat Calories display should be blank. If a “d” appears in the display, the console is in the “demo” mode. This mode is intended to be used only when a treadmill is displayed in a store. When the console is in the demo mode, the power cord can be plugged in, the key can be removed from the console, and the displays and indicators on the console will automatically light in a preset sequence, although the buttons on the console will not operate. **If a “d” appears in the Calories/Fat Calories display when the information mode is selected, press the Speed ▽ button so the Calories/ Fat Calories display is blank.**



To exit the information mode, remove the key from the console.

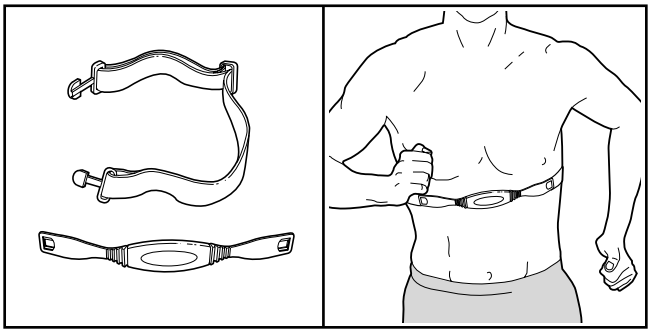
HOW TO ADJUST THE CUSHIONING SYSTEM

The treadmill features a cushioning system that reduces the impact as you walk or run on the treadmill. The firmness of the cushioning system is controlled by the adjustable cushions at the center of the treadmill (there is one adjustable cushion on each side). To select the maximum firmness setting, turn the cushions to level 3; to decrease the firmness, turn the cushions to level 2 or 1. It may be helpful to lift on the walking platform as you rotate the cushion. **Note: The faster you run on the treadmill, or the heavier your weight, the firmer the cushioning system should be. Make sure that both cushions are at the same setting.**



THE OPTIONAL CHEST PULSE SENSOR

An optional chest pulse sensor adds even more features to the console. The chest pulse sensor offers hands-free operation and continuously monitors your heart rate during your workouts. **To purchase the optional chest pulse sensor, call toll-free 1-800-734-2377.**



HOW TO FOLD AND MOVE THE TREADMILL

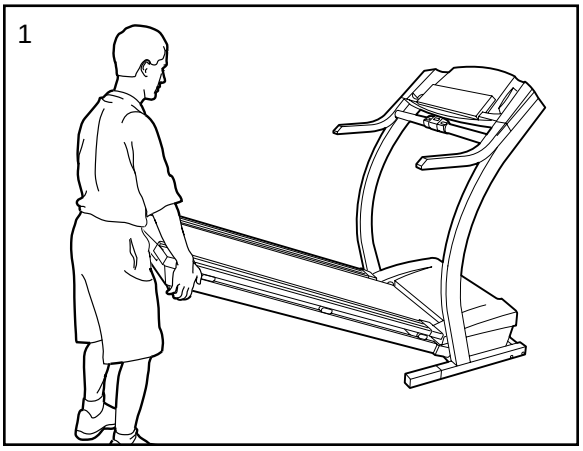
HOW TO FOLD THE TREADMILL FOR STORAGE

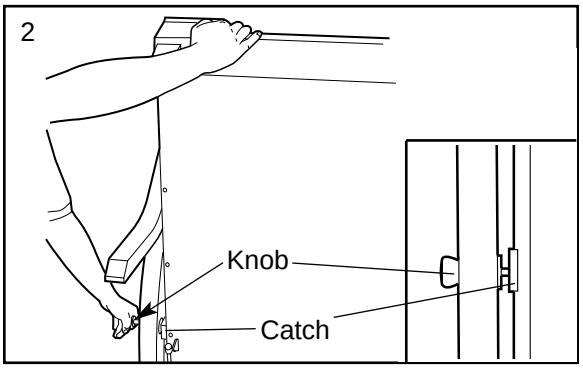
Before folding the treadmill, adjust the incline to the lowest position. If this is not done, the treadmill may be damaged. Make sure the adjustable cushion is in a set position (see page 18). Next, unplug the power cord. CAUTION: You must be able to safely lift 45 pounds (20 kg) in order to raise, lower, or move the treadmill.

1. Hold the treadmill with your hands in the locations shown at the right. **CAUTION: To decrease the possibility of injury, bend your legs and keep your back straight. As you raise the treadmill, make sure to lift with your legs rather than your back.** Raise the treadmill about halfway to the vertical position.

2. Move your right hand to the position shown and hold the treadmill firmly. Using your left hand, pull the latch knob to the left and hold it. Raise the treadmill until the latch pin is aligned with the hole in the catch. Insert the latch pin into the catch. **Make sure that the latch pin is fully inserted into the catch.**

   To protect the floor or carpet from damage, place a mat under the treadmill. Keep the treadmill out of direct sunlight. Do not leave the treadmill in the storage position in temperatures above 85° Fahrenheit.





HOW TO MOVE THE TREADMILL

Before moving the treadmill, convert the treadmill to the storage position as described above. **Make sure that the pin on the lock knob is inserted into the slot in the catch.**

1. Hold the handrails as shown and place one foot against a wheel. It may be helpful to grab the pulse bar as you tip the treadmill.

2. Tilt the treadmill back until it rolls freely on the front wheels. Carefully move the treadmill to the desired location. **Never move the treadmill without tipping it back. To reduce the risk of injury, use extreme caution while moving the treadmill. Do not attempt to move the treadmill over an uneven surface.**

3. Place one foot on the base, and carefully lower the treadmill until it is resting in the storage position.

HOW TO LOWER THE TREADMILL FOR USE

1. Refer to drawing 2 above. Hold the upper end of the treadmill with your right hand as shown. Using your left hand, pull the lock knob to the left and hold it. Pivot the treadmill down until the frame is past the pin on the lock knob. Note: You may need to push the handrail to the side slightly.

2. Refer to drawing 1 above. Hold the treadmill firmly with both hands, and lower the treadmill to the floor. **CAUTION: To decrease the possibility of injury, bend your legs and keep your back straight.**

TROUBLE-SHOOTING

Most treadmill problems can be solved by following the steps below. Find the symptom that applies, and follow the steps listed. If further assistance is needed, please call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays).

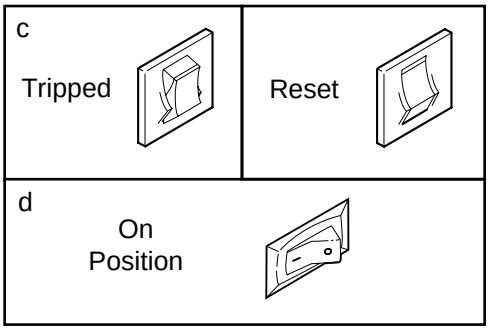
PROBLEM: The power does not turn on

SOLUTION: a. Make sure that the power cord is plugged into a surge suppressor, and that the surge suppressor is plugged into a properly grounded outlet (see page 8). Use only a single-outlet surge suppressor that meets all of the specifications described on page 8. Important: The treadmill is not compatible with GFCI-equipped outlets.

b. After the power cord has been plugged in, make sure that the key is fully inserted into the console.

c. Check the circuit breaker located on the treadmill near the power cord. If the switch protrudes as shown, the circuit breaker has tripped. To reset the circuit breaker, wait for five minutes and then press the switch back in.

d. Check the on/off switch located on the treadmill near the power cord. The switch must be in the on position.



PROBLEM: The power turns off during use

SOLUTION: a. Check the circuit breaker located on the treadmill frame near the power cord (see c. above). If the circuit breaker has tripped, wait for five minutes and then press the switch back in.

b. Make sure that the power cord is plugged in.

c. Unplug the power cord, wait for five minutes, and then plug the power cord back in.

d. Remove the key from the console. Reinsert the key fully into the console.

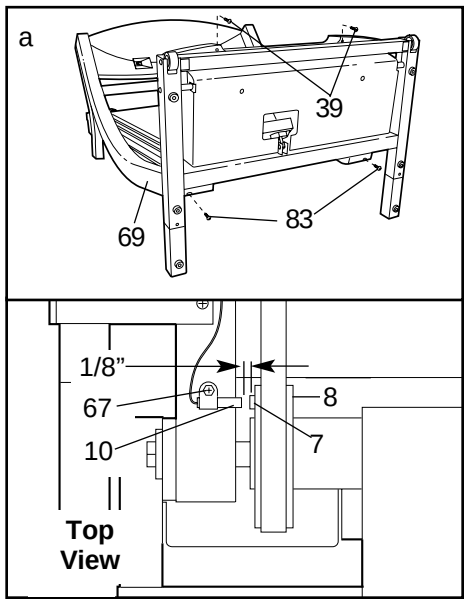
e. Make sure that the on/off switch is in the on position.

f. If the treadmill still will not run, please call our Customer Service Department, toll-free.

PROBLEM: The displays of the console do not function properly

SOLUTION: a. Remove the key from the console and **unplug the power cord.** Carefully tip the treadmill down as shown in drawing a. Remove the Screws (39, 83) from the hood. Raise the Uprights (69) and carefully remove the hood.

Locate the Reed Switch (10) and the Magnet (7) on the left side of the Pulley (8). Turn the Pulley until the Magnet is aligned with the Reed Switch. **Make sure that the gap between the Magnet and the Reed Switch is about 1/8".** If necessary, loosen the 1/2" Screw (67) and move the Reed Switch slightly. Retighten the Screw. Re-attach the hood, and run the treadmill for a few minutes to check for a correct speed reading.



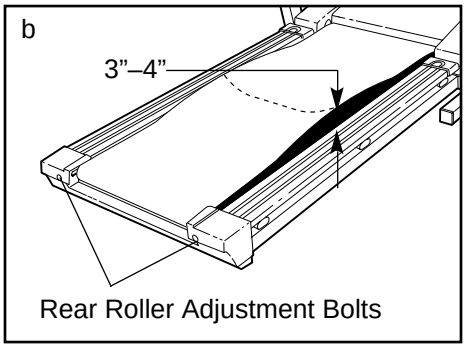
PROBLEM: The thumb pulse sensor does not function properly

SOLUTION: a. Wash your hands before to using the pulse sensor. In addition, keep the pulse sensor clean using a damp cloth and a small amount of mild detergent.

PROBLEM: The walking belt slows when walked on

SOLUTION: a. Use only a single-outlet surge suppressor that meets all of the specifications described on page 8.

b. If the walking belt is overtightened, treadmill performance may decrease and the walking belt may become damaged. Remove the key and **UNPLUG THE POWER CORD**. Using the allen wrench, turn both rear roller adjustment bolts counterclockwise, 1/4 of a turn. When the walking belt is properly tightened, you should be able to lift each side of the walking belt 3 to 4 inches off the walking platform. Be careful to keep the walking belt centered. Plug in the power cord, insert the key and run the treadmill for a few minutes. Repeat until the walking belt is properly tightened.

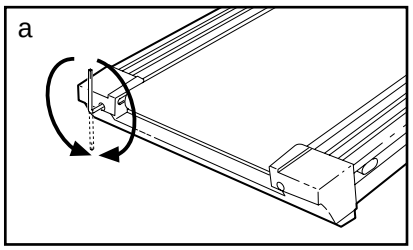


Rear Roller Adjustment Bolts

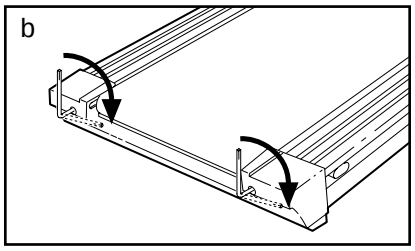
c. If the walking belt still slows, please call our Customer Service Department, toll-free.

PROBLEM: The walking belt is off-center or slips when walked on

SOLUTION: a. **If the walking belt is off-center,** first remove the key and **UNPLUG THE POWER CORD**. **If the walking belt has shifted to the left,** use the allen wrench to turn the left rear roller bolt clockwise 1/2 of a turn. **If the walking belt has shifted to the right,** turn the left rear roller bolt counterclockwise 1/2 of a turn. Be careful not to overtighten the walking belt. Plug in the power cord, insert the key and run the treadmill for a few minutes. Repeat until the walking belt is centered.



b. If the walking belt slips when walked on, first remove the key and **UNPLUG THE POWER CORD**. Using the allen wrench, turn both rear roller bolts clockwise, 1/4 of a turn. When the walking belt is correctly tightened, you should be able to lift each side of the walking belt 3 to 4 inches off the walking platform. Be careful to keep the walking belt centered. Plug in the power cord, insert the key and carefully walk on the treadmill for a few minutes. Repeat until the walking belt is properly tightened.



PROBLEM: The incline of the treadmill does not change correctly or does not change when iFIT.com CD’s and videos are played

SOLUTION: a. With the key in the console, press one of the Incline buttons. **While the incline is changing, remove the key.** After a few seconds, re-insert the key. The treadmill will automatically rise to the maximum incline level and then return to the minimum level. This will recalibrate the incline.

CONDITIONING GUIDELINES

⚠WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for individuals over the age of 35 or individuals with pre-existing health problems.

The pulse sensor is not a medical device. Various factors, including your movement, may affect the accuracy of heart rate readings. The sensor is intended only as an exercise aid in determining heart rate trends in general.

The following guidelines will help you to plan your exercise program. Remember—these are general guidelines only. For more detailed exercise information, obtain a reputable book or consult your physician.

EXERCISE INTENSITY

Whether your goal is to burn fat or to strengthen your cardiovascular system, the key to achieving the desired results is to exercise with the proper intensity. The proper intensity level can be found by using your heart rate as a guide. The chart below shows recommended heart rates for fat burning and aerobic exercise.

HEART RATE TRAINING ZONES

AEROBIC	165	155	145	140	130	125	115
MAX FAT BURN	145	138	130	125	118	110	103
FAT BURN	125	120	115	110	105	95	90
Age	20	30	40	50	60	70	80

To find the proper heart rate for you, first find your age near the bottom of the chart (ages are rounded off to the nearest ten years). Next, find the three numbers above your age. The three numbers define your "training zone." The lower two numbers are recommended heart rates for fat burning; the higher number is the recommended heart rate for aerobic exercise.

To measure your heart rate during exercise, use the pulse sensor on the console. If your heart rate is too high or too low, adjust the speed and incline of the treadmill.

Fat Burning

To burn fat effectively, you must exercise at a relatively low intensity level for a sustained period of time. During the first few minutes of exercise, your body uses easily accessible carbohydrate calories for energy. Only after the first few minutes does your body begin to use stored fat calories for energy. If your goal is to burn fat, adjust the speed and incline of the treadmill until your heart rate is near the lowest number in your training zone.

For maximum fat burning, adjust the speed and incline of the treadmill until your heart rate is near the middle number in your training zone.

Aerobic Exercise

If your goal is to strengthen your cardiovascular system, your exercise must be "aerobic." Aerobic exercise is activity that requires large amounts of oxygen for prolonged periods of time. This increases the demand on the heart to pump blood to the muscles, and on the lungs to oxygenate the blood. For aerobic exercise, adjust the speed and incline of the treadmill until your heart rate is near the highest number in your training zone.

WORKOUT GUIDELINES

Each workout should include the following three parts:

A Warm-up—Start each workout with 5 to 10 minutes of stretching and light exercise. A proper warm-up increases your body temperature, heart rate and circulation in preparation for exercise.

Training Zone Exercise—After warming up, increase the intensity of your exercise until your pulse is in your training zone for 20 to 60 minutes. (During the first few weeks of your exercise program, do not keep your pulse in your training zone for longer than 20 minutes.) Breathe regularly and deeply as you exercise—never hold your breath.

A Cool-down—Finish each workout with 5 to 10 minutes of stretching to cool down. This will increase the flexibility of your muscles and will help prevent post-exercise problems.

EXERCISE FREQUENCY

To maintain or improve your condition, complete three workouts each week, with at least one day of rest between workouts. After a few months, you may complete up to five workouts each week if desired.

The key to success is to make exercise a regular and enjoyable part of your everyday life.

PART LIST—Model No. PFTL99600

R0202A

To locate the parts listed below, refer to the EXPLODED DRAWING attached in the center of this manual.

Key No.	Qty.	Description
1	2	Foot Rail Insert
2	2	Foot Rail
3	2	Foot Rail Cap Screw
4	1	Left Foot Rail Cap
5	2	Frame Pivot Bolt
6	2	Frame Pivot Spacer
7	1	Magnet
8	1	Front Roller/Pulley
9	8	Frame Pivot Nut
10	1	Reed Switch/Sensor Wire
11*	1	Latch Assembly
12	1	Reed Switch Clip
13	1	Lift Frame
14	1	Star Washer
15*	1	Motor Assembly
16	1	Motor
17	1	Pulley/Flywheel/Fan
18	1	Motor Belt
19	1	Motor Pivot Nut
20	1	Motor Tension Nut
21	1	Motor Tension Bolt
22	1	Motor Pivot Bolt
23	1	Hood
24	2	Incline Motor Bolt
25	4	Plastic Stand-off
26	1	Power Board
27	5	Screw
28**	1	Optional iFIT.com CD
29	1	Controller
30	1	Electronics Plate
31	1	Motor/Controller Wire
32	1	Front Roller Adj. Bolt
33	4	1 1/4” Screw
34	4	Roller Washer
35	1	Front Roller Nut
36	1	Incline Motor
37	1	Incline Motor Stop
38	1	Belly Pan
39	10	Belly Pan Screw (Long)
40	2	Static Decal
41	1	Circuit Breaker
42	1	Power Cord
43	1	On/Off Switch
44	1	Left Endcap Insert
45	4	Belt Guide Screw
46	1	Belt Guide
47	2	Front Isolator
48	2	Adjustable Cushion
49	16	Fastener
50	1	Belly Pan
51	1	Right Foot Rail Cap
52	1	Walking Platform
53	4	Platform Screw
54	2	Adjustable Cushion Screw
55	1	Video Wire Nut
56	5	Ground Screw/ Controller Screw
57	1	Ground Wire
58	1	Rear Endcap
59	2	Rear Roller Adj. Bolt
60	1	Warning Decal
61	1	Allen Wrench
62	1	Rear Roller
63**	1	Optional Chest Pulse Strap
64**	1	Optional Chest Pulse
65	1	Left Foam Grip
66	2	Handrail Extension
67	8	1/2” Screw
68	1	Lock Knob
69	1	Upright
70	1	Lock Knob Sleeve
71	1	Spring
72	2	Lock Pin Collar
73	1	Pin Clip
74	1	Lock Pin
75	1	Right Foam Grip
76	1	Pulse Bar
77	2	Pulse Bar Washer
78	2	Pulse Bar Bolt
79	2	Upright Endcap
80	4	Belly Pan Screw
81	1	Console Base
82	1	Console
83	10	Console Screw
84	1	Key/Clip
85	1	IFIT.com Wire
86	1	Jack
87	14	Console Back Screw
88	1	Console Back
89	1	Releaseable Tie
90	1	Cable Tie Screw
91	1	Cable Tie Clamp
92	4	8” Cable Tie
93	2	Lift Pivot Bolt
94	2	Wheel Bolt
95	2	Wheel
96	1	Right Endcap Insert
97	1	Grommet
98	1	Upright Wire Harness
99	4	Base Pad
100	8	3/4” Screw
101	1	Motor Washer
102	2	Extension Leg
103	2	Extension Cap
104	2	Incline Warning Decal
105	1	Shock
106*	2	Extension Leg Assembly
107	1	Chest Pulse Wire
108	1	Book Holder
109	1	Power Cord Grommet
110	1	Frame
111	2	Catch Screw
112	1	Catch
113	1	Audio Wire
114	1	Walking Belt
115	1	30” Wire Harness
116	1	20” Wire Harness
117	2	Hand Weight
118	2	Endcap Spacer
119	2	Thick Base Pad
120	1	Not Used
121**	1	Optional iFIT.com Videocassette
122	2	Long Hood Screw
123	2	Cushion Bolt
124	2	Cushion Spacer
125	2	Rear Isolator
126	2	Ball Detent
#	1	12” White Wire, M/F
#	1	8” White Wire, 2F
#	1	14” Blue Wire, 2F
#	1	4” Blue Wire, 2F
#	1	4” Black Wire, 2F
#	1	12” Green Wire, 2/Ring
#	1	8” Green Wire, F/Ring
#	1	User's Manual

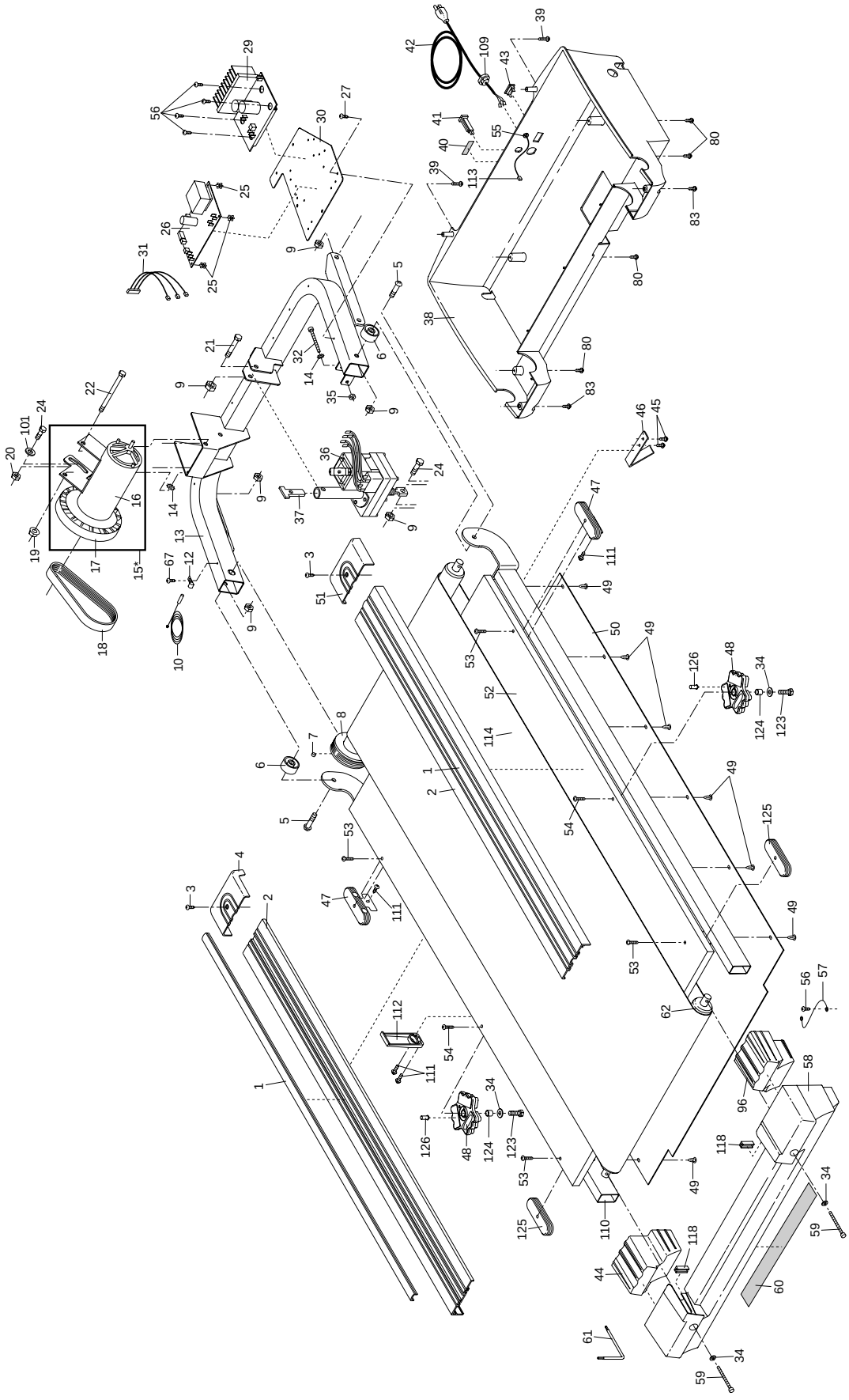
* Includes all parts shown in box

**For information about the optional chest pulse sensor and iFIT.com products, see page 18

These parts are not illustrated

EXPLODED DRAWING—Model No. PFTL99600

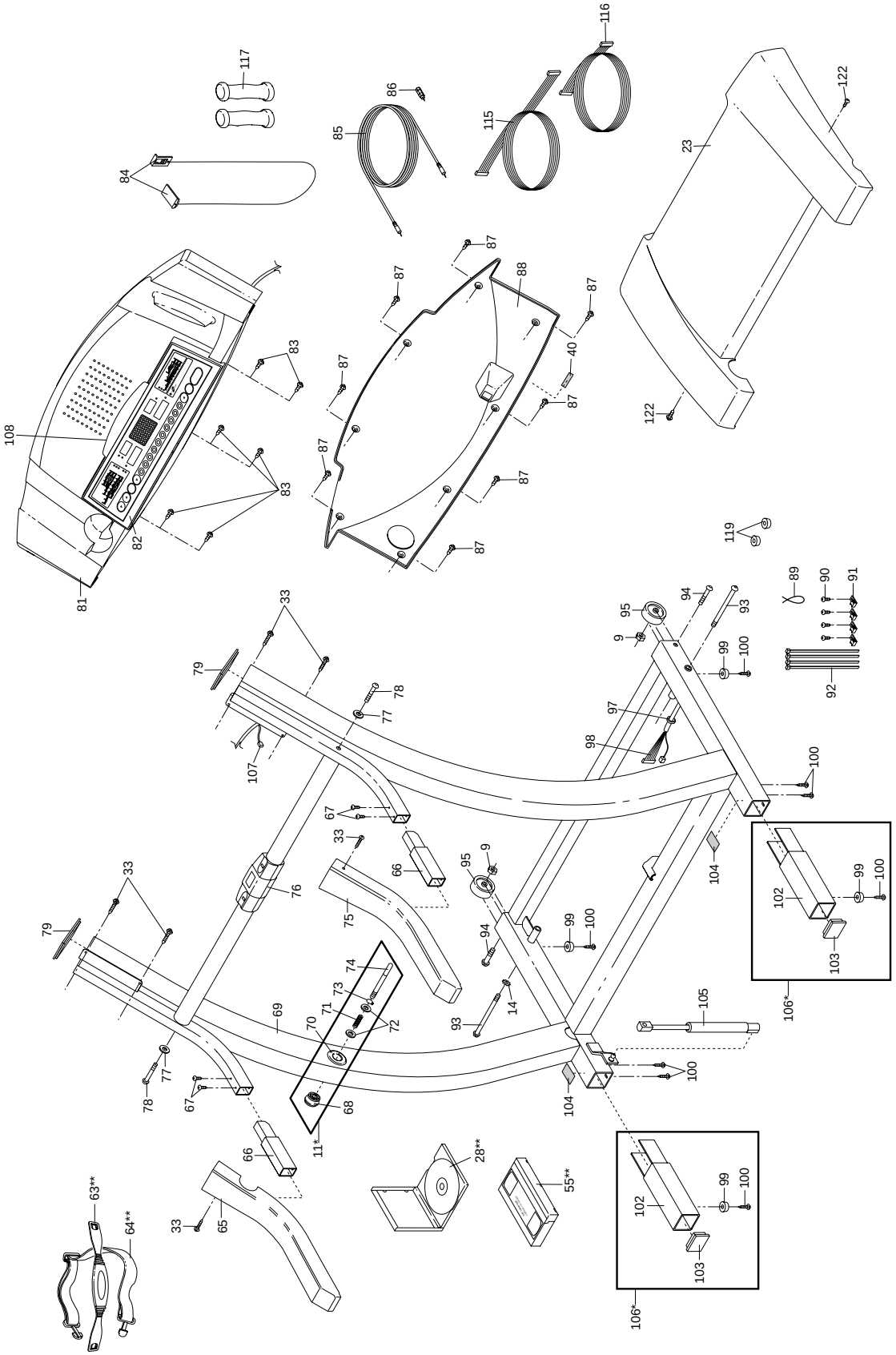
R0202A



To identify the parts shown on this exploded drawing, refer to the PART LIST on page 23 of the USER'S MANUAL.

EXPLODED DRAWING—Model No. PFTL99600

R0202A



ORDERING REPLACEMENT PARTS

To order replacement parts, call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). When ordering parts, please be prepared to give the following information:

- The MODEL NUMBER OF THE PRODUCT (PFTL99600)
- The NAME OF THE PRODUCT (PROFORM® 995 SEL treadmill)
- The SERIAL NUMBER OF THE PRODUCT (see the front cover of this manual)
- The KEY NUMBER AND DESCRIPTION OF THE PART(S) (see the PART LIST on page 23 and the EXPLODED DRAWING attached in the center of this manual).

If possible, place the treadmill near your telephone for easy reference when calling.

LIMITED WARRANTY

ICON Health & Fitness, Inc. (ICON), warrants this product to be free from defects in workmanship and material, under normal use and service conditions, for a period of ninety (90) days from the date of purchase. This warranty extends only to the original purchaser. ICON's obligation under this warranty is limited to replacing or repairing, at ICON's option, the product at one of its authorized service centers. All products for which warranty claim is made must be received by ICON at one of its authorized service centers with all freight and other transportation charges prepaid, accompanied by sufficient proof of purchase. All returns must be pre-authorized by ICON. This warranty does not extend to any product or damage to a product caused by or attributable to freight damage, abuse, misuse, improper or abnormal usage or repairs not provided by an ICON authorized service center, to products used for commercial or rental purposes, or to products used as store display models. No other warranty beyond that specifically set forth above is authorized by ICON.

ICON is not responsible or liable for indirect, special or consequential damages arising out of or in connection with the use or performance of the product or damages with respect to any economic loss, loss of property, loss of revenues or profits, loss of enjoyment or use, costs of removal, installation or other consequential damages of whatsoever nature. Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above limitation may not apply to you.

The warranty extended hereunder is in lieu of any and all other warranties and any implied warranties of merchantability or fitness for a particular purpose is limited in its scope and duration to the terms set forth herein. Some states do not allow limitations on how long an implied warranty lasts. Accordingly, the above limitation may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

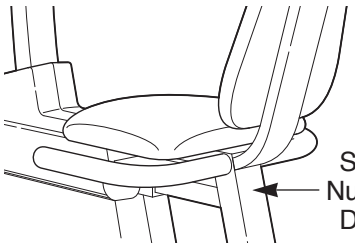
ICON HEALTH & FITNESS, INC., 1500 S. 1000 W., LOGAN, UT 84321-9813

Part No. 173916 R0202A

PRO-FORM®

USER'S MANUAL

Model No. PFEX33790
Serial No. _____



QUESTIONS?

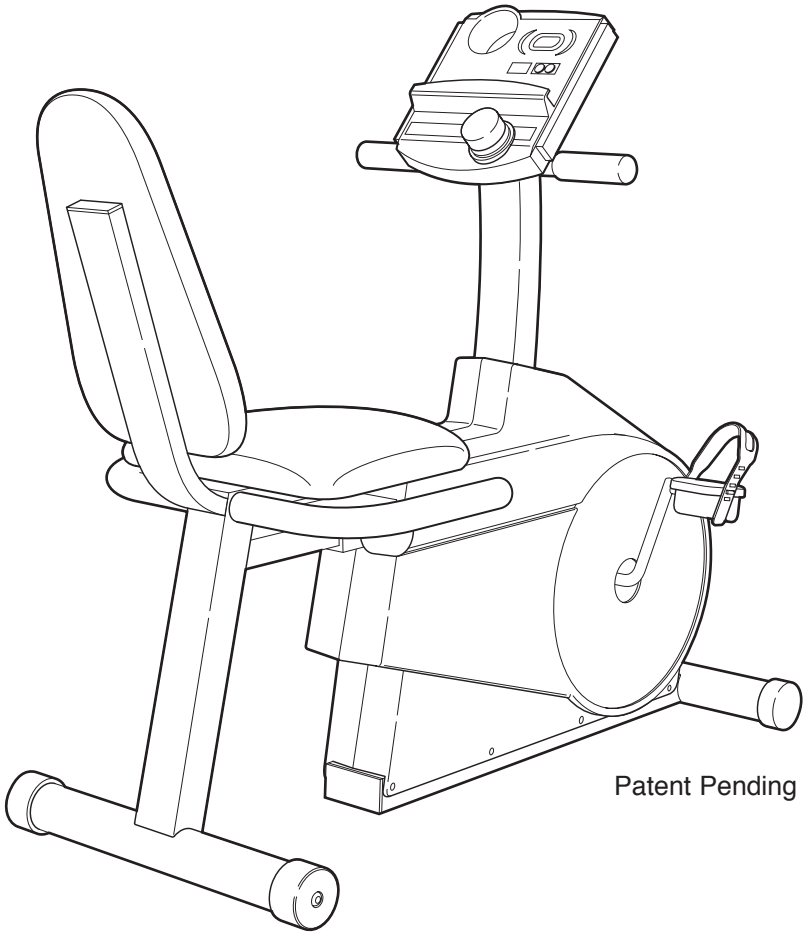
As a manufacturer, we are committed to providing complete customer satisfaction. If you have questions, or if there are missing parts, we will guarantee complete satisfaction through direct assistance from our factory.

TO AVOID UNNECESSARY DELAYS, PLEASE CALL DIRECT TO OUR TOLL-FREE CUSTOMER HOT LINE. The trained technicians on our customer hot line will provide immediate assistance, free of charge to you.

CUSTOMER HOT LINE:
1-800-999-3756
Mon.–Fri., 6 a.m.–6 p.m. MST

CAUTION

Read all precautions and instructions in this manual before using this equipment. Keep this manual for future reference.



Patent Pending

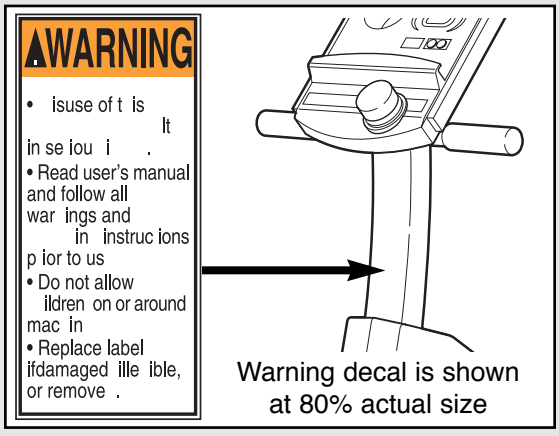
Visit our website at
www.proform.com
new products, prizes, fitness tips, and much more!

TABLE OF CONTENTS

IMPORTANT PRECAUTIONS

WARNING: To reduce the risk of serious injury, read the following important precautions before using the PROFORM® 965R.

1. **Read all instructions in this manual before using the 965R.**
2. **It is the responsibility of the owner to ensure that all users of the 965R are adequately informed of all precautions. Use the 965R only as described in this manual.**
3. **Use the 965R indoors on a level surface. Keep the 965R away from moisture and dust. Place a mat under the 965R to protect the floor or carpet.**
4. **Inspect and tighten all parts regularly. Replace any worn parts immediately.**
5. **Keep children under the age of 12 and pets away from the 965R at all times.**
6. **The 965R should not be used by persons weighing more than 250 pounds.**
7. **Wear appropriate clothing when exercising; do not wear loose clothing that could become caught on the 965R. Always wear athletic shoes when using the 965R.**
8. **Always keep your back straight when using the 965R. Do not arch your back.**
9. **If you feel pain or dizziness at any time while exercising, stop immediately and begin cooling down.**
10. **The 965R is intended for in-home use only. Do not use the 965R in a commercial, rental, or institutional setting.**
11. **CAUTION DECAL PLACEMENT: The decal shown below has been placed on the 965R. If the decal is missing, or if it is not legible, please call our Customer Service Department toll-free at 1-800-999-3756 to order a free replacement decal. Apply the decal in the location shown.**



Warning decal is shown at 80% actual size

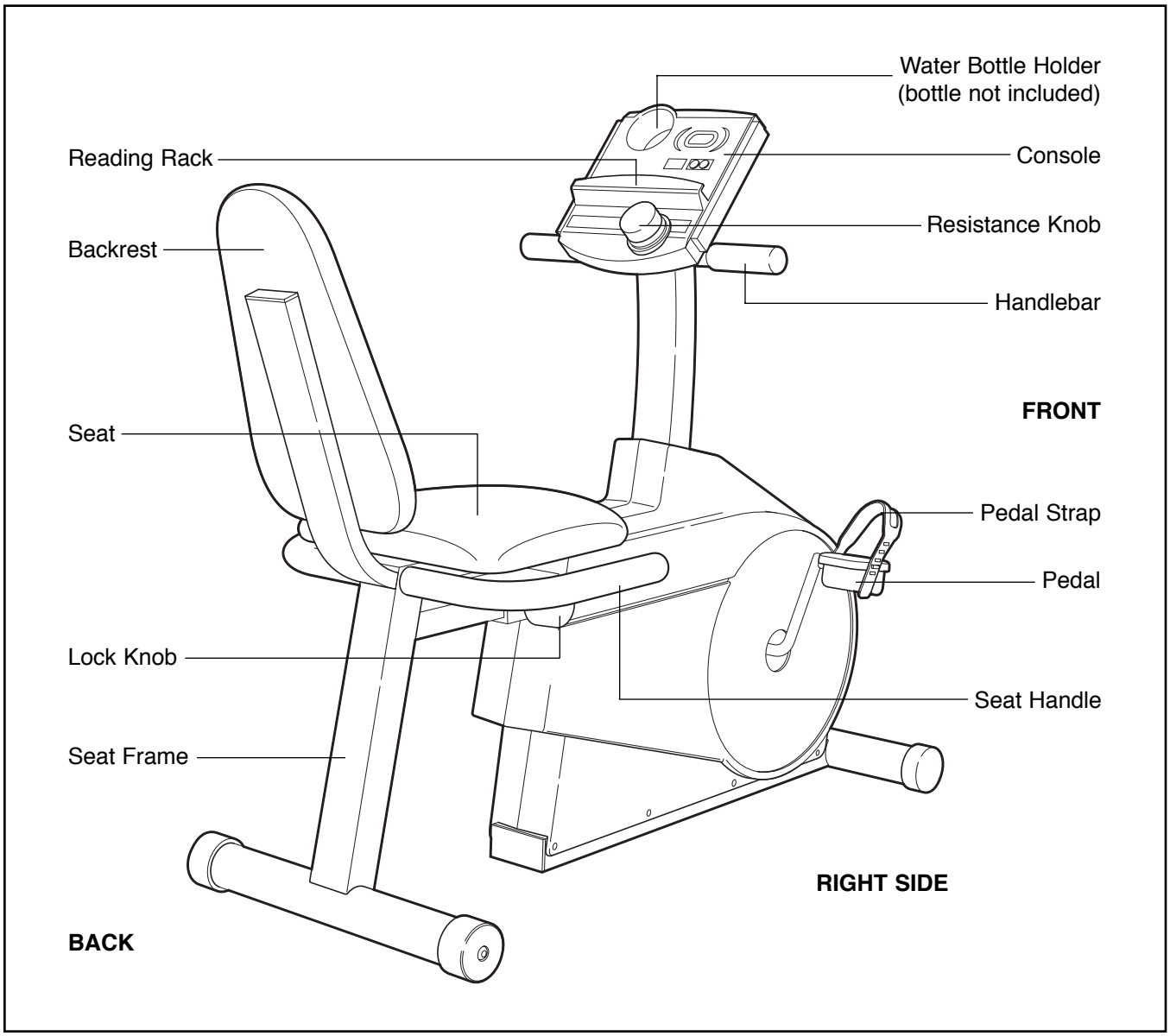
WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for persons over the age of 35 or persons with pre-existing health problems. Read all instructions before using. ICON assumes no responsibility for personal injury or property damage sustained by or through the use of this product.

BEFORE YOU BEGIN

Thank you for selecting the innovative PROFORM® 965R. The PROFORM 965R offers a unique form of low-impact exercise that offers greater cardiovascular benefits and increased muscle toning. The 965R features adjustable resistance to let you tailor your exercise to the level that's perfect for you. And when you're not exercising, the 965R can be folded for compact storage.

For your benefit, read this manual carefully before you use the PROFORM 965R. If you have additional questions, please call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). To help us assist you, please mention the product model number and serial number when calling. The model number is PFEX33790. The serial number can be found on a decal attached to the 965R (see the front cover of this manual for the location of the decal).

Before reading further, please look at the drawing below and familiarize yourself with the parts that are labeled.



ASSEMBLY

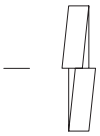
Place all parts of the PROFORM® 965R in a cleared area and remove the packing materials. **Do not dispose of the packing materials until assembly is completed.**

Assembly requires the included tools and your own adjustable wrench  **.**

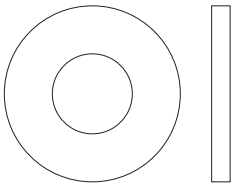
PART CHART

Use the part drawings below to identify the small parts used in assembly The number in parenthesis below each drawing refers to the key number of the part. The second number refers to the quantity used in assembly. **Note: Some small parts may have been pre-attached for shipping. If a part is not in the parts bag, check to see if it has been pre-assembled.**

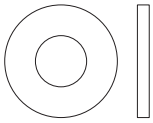
M6 Split Washer (67)–4



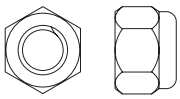
M10 Split Washer (26)–3



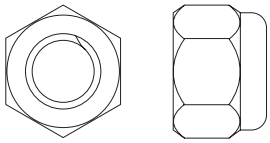
M10 Flat Washer (40)–1



M6 Flat Washer (34)–7

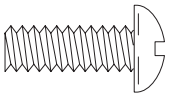


M6 Nylon Locknut (66)–4

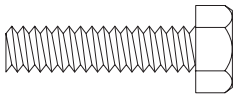


M10 Nylon Locknut (71)–4

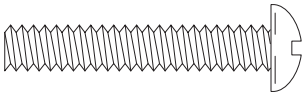
#8 x 5/8” Screw (22)–4



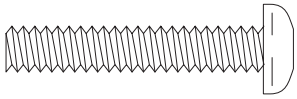
M6 x 16mm Phillips Screw (24)–4



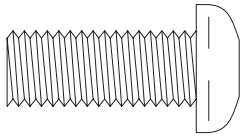
M6 x 25mm Hex Screw (14)–4



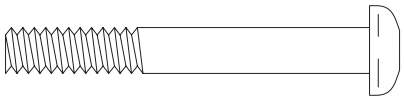
M6 x 35mm Phillips Screw (49)–3



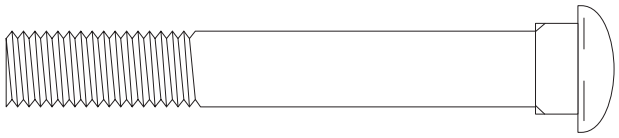
M6 x 34mm Button Bolt (18)–4



M10 x 25mm Button Screw (25)–3



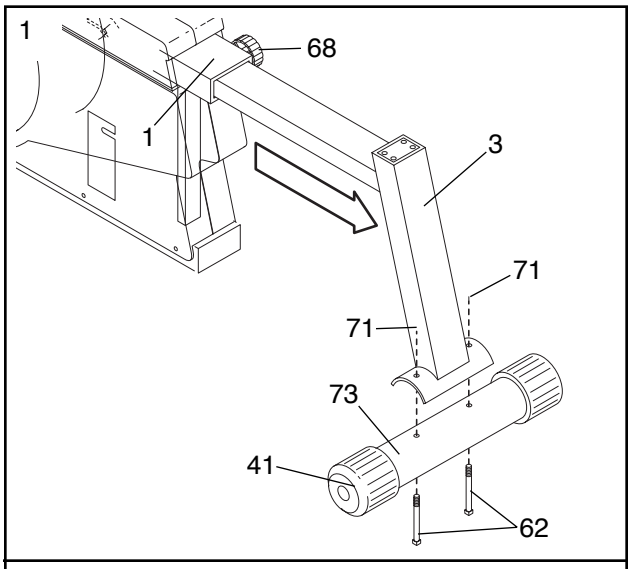
M6 x 48mm Button Bolt (70)–4



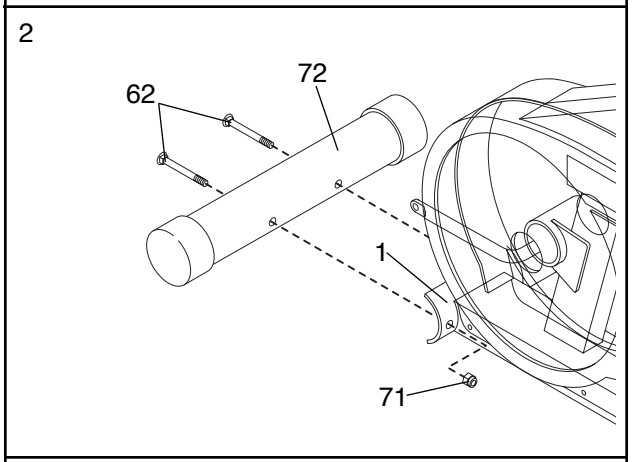
M10 x 70mm Carriage Bolt (62)–4

1. Loosen the Lock Knob (68) on the right side of the Frame (1). Slide the Seat Frame (3) out until it stops. Tighten the Lock Knob.

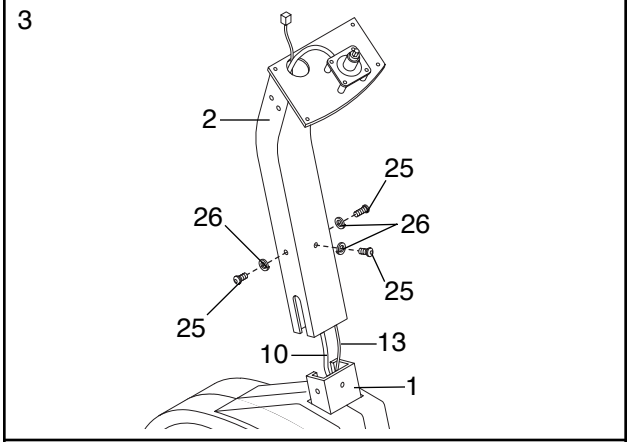
   Identify the Rear Stabilizer (73), which has Wheels (41) on the ends. Attach the Rear Stabilizer to the Seat Frame (3) with two M10 x 70mm Carriage Bolts (62) and two M10 Nylon Locknuts (71).



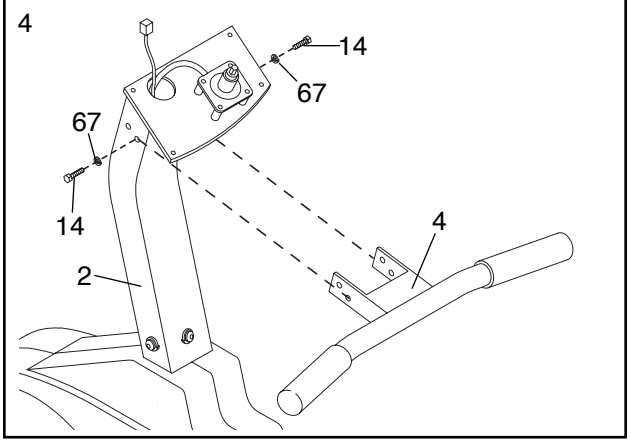
2. Attach the Front Stabilizer (72) to the Frame (1) with two M10 x 70mm Carriage Bolts (62) and two M10 Nylon Locknuts (71).



3. Attach the Upright (2) to the Frame (1) with three M10 x 25mm Button Screws (25) and three M10 Split Washers (26). **Be careful not to pinch the Reed Switch Wire (13) or the Resistance Cable (10).**



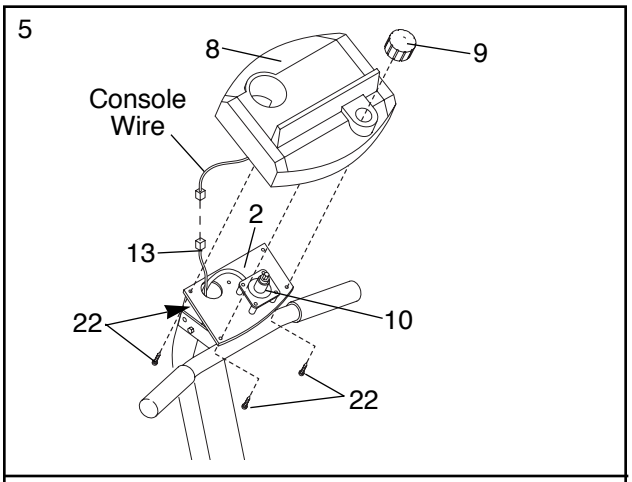
4. Attach the Handlebar (4) to the Upright (2) with two M6 x 25mm Hex Screws (14) and two M6 Split Washers (67), **but do not tighten the Screws yet. Make sure that the Screws are threaded into the indicated holes. Note: Two additional Screws will be attached in step 6.**



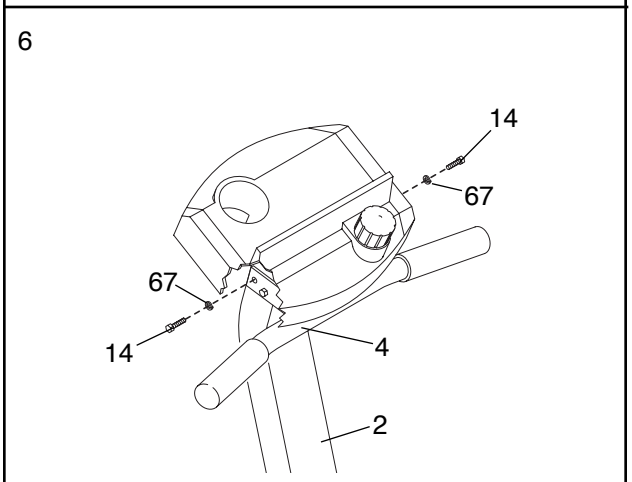
5. Connect the Reed Switch Wire (13) to the wire on the Console (8).

   Next, attach the Console (8) to the Upright (2) with four #8 x 5/8" Screws (22).

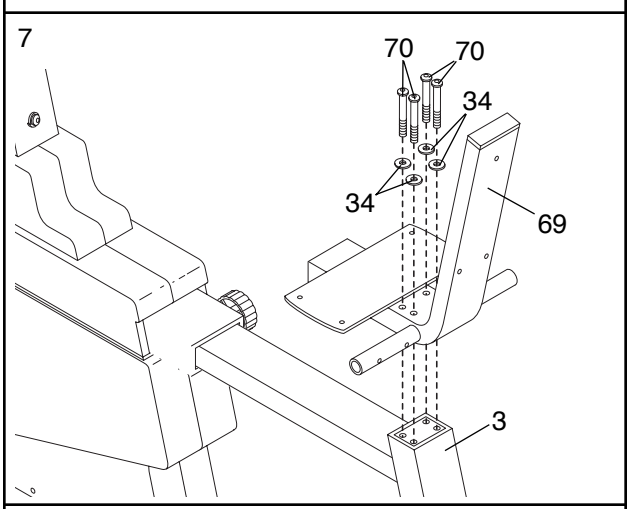
   Press the Resistance Knob (9) onto the Resistance Control (10). Be sure that the mark on the Knob is correctly aligned.



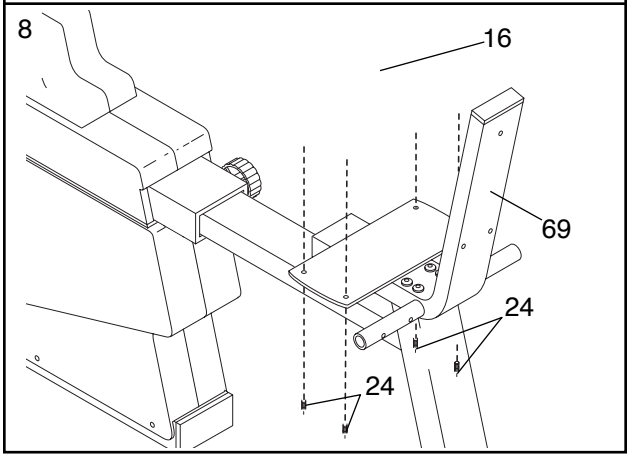
6. Finish attaching the Handlebar (4) to the Upright (2) with two additional M6 x 25mm Hex Screws (14) and M6 Split Washers (67). **Tighten all four Hex Head Screws.**



7. Attach the Seat Bracket (69) to the Seat Frame (3) with four M6 x 48mm Button Bolts (70) and four M6 Flat Washers (34).

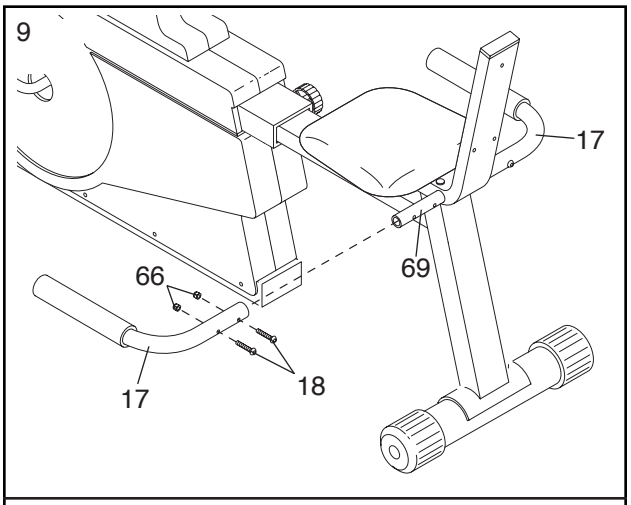


8. Attach the Seat (16) to the Seat Bracket (69) with four M6 x 16mm Phillips Screws (24).

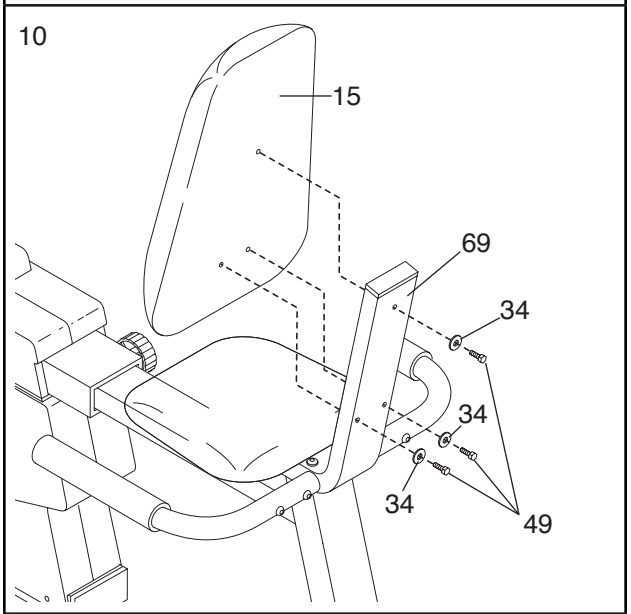


9. Attach a Seat Handle (17) to the Seat Bracket (69) with two M6 x 34mm Button Bolts (18) and two M6 Nylon Locknuts (66).

   Attach the other Seat Handle (17) to the Seat Bracket (69) in the same manner.



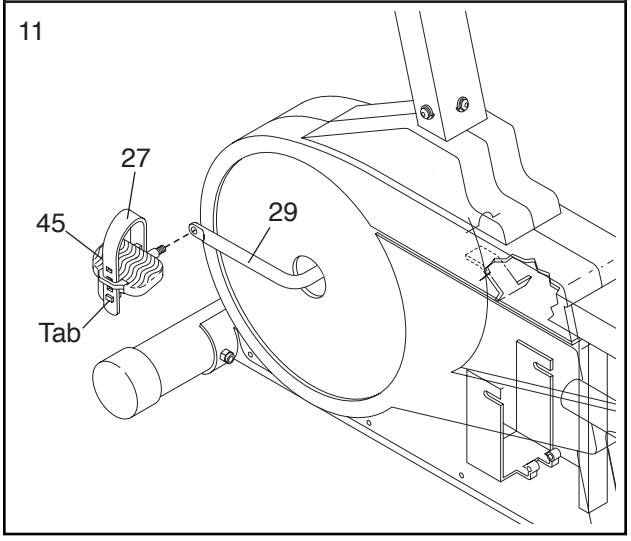
10. Attach the Backrest (15) to the Seat Bracket (69) with three M6 x 35mm Phillips Screws (49), and three M6 Flat Washers (34).



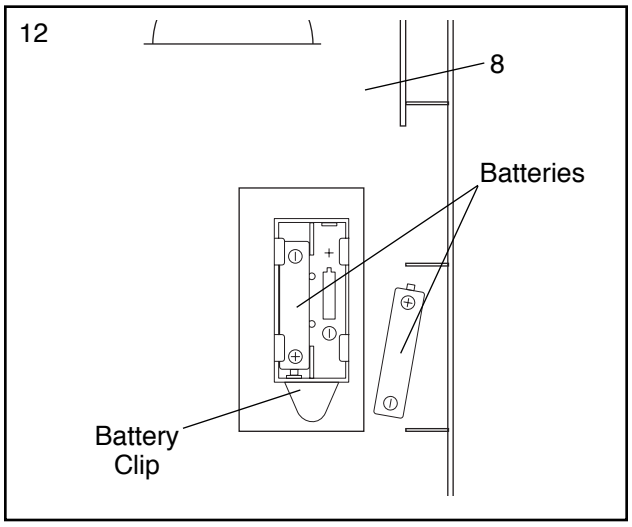
11. Identify the Left Pedal (45); there is an "L" on the Left Pedal for identification. Using an adjustable wrench, tighten the Left Pedal counterclockwise into the left arm of the Crank (29). Tighten the Right Pedal (not shown) clockwise into the right arm of the Crank. **Tighten both Pedals as fully as possible.**

    Important: After using the exercise cycle for one week, retighten the pedals. For best performance, the pedals must be kept properly tightened.

    Next, adjust the Pedal Strap (27) on the Left Pedal (45) to the desired position. Press the Pedal Strap onto the adjustment tab on the Left Pedal. Adjust the Pedal Strap on the Right Pedal (not shown) in the same way.



12. The Console (8) requires either two or three “AA” batteries (not included); alkaline batteries are recommended. Open the battery cover (not shown) on the back of the Console. Press the batteries into the battery clip. **Make sure that the negative (–) ends of the batteries are touching the springs.** Close the battery cover. Note: If the battery clip holds three batteries, you must insert three batteries.

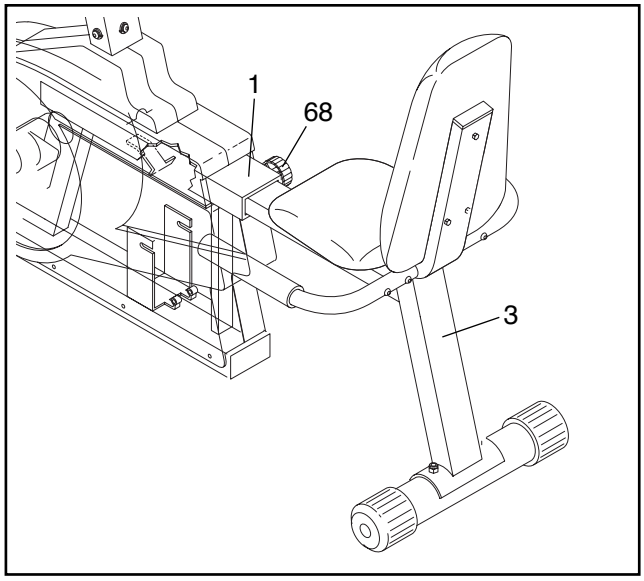


13. **Make sure that all parts are properly tightened before you use the PROFORM® 965R.** Note: Some hardware may be left over after assembly is completed.

HOW TO USE THE PROFORM® 965R

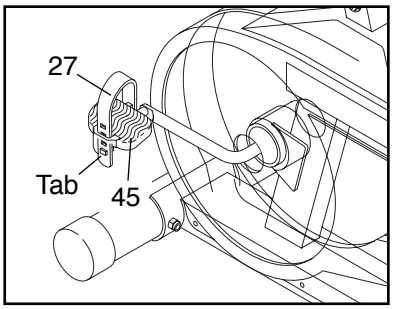
HOW TO ADJUST THE SEAT FRAME POSITION

The Seat Frame (3) can be adjusted to the position that is the most comfortable for you. To adjust the Seat Frame, first loosen the Lock Knob (68) on the right side of the Frame (1). Slide the Seat Frame forward or backward to the desired position. Tighten the Lock Knob.



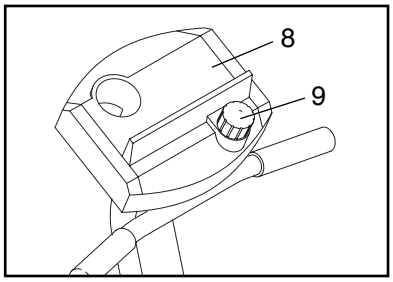
HOW TO ADJUST THE PEDAL STRAPS

To adjust each Pedal Strap (27), first pull the end of the Pedal Strap off the adjustment tab on the Pedal (45). Align a different hole in the Pedal Strap with the tab. Press the Pedal Strap onto the tab.



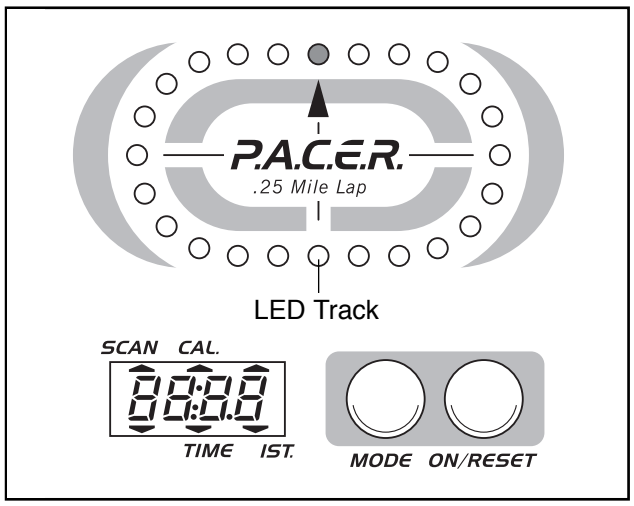
HOW TO ADJUST THE PEDALING RESISTANCE

The pedaling resistance can be adjusted with the Resistance Knob (9) located on the Console (8). To increase the resistance, turn the Resistance Knob clockwise; to decrease the resistance, turn the Resistance Knob counterclockwise.



DESCRIPTION OF THE CONSOLE

The console is designed to help you get the most from your workouts. As you exercise, you can watch your progress around the LED track, while the display provides continuous exercise feedback. The modes of the display are described below.



Speed—This mode displays your pedaling speed, in miles per hour.

Time—This mode displays the elapsed time. Note: If you stop exercising, the time mode will pause.

Distance—This mode displays the total distance you have pedaled, in miles.

Laps—This mode displays the number of 1/4-mile laps you have completed around the LED track.

Calorie—This mode displays the approximate number of Calories you have burned.

Scan—This mode displays the speed, time, distance, laps and calorie modes, for 5 seconds each, in a repeating cycle.

BATTERY INSTALLATION

Before the console can be operated, two “AA” batteries must be installed (see assembly step 12 on page 8).

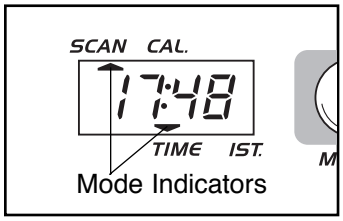
HOW TO OPERATE THE CONSOLE

If there is a thin sheet of clear plastic on the face of the console, remove it.

1. To turn on the power, press the on/reset button or simply begin pedaling. When the power is turned on, one LED indicator will light in the LED track, and the entire display will appear for two seconds. The console will then be ready for operation.

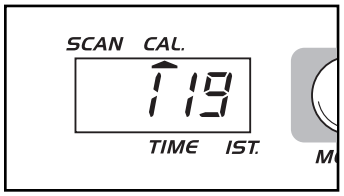
2. Select one of the modes:

Scan mode— When the power is turned on, the scan mode will automatically be selected. One mode indicator will show that the scan mode is selected, and a flashing mode indicator will show which mode is currently displayed. Note: If a different mode is selected, you can select the scan mode again by repeatedly pressing the mode button.



Mode Indicators

Speed, time, distance, laps or calorie mode— To select one of these modes for continuous display, press the mode button repeatedly. The mode indicators will show which mode is selected. (Make sure that the scan mode is not selected.)



3. The LED track represents a distance of 1/4 mile. As you exercise, the indicators around the track will light one at a time until you have completed 1/4 mile. A new lap will then begin.

4. To reset the display, press the on/reset button.

5. To turn off the power, simply wait for about four minutes. **The console has an "auto-off" feature. If the pedals are not moved and the console buttons are not pressed for four minutes, the power will turn off automatically in order to conserve the batteries.**

MAINTENANCE AND STORAGE

Inspect and tighten all parts of the PROFORM® 965R regularly. The 965R can be cleaned with a soft, damp cloth. To prevent damage to the console, keep liquids away from the console and keep the console out of direct sunlight.

TIGHTENING THE PEDALS

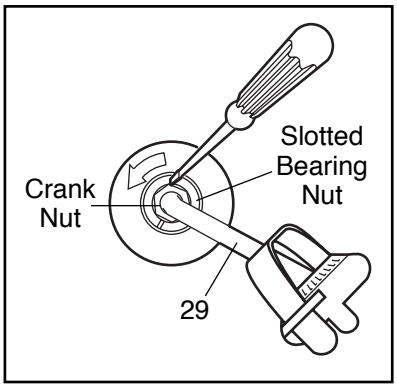
For best performance, the pedals must be kept properly tightened. Regularly tighten both pedals.

BATTERY REPLACEMENT

If the console does not function properly, the batteries should be replaced. To replace the batteries, refer to assembly step 12 on page 8.

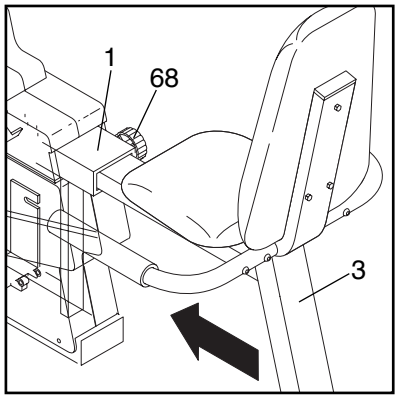
CRANK ADJUSTMENT

If the arms of the Crank (29) become loose, they should be tightened in order to prevent excessive wear. Loosen the crank nut on the left arm of the Crank. Place the end of a standard screwdriver in one of the slots in the slotted bearing nut. Lightly tap the screwdriver with a hammer to turn the slotted bearing nut counterclockwise until the arms are no longer loose. **Do not overtighten the slotted bearing nut.** When the slotted bearing nut is properly tightened, tighten the crank nut.



HOW TO STORE THE PROFORM® 965R

When the PROFORM® 965R is not in use, the Seat Frame (3) can be adjusted to the storage position. First, loosen the Lock Knob (68) on the right side of the Frame (1). Slide the Seat Frame (3) into the Frame as far as possible. Tighten the Lock Knob. Store the PROFORM® 965R indoors, away from moisture and dust.



CONDITIONING GUIDELINES

The following guidelines will help you to plan your exercise program. Remember that proper nutrition and adequate rest are essential for successful results.

WARNING: Before beginning this or any exercise program, consult your physician. This is especially important for individuals over the age of 35 or individuals with pre-existing health problems.

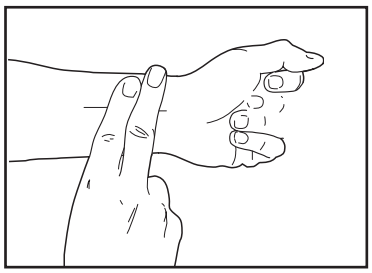
WHY EXERCISE?

Exercise has proven essential for good health and general well-being. Regular participation in a well-rounded exercise program results in a stronger and more efficient heart, improved respiratory function, increased stamina and endurance, better weight management and body fat control, increased ability to deal with stress, and greater self-esteem and confidence.

EXERCISE INTENSITY

To maximize the benefits of exercising, it is important to exercise with the proper intensity. The proper intensity level can be found by using your heart rate as a guide. For effective aerobic exercise, your heart rate should be maintained at a level between 70% and 85% of your maximum heart rate as you exercise. This is known as your training zone. You can find your training zone in the table below. Training zones are listed according to age and physical condition. During the first few months of your exercise program, keep your heart rate near the low end of your training zone as you exercise. After a few months of regular exercise, your heart rate can be increased gradually until it is near the middle of your training zone as you exercise.

AGE	TRAINING ZONE (BEATS/MIN.)	
	UNCONDITIONED	CONDITIONED
20	138–167	133–162
25	136–166	132–160
30	135–164	130–158
35	134–162	129–156
40	132–161	127–155
45	131–159	125–153
50	129–156	124–150
55	127–155	122–149
60	126–153	121–147
65	125–151	119–145
70	123–150	118–144
75	122–147	117–142
80	120–146	115–140
85	118–144	114–139



To measure your heart rate, place two fingers on your wrist as shown. Stop exercising and take a six-second heartbeat count. Multiply the result by ten to find your heart rate. (A six-second count is used because your heart rate drops quickly when you stop exercising.) If your heart rate is too high, decrease the intensity of your exercise. If your heart rate is too low, increase the intensity of your exercise.

WORKOUT GUIDELINES

A well-rounded workout includes the following three phases:

A warm-up phase, lasting 5 to 10 minutes. Begin with slow, controlled stretches, and progress to more rhythmic stretches. This will increase the body temperature, heart rate, and circulation in preparation for strenuous exercise.

A cardiovascular phase, including 20 to 30 minutes of exercising with your heart rate in your training zone.

A cool-down phase, consisting of 5 to 10 minutes of stretching. Thorough stretching offsets muscle contractions and other problems caused when you stop exercising suddenly. Stretching for increased flexibility is often most effective during this phase. This phase should leave you relaxed and comfortably tired.

To maintain or improve your condition, complete three workouts each week, with at least one day of rest between workouts. After a few months of regular exercise, you may complete up to five workouts each week, if desired. Find the best time of day for your workouts, and then stick with it.

Remember, the key to success is to make exercise a regular and enjoyable part of your everyday life.

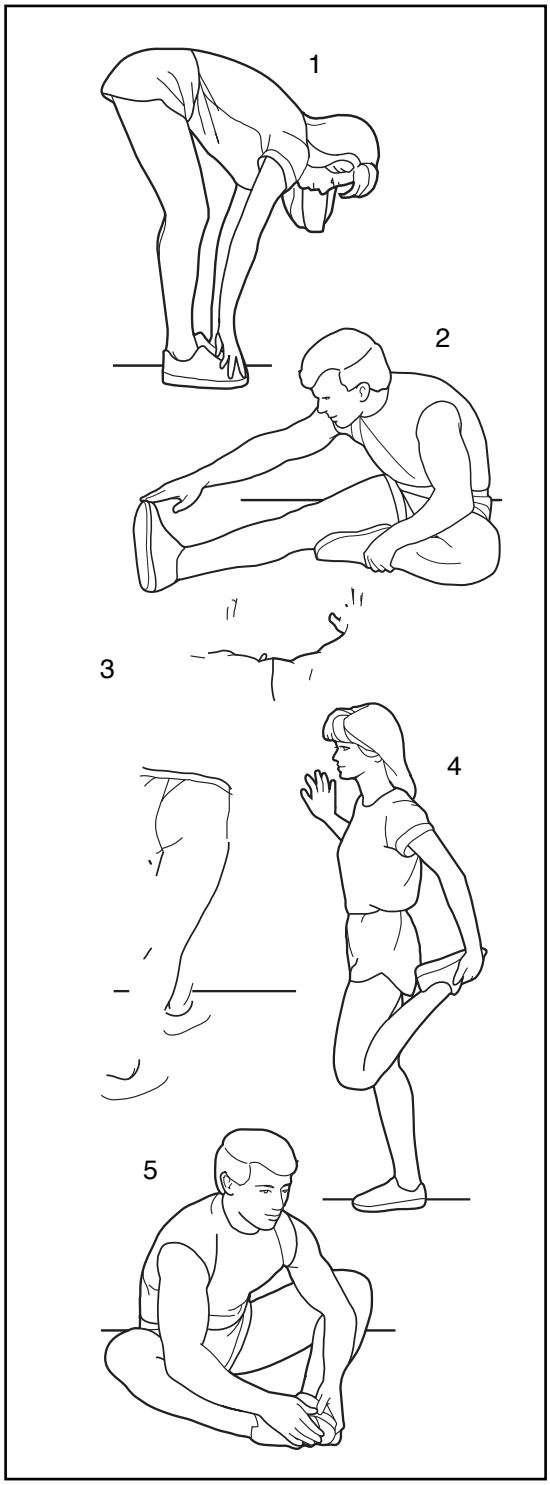
EXERCISE FREQUENCY

To maintain or improve your condition, plan three workouts each week, with at least one day of rest between workouts. After a few months of regular exercise, you may complete up to five workouts each week, if desired. **Caution: Be sure to progress at your own pace and avoid overdoing it. Incorrect or excessive training may result in injury to your health.**

Remember, the key to success is make exercise a regular and enjoyable part of your everyday life.

SUGGESTED STRETCHES

The correct form for several basic stretches is shown at the right. Move slowly as you stretch—never bounce.



1. Toe Touch Stretch

Stand with your knees bent slightly and slowly bend forward from your hips. Allow your back and shoulders to relax as you reach down toward your toes as far as possible. Hold for 15 counts, then relax. Repeat 3 times. Stretches: Hamstrings, back of knees and back.

2. Hamstring Stretch

Sit with one leg extended. Bring the sole of the opposite foot toward you and rest it against the inner thigh of your extended leg. Reach toward your toes as far as possible. Hold for 15 counts, then relax. Repeat 3 times for each leg. Stretches: Hamstrings, lower back and groin.

3. Calf/Achilles Stretch

With one leg in front of the other, reach forward and place your hands against a wall. Keep your back leg straight and your back foot flat on the floor. Bend your front leg, lean forward and move your hips toward the wall. Hold for 15 counts, then relax. Repeat 3 times for each leg. To cause further stretching of the achilles tendons, bend your back leg as well. Stretches: Calves, achilles tendons and ankles.

4. Quadriceps Stretch

With one hand against a wall for balance, reach back and grasp one foot with your other hand. Bring your heel as close to your buttocks as possible. Hold for 15 counts, then relax. Repeat 3 times for each leg. Stretches: Quadriceps and hip muscles.

5. Inner Thigh Stretch

Sit with the soles of your feet together and your knees outward. Pull your feet toward your groin area as far as possible. Hold for 15 counts, then relax. Repeat 3 times. Stretches: Quadriceps and hip muscles.

PART LIST—Model No. PFEX33790

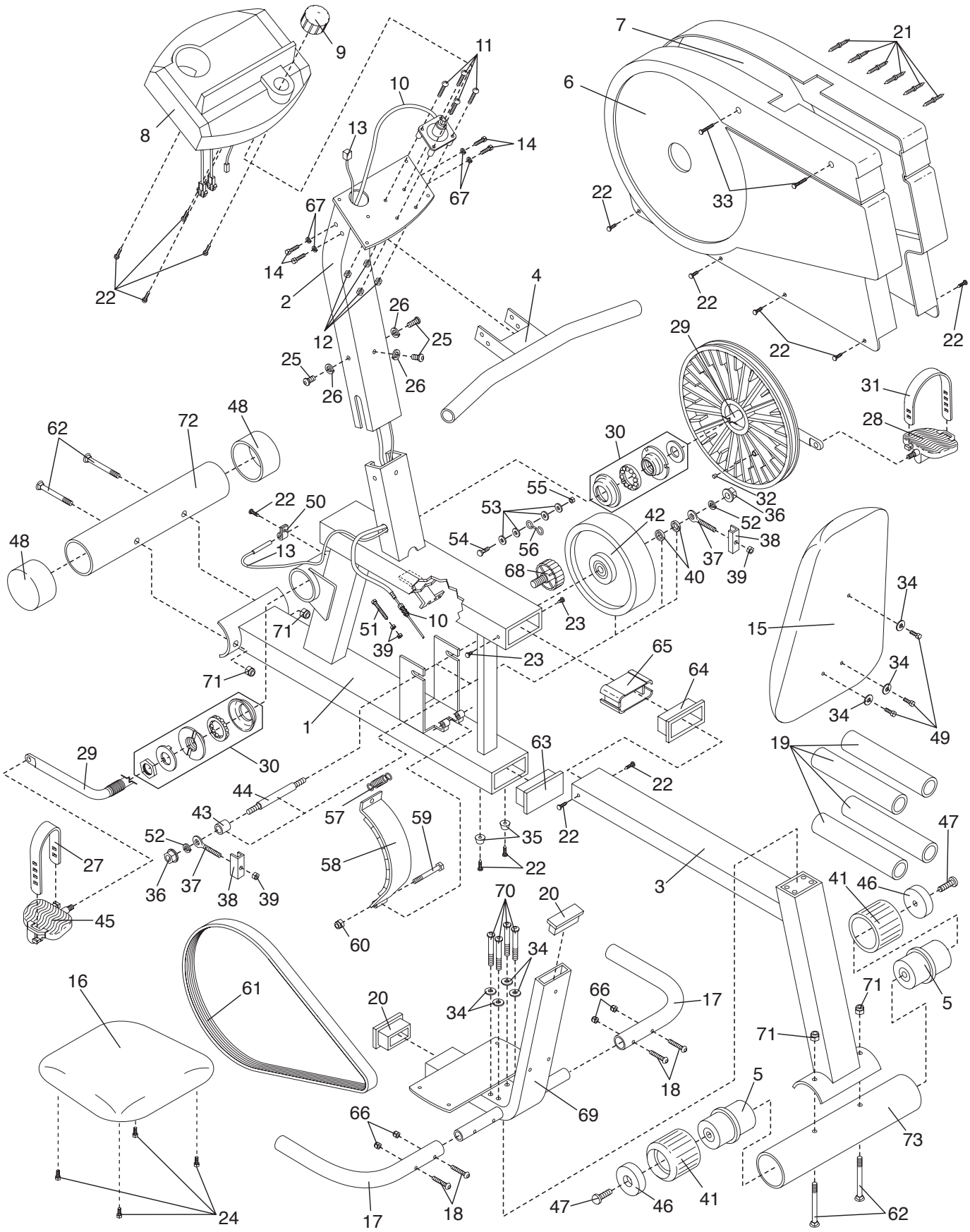
R0400A

Key No.	Qty.	Description
1	1	Frame
2	1	Upright
3	1	Seat Frame
4	1	Handlebar
5	2	Wheel Hub
6	1	Left Side Shield
7	1	Right Side Shield
8	1	Console
9	1	Resistance Knob
10	1	Resistance Cable/Control
11	4	M5 x 30mm Screw
12	4	M5 Nut
13	1	Reed Switch/Wire
14	4	M6 x 25mm Hex Screw
15	1	Backrest
16	1	Seat
17	2	Seat Handle
18	4	M6 x 34mm Button Bolt
19	4	Handle Grip
20	2	25mm x 75mm Endcap
21	6	Tree Fastener
22	19	#8 x 5/8” Screw
23	2	#8 x 3/8” Screw
24	4	M6 x 16mm Phillips Screw
25	3	M10 x 25mm Button Screw
26	3	M10 Split Washer
27	1	Left Pedal Strap
28	1	Right Pedal
29	1	Crank/Pulley
30	1	Bearing Assembly
31	1	Right Pedal Strap
32	1	Magnet
33	2	M4 x32mm Screw
34	7	M6 Flat Washer
35	2	Rubber Bumper
36	2	M8 Flanged Hex Nut
37	2	M6 Eyebolt
38	2	Adjustment Bracket
39	4	M6 Nut
40	1	M10 Washer
41	2	Wheel
42	1	Flywheel
43	1	10mm x 13mm Spacer
44	1	Flywheel Axle
45	1	Left Pedal
46	2	Wheel Spacer
47	2	M6 x 16mm Self-tapping Screw
48	2	Round Endcap
49	3	M6 x 35mm Phillips Screw
50	1	Cable Clamp
51	1	M6 x 56mm Bolt
52	2	M8 Split Washer
53	4	#8 Flat Washer
54	1	Clamp Bolt
55	1	Clamp Nut
56	1	Resistance Hook
57	1	Resistance Spring
58	1	Magnet Bracket
59	1	M8 x 65mm Hex Bolt
60	1	M8 Nylon Locknut
61	1	Drive Belt
62	4	M10 x 70mm Carriage Bolt
63	1	2” x 4” Endcap
64	1	Frame Bushing
65	1	Seat Frame Bushing
66	4	M6 Nylon Locknut
67	4	M6 Split Washer
68	1	Lock Knob
69	1	Seat Bracket
70	4	M6 x 48mm Button Bolt
71	4	M10 Nylon Locknut
72	1	Front Stabilizer
73	1	Rear Stabilizer
#	1	User’s Manual
#	1	4mm Allen Wrench
#	1	5.5mm Allen Wrench

Note: “#” indicates a non-illustrated part. Specifications are subject to change without notice. See the back cover of this manual for information about ordering replacement parts.

EXPLODED DRAWING—Model No. PFEX33790

R0400A



ORDERING REPLACEMENT PARTS

To order replacement parts, call our Customer Service Department toll-free at 1-800-999-3756, Monday through Friday, 6 a.m. until 6 p.m. Mountain Time (excluding holidays). To help us assist you, please be prepared to give the following information:

- The MODEL NUMBER of the product (PFEX33790)
- The NAME of the product (PROFORM® 965R)
- The SERIAL NUMBER of the product (see the front cover of this manual)
- The KEY NUMBER and DESCRIPTION of the part(s) (see the PART LIST on page 14 of this manual).

LIMITED WARRANTY

ICON Health & Fitness, Inc. (ICON), warrants this product to be free from defects in workmanship and material, under normal use and service conditions, for a period of ninety (90) days from the date of purchase. This warranty extends only to the original purchaser. ICON's obligation under this warranty is limited to replacing or repairing, at ICON's option, the product through one of its authorized service centers. All repairs for which warranty claims are made must be pre-authorized by ICON. This warranty does not extend to any product or damage to a product caused by or attributable to freight damage, abuse, misuse, improper or abnormal usage or repairs not provided by an ICON authorized service center, products used for commercial or rental purposes, or products used as store display models. No other warranty beyond that specifically set forth above is authorized by ICON.

ICON is not responsible or liable for indirect, special or consequential damages arising out of or in connection with the use or performance of the product or damages with respect to any economic loss, loss of property, loss of revenues or profits, loss of enjoyment or use, costs of removal, installation or other consequential damages of whatsoever nature. Some states do not allow the exclusion or limitation of incidental or consequential damages. Accordingly, the above limitation may not apply to you.

The warranty extended hereunder is in lieu of any and all other warranties and any implied warranties of merchantability or fitness for a particular purpose is limited in its scope and duration to the terms set forth herein. Some states do not allow limitations on how long an implied warranty lasts. Accordingly, the above limitation may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

ICON HEALTH & FITNESS, INC., 1500 S. 1000 W., LOGAN, UT 84321-9813

Part No. 157458 R0400A

Quality of Life and Resource Utilization

Quality-of-Life Assessments

An important goal of the HF-ACTION trial is to assess the effects of exercise on symptoms and quality of life in patients with heart failure. The HF-ACTION trial will use a variety of assessment tools and tests to evaluate quality-of-life outcomes. These tools and tests include:

- EuroQoL Questionnaire and Thermometer
- Pain Assessment
- Kansas City Cardiomyopathy Questionnaire (KCCQ)
- Beck Depression Inventory (BDI)
- Perceived Social Support Scale (PSSS)
- Physical Activity Questionnaire (PAQ)
- Patient Expectations Evaluation

All forms should be completed by the patient **independently**. However, if the patient is unable to complete the forms because they are unable to read or write (e.g., a broken arm), the questions and responses can be read to the patient.

All forms should **always** be completed prior to the patient's CPX exercise test. At visits when the 6-minute walk is administered, the QoL forms can be administered either before or after completion of the 6-minute walk however, the order of administration should be the same for the patient throughout the trial.

Refer to the *Administration Instructions for Patient Self-Report Forms* (located in the Study Coordinator Tools Binder) as needed throughout the trial for quick reference.

EuroQoL

Thermometer Score – Visual Analog Scale

This form should be completed by the patient at the following visits:

- Randomization

- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 24-month visit
- Year 3
- Final Visit

This form is located in the Study Coordinator Tools Binder. Photocopy this form and ask the patient to draw a line from the box to a point on the scale (the scale resembles a thermometer). Record the patient's score (from 0 to 100) in the CRF. The original form should be maintained with the patient's source documents.

EuroQoL Questionnaire

This questionnaire should be completed by the patient at the following visits:

- Randomization
- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 24-month visit
- Year 3
- Final Visit

The EuroQoL questionnaire is included in the CRF. Patients can either complete these CRF pages directly, or the study coordinator can photocopy the pages, have the patient complete the photocopied pages, and then transcribe the information onto the CRF.

Both the EuroQoL thermometer and questionnaire should be administered **at the beginning of each study visit**.

Pain Assessment

This assessment should be completed by the patient at the following visits:

- Randomization

- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 24-month visit
- Year 3
- Final Visit

The pain assessment is included in the CRF. Patients can either complete this CRF page directly, or the study coordinator can photocopy the page, have the patient complete the photocopied page, and then transcribe the information onto the CRF.

The Kansas City Cardiomyopathy Questionnaire (KCCQ)

The KCCQ should be completed by the patient at the following visits:

- Randomization
- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 24-month visit
- Year 3
- Final Visit

The KCCQ questionnaire is included in the CRF. Patients can either complete these CRF pages directly, or the study coordinator can photocopy the pages, have the patient complete the photocopied pages, and then transcribe the information onto the CRF.

The Beck Depression Inventory (BDI)

This questionnaire should be completed by the patient at the following visits:

- Randomization
- 3-month visit
- 6-month visit
- 9-month visit

- 12-month visit
- 24-month visit
- Year 3
- Final Visit

The BDI questionnaire is included in the CRF. Patients can either complete these CRF pages directly, or the study coordinator can photocopy the pages, have the patient complete the photocopied pages, and then transcribe the information onto the CRF.

Perceived Social Support Scale (PSSS)

This questionnaire should be completed by the patient at the following visits:

- Randomization
- Final Visit

The PSSS questionnaire is included in the CRF. Patients can either complete this CRF page directly, or the study coordinator can photocopy the page, have the patient complete the photocopied page, and then transcribe the information onto the CRF.

Physical Activity Questionnaire (PAQ)

This questionnaire should be completed by the patient at the following visits:

- Randomization
- 6-month visit
- 12-month visit
- 24-month visit
- Year 3
- Final Visit

The PAQ is included in the CRF. Patients can either complete these CRF pages directly, or the study coordinator can photocopy the pages, have the patient complete the photocopied pages, and then transcribe the information onto the CRF.

Patient Expectations Evaluation

The purpose of this question is to determine a patient's expectation of the effect that exercise will have on their health. This questionnaire should be completed by the patient at baseline **after the patient's CPX exercise test**. The Patient Expectations Evaluation is located in the CPX Binder. Photocopy this form and have the patient read the question and circle the number that best describes their expectation of exercise. Record the patient's score (from -3 to +3) in the CRF. The original form should be maintained with the patient's source documents.

Resource Utilization

Resource utilization and patients' hospital bills will be collected in HF-ACTION to determine the cost difference between the different treatment groups. Resource utilization will be captured via the Resource Utilization Rapid Report Form.

Hospitalizations, Outpatient Care, and Additional Resource Use Items

These items are captured in the CRF and are to be collected at every study visit:

- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 15-month visit
- 18-month visit
- 21-month visit
- 24-month visit
- Year 3
- Final Visit

Resource Utilization Rapid Report Form

Hospital bills will be collected by the Duke Clinical Research Institute (DCRI). The Resource Utilization Rapid Report Form is used to notify personnel at Duke that a hospitalization (less than or greater than 24 hours) or visit to the ER or an observation unit has occurred.

In order for the DCRI to obtain hospital bills, fax the patient's informed consent to Linda Davidson-Ray at 919-668-7051. For the first patient enrolled at your site, you will need to fax the entire informed consent. For each subsequent enrolled patient, you will need to fax only the signature page of the informed consent. Be sure the patient's name and HF-ACTION study ID are printed legibly on the signature page of the consent.

The Resource Utilization Rapid Report Form should be completed and faxed to Linda Davidson-Ray at each visit, even if the patient did not have a hospitalization/ hospitalization<24 hours/ER/observation unit visit. This form is located in the Patient CRF Binder next to the visit-specific CRF pages.

The schedule is as follows:

- 3-month visit
- 6-month visit
- 9-month visit
- 12-month visit
- 15-month visit
- 18-month visit
- 21-month visit
- 24-month visit
- Year 3
- Final Visit

Questions

If you have questions regarding the patient self-report forms, resource utilization CRF pages, or the Resource Utilization Rapid Report Form, please contact:

Joëlle Friedman, MPA
EQoL Project Leader for HF-ACTION
919-668-8772 (phone)
919-668-7124 (fax)
joelle.friedman@duke.edu

Administration Instructions for Patient Self-Report Forms

Location of Forms
- Patient self-report forms are visit-specific and most are located in the Patient CRF.
- The EuroQoL Thermometer worksheet is located in the Study Coordinator Tools Binder.
- The Patient Expectations Evaluation *(1 question)* is located in the CPX Binder. It must be completed **after** the initial CPX test.

Administration schedule—on back.
- Patient self-report forms must be completed before CPX and preferably before the 6-minute walk.

General Instructions for **all** patient self-report forms:
- Administer assessments directly to patient and allow him/her to complete independently. Proxies should **not** be used.
- Review the instructions printed on the form with the patient and be available for questions during completion.
- Check to be sure all questions are answered, and that responses on the bottom copy (pink) are legible. If necessary, write on top of the patient's handwriting to make all CRF copies legible. If the patient completes a photocopy of the CRF page, transcribe the answers onto the original CRF.

Patient Survey

Questions 1 and 2—Ethnicity and Race

Instruct the patient to choose 1 option for ethnicity and as many races as apply.

Question 6—Employment Status

Student = 6 credit hours or more per semester
Volunteer = 20 hours/week or more

EuroQoL

EuroQoL Questionnaire
- Have the patient complete this assessment at the beginning of the study visit. Instruct the patient to check 1 response which best describes their health state **today**.

EuroQoL Thermometer *(located in Study Coordinator Tools Binder)*
- Have the patient complete this form at the beginning of the study visit.
- Instruct the patient to draw a line from the box to a point on the scale.
- Record the patient's score (whole number from 0 to 100) on the CRF.
- Maintain the completed worksheet with the patient's study records.

Pain Assessment
- Instruct the patient to consider their pain during the past **4 weeks**.

Kansas City Cardiomyopathy Questionnaire (KCCQ)
- Instruct the patient to consider how much their heart failure has affected them during the past **2 weeks**.

Beck Depression Inventory (BDI)
- After completion, check to be sure the patient does not choose > 1 statement for any group, including item 16 (Changes in Sleeping Pattern) and item 18 (Changes in Appetite).
- **IMPORTANT:** Check patient's response to item 9. Initial and date to indicate it has been reviewed. If suicidal ideation is indicated (a score of 2 or higher), contact the PI immediately.

Perceived Social Support Scale (PSSS)
- Instruct the patient to read each statement and determine how much they agree with it (very strongly disagree to very strongly agree).

Stages of Change
- Instruct the patient to check "No" or "Yes" for each question.
- Remind patient that physical activity or exercise includes walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these. *Regular activity = 30 minutes of activity per day at least 5 days per week.*

Exercise Self-Efficacy
- Instruct the patient to choose the appropriate confidence level for each situation.

Decisional Balance
- Instruct the patient to rate how important each statement is to their decision making.

Barrier Scale
- Instruct the patient to select how much each item listed will interfere with their participation in HF-ACTION.

Physical Activity Questionnaire (PAQ)
- Instruct the patient to consider their activity level during the past **7 days**.

Patient Expectations Evaluation *(worksheet located in CPX binder)*
- Administer immediately after the initial CPX test.
- Instruct the patient to circle their response.
- Record the patient's response on the CRF; maintain the completed worksheet with the patient's study records.

Administration Instructions for Patient Self-Report Forms

Administration Schedule

	Baseline	Months 1–24																						Year 3	Year 4 or end of study
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Verbal Question #1 (below)		X																									
Patient Survey*	X																										
EuroQoL Questionnaire & Thermometer	X			X			X			X			X												X	X	X
Pain Assessment	X			X			X			X			X												X	X	X
KCCQ*	X			X			X			X			X												X	X	X
BDI*	X			X			X			X			X												X	X	X
PSSS	X																										X
Stages of Change	X												X														
Exercise Self-Efficacy	X												X														
Decisional Balance	X												X														
Barrier Scale	X												X														
PAQ	X						X						X												X	X	X
Verbal Question #2 (below)		X																									
Patient Expectations Evaluation *(located in CPX binder; give after CPX)*	X																										

EuroQoL Thermometer worksheet is located in the Study Coordinator Tools binder; other assessments are located in the CRF.

*** Administer also to registry patients at baseline.**

Verbal Question #1 (after consent is obtained): Some participants in this study would prefer to be assigned to one treatment over the other, while some participants don't have a preference. Although your treatment group will be determined entirely by chance, we are interested in your preference regarding these treatments. Would you prefer to be in the usual care group or exercise training group? ☐ Usual care group ☐ Exercise training group ☐ No preference

Verbal Question #2 (post randomization): You have been assigned to _____. How satisfied are you with this assignment?
☐ Very satisfied ☐ Somewhat satisfied ☐ Neither satisfied nor dissatisfied ☐ Somewhat dissatisfied ☐ Very dissatisfied

HF-ACTION

Resource Utilization Rapid Report Form

See instructions on back.

Patient Number: ___ ___ ___ - ___ ___ ___ ___

Patient Name: ______________________________
Last First MI

Date of visit: ___ ___ /___ ___ ___ /___ ___ ___ ___
day month year

Visit: ☐ 3 months ☐ 6 months ☐ 9 months ☐ 12 months ☐ 15 months ☐ 18 months ☐ 21 months ☐ 24 months ☐ Year 3 ☐ End of study

Since the last study visit, has the patient been hospitalized, to the emergency department (ER), or been in an observation unit?

☐ No → **Form is complete. Fax to 919-668-7051.**

☐ Yes → **How many times?** ________

→ **Records details below and fax form.**

If > 3 episodes occurred, complete additional Resource Utilization Rapid Report Forms.

Dates and type of admission	Institution/Location
From: ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **To:** ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **Admission type:** ☐ Hospitalization ☐ ER ☐ Observation Unit	**Institution Name:** **Street Address:** **City, State:**
From: ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **To:** ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **Admission type:** ☐ Hospitalization ☐ ER ☐ Observation Unit	**Institution Name:** **Street Address:** **City, State:**
From: ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **To:** ___ ___ /___ ___ ___ /___ ___ ___ ___ (day month year) **Admission type:** ☐ Hospitalization ☐ ER ☐ Observation Unit	**Institution Name:** **Street Address:** **City, State:**

Retain original form on site with patient study records.
Fax completed forms to Linda Davidson-Ray (919) 668-7051 within 24 hours of study visit.

Resource Utilization Rapid Report Form Instructions

Instructions

Patient Study #: Number assigned by the IVRS at randomization.

Patient Name: Last name, first name and middle initial.

Visit: Check one to indicate the appropriate visit.

Since the last study visit, has the patient been hospitalized, to the emergency department (ER), or been in an observation unit?

If No → Check the box and fax immediately. *Be sure to complete the patient identifier information at the top of the form.*

If Yes → Check the box, record # of times, complete the admission data, and fax immediately.

Date and Type of Admission: The following information is required for all hospitalizations, ER visits, and observation unit stays.

From/To: Record the date of admission and discharge using the following format DD/MMM/YYYY. Example: 23/FEB/2003.

Note: If the exact day is unavailable, try to assist the patient to remember the month.

Institution/Location: Include name, address, city and state.

Note:

- If > 3 episodes occurred, complete additional Resource Utilization Rapid Report Forms.
- If the patient is admitted to a hospital (ICU/CCU, step-down care, regular care), please record as a "Hospitalization."
- If the patient presents to the Emergency Room but is not admitted to the hospital overnight, please record as "ER" visit.
- If the patient is admitted to a 23-hour observation unit or short-stay unit, record as "Observation Unit."
- If a patient presents to the hospital dead on arrival (DOA), it is not a hospitalization.

Please fax Resource Utilization Rapid Report Form within 24 hours of the study visit.

Patient Education and Follow-up

HF-ACTION Patient Education Manual

All patients will receive patient education as part of the HF-ACTION protocol. The foundation of the program will be the HF-ACTION Patient Educational Manual which covers topics such as drugs and their side effects, fluid management, symptom exacerbation, and the importance of adhering to a low-sodium diet and exercise. This manual should be provided and reviewed with the patient. Use the Patient Education Checklist *(part of the Patient Checklist located in the Study Coordinator Tools Binder)* to be sure all topics are covered.

The HF-ACTION Patient Education Manual will recommend that patients with heart failure carry out 30 minutes, *or as long as tolerated*, of moderate intensity activity most days of the week. Moderate intensity activity is defined as an effort level that does not cause the individual to sweat or become short of breath. No formal exercise instruction (written or verbal) may be given to usual care patients. Usual care patients requesting detailed exercise instruction and materials should be referred to their usual care healthcare providers.

Exercise Patient Education Manual

Patients assigned to the exercise training group will also receive the Exercise Patient Education Manual. Content of this manual should be introduced at randomization and then covered more in depth throughout the supervised exercise training sessions. Exercise trainers should use the Checklist for the Cardiac Rehabilitation Centers *(located in the Supervised Exercise Training Binder and at http://members.hfaction.org)* to be sure all exercise-related education topics are covered.

Patient Follow-up

Phone calls will be made to all randomized HF-ACTION patients every 2 weeks for the first 9 months of their participation, then monthly for months 10–24, and then every 3 months thereafter. Sites should use the HF-ACTION Script/Worksheet for Telephone Calls *(located in the Study Coordinator Tools Binder and at http://members.hfaction.org)* when making follow-up phone calls. Sites should refer the Patient Contact Information form *(completed at baseline, also located in the Study Coordinator Tools Binder)*, as needed, to determine the best time to contact the patient. There should be 3 attempts made for each call and attempts should be made on a different day. During follow-up telephone calls, clinic visits, and supervised exercise training

sessions, patient education about behavior modification should be provided as necessary to improve adherence with training.

Patient Diaries

Two types of patient diaries are provided for the HF-ACTION trial—1 for usual care patients and 1 for the exercise training patients. The diary for the exercise training group is larger because it allows patients to record their home-exercise sessions. **Every 3 months** patients should be given a new diary (usual care or exercise version) during their scheduled clinic visit. Information extracted from the diary will be used to complete the CRF.

When dispensing a new diary to a patient, study coordinators should—

- Complete the first page (time period to be covered by the diary).
- Tailor each calendar page by writing the month, days, and year across the calendar pages.
- Use the calendar to schedule the patient's next study appointment and if desired follow-up phone calls (every 2 weeks, 1 month, or 3 months).
- Review the diary with the patient.
    - If the patient is able and the Principal Investigator feels it would be helpful, patients may use the diary to record daily weight and other health-related information.
    - The diary also provides a place for patients to record their healthcare use information. Patients should be encouraged to complete this section after each encounter with a healthcare provider and to refer to it during follow-up phone calls.
- In addition, for exercise training group patients, study coordinators should—
    - Record the patient's target training heart rate (or RPE, if applicable).
    - Place an S over scheduled supervised exercise training days.
    - Instruct the patient to place an X over days when they do not exercise.
    - **IMPORTANT:** Instruct the patient to record home-exercise sessions in the diary every day. ***Stress*** the importance of recording the mode (TM, bike, free walk or other), exercise heart rate, RPE, and minutes at each session. (These numbers are necessary for compliance calculations).
    - **IMPORTANT:** Instruct the patient to bring the diary with them to every study visit and every supervised exercise training session.

When a patient returns their diary, study coordinators should—

- Review the completed diary with the patient, addressing patient's notes and concerns as appropriate.
- For exercise training group patients, study coordinators should—
    - Briefly examine the diary for exercise compliance and provide feedback as necessary. Specifically, give patient feedback on exercise frequency, intensity, duration, and exercise mode.
    - Refer to the Home Exercise Compliance Calculation Instructions (also available at http://members.hfaction.org) to determine compliance information to be recorded on the CRF.

Patient Heart Monitor Instructions

The Patient Heart Monitor Instructions are provided and should be provided to patients assigned to the exercise training group.

Note: All patient materials will be printed and provided in the site starter kits. Site should reorder patient materials as needed using the HF-ACTION resupply form. Patient materials are also posted on http://members/hfaction.org. French-Canadian and Spanish education materials are available and may be ordered by completing an HF-ACTION Resupply Order Form.

Home Exercise Compliance Calculation Instructions

Applicable to Exercise Patient Diary Only

STEP 1:

Use the far right column of the diary to record the weekly totals.

Total # of days of home exercise:

Include the total # of days the patient exercised at home (regardless of whether the patient recorded complete information/data).

Total exercise heart rate (or RPE*) and minutes:

If the patient records a split exercise session (e.g., exercises on a bike for 15 minutes in the morning and then walks for 20 minutes in the afternoon), do the following:

- Use the **average exercise heart rate (or RPE*)** for the day when adding the total heart rate (or RPE*) for the week.
- Use the **total exercise minutes** for the day when calculating the total minutes for the week.

A split exercise example is provided.

Total # of days of home exercise: _____

Total exercise heart rate (or RPE*): _____

# of days with heart rate (or RPE*) data : _____

Total exercise minutes: _____

# of days with minute data: _____

Symptom frequency:

a: _____ b: _____ c: _____

d: _____ e: _____

*Calculate using RPE (instead of heart rate) **only** for patients with an irregular heart rate making heart rate measurements invalid.

# of days with heart rate (or RPE*) and minute data:

If the patient fails to record exercise heart rate (or RPE*) or minutes one day, be sure this is accurately reflected in the # of days with heart rate (or RPE*) or minute data.

Failure to do this will result in inaccurate (low) averages.

An example of missing data is provided.

Symptom frequency:

Record the total number of times each symptom occurred during the week.

STEP 2:

Using the Study Coordinator calculation area at the back of the patient diary, add together the weekly totals to obtain the *3-month totals*.

STEP 3:

Calculate the *3-month total* average exercise heart rate and average exercise minutes.

$$\frac{\text{3-month total heart rate (or RPE*)}}{\text{3-month total days with heart rate (or RPE*)}} = \text{3-month average exercise heart rate (or RPE*)}$$

$$\frac{\text{3-month total exercise minutes}}{\text{3-month total days with exercise minutes}} = \text{3-month average exercise minutes}$$

Note: To avoid calculation errors, use the Home Exercise Compliance Calculation Tool (Excel spreadsheet) available at http://members.hfaction.org.

STEP 4:

Record calculations on the Exercise Compliance CRF page.

Study coordinators should complete these areas when giving the patient a new diary.

Having the patient record daily weight and heart rate is optional.

Training Heart Rate: _____

Days Covered: _____ month _____ day to _____ month _____ day

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Study Coordinator
_____	_____	Weight: _____	Weight: _____	Weight: _____	Weight: _____	Total # of days of home exercise: _____
_____	ting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Total exercise heart rate (or RPE*): _____
☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	# of days with heart rate (or RPE*) data: _____
Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	Total exercise minutes: _____
Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	# of days with minute data: _____
Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Symptom frequency: a: ____ b: ____ c: ____ d: ____ e: ____
Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	
Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	
☐	☐	☐	☐	☐	☐	Total # of days of home exercise: _____
Weight: _____	Weight: _____	Weight: _____	Weight: _____	Weight: _____	Weight: _____	Total exercise heart rate (or RPE*): _____
Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	Resting heart rate: _____	# of days with heart rate (or RPE*) data: _____
☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	☐ Treadmill ☐ Bike ☐ Free walk ☐ Other	Total exercise minutes: _____
Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	Time of day: _____	# of days with minute data: _____
Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Exercise heart rate: _____	Symptom frequency: a: ____ b: ____ c: ____ d: ____ e: ____
Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	Average RPE: _____ *(record one rating of exertion)*	
Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	Total exercise min: _____	
Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	Symptoms: _____ *(use codes below)*	

Symptom codes:

- **a.** Fall or injury
- **b.** Chest pains/discomfort
- **c.** Palpitations
- **d.** Lightheadedness
- **e.** Symptoms related to drop in blood sugar during or just after exercise *(nausea/lightheadedness/disorientation/weakness)*

***Study Coordinator, Calculate using RPE only for special circumstances. Refer to the Home Exercise Compliance Calculation Instructions located in the Manual of Operations.**

Study coordinators should complete these areas after the patient returns the completed diary.

Example of a split exercise session.

ACTION

Training Heart Rate: 105–125

eptember (month) 17 (day) **to** September (month) 30 (day)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Study Coordinator Calculation Area
17	18	19	20			23	
Weight: 220 pounds	Weight: 221 pounds	Weight:	Weight: 221 pounds		220 pounds	Weight: 219 pounds	
Resting heart rate: 74	Resting heart rate: 70	Resting heart rate:	Resting heart rate: 74		t rate: 68	Resting heart rate: 70	
[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[ ] Treadmill [ ] Bike [ ] Free walk [ ] Other	[ ] Treadmill [X] Bike [ ] Free walk [ ] Other	X X	[ ] Bike alk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	Total # of days of home exercise: 6
Time of day: 5 pm	Time of day: 4 pm	Time of day:	Time of day: 3 pm		4 pm	Time of day: 5 pm	Total exercise heart rate (or RPE*): 701
Exercise heart rate: 115	Exercise heart rate: 120	Exercise heart rate:	Exercise heart rate: 118	110, 114	cise heart rate: 120	Exercise heart rate: 116	# of days with heart rate (or RPE*) data: 6
Average RPE: 13 (record one rating of exertion)	Average RPE: 14 (record one rating of exertion)	Average RPE: (record one rating of exertion)	Average RPE: 13 (record one rating of exertion)		age RPE: 14 ating of exertion)	Average RPE: 14 (record one rating of exertion)	Total exercise minutes: 210
Total exercise min: 35	Total exercise min: 35	Total exercise min:	Total exercise min: 33		cise min: 37	Total exercise min: 35	# of days with minute data: 6
Symptoms: none (use codes below)	Symptoms: none (use codes below)	Symptoms: (use codes below)	Symptoms: none (use codes below)		none (use codes below)	Symptoms: none (use codes below)	Symptom frequency: a: 0 b: 0 c: 0 d: 0 e: 0
24	25	26	27	28	29	30	
Weight:	Weight: 219 pounds	Weight: 220 pounds	Weight: 218 pounds	Weight: 218 pounds	Weight: 220 pounds	Weight: 221 pounds	
Resting heart rate:	Resting heart rate: 74	Resting heart rate: 72	Resting heart rate: 68	Resting heart rate: 70	Resting heart rate: 74	Resting heart rate: 70	
[ ] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[X] Treadmill [ ] Bike [ ] Free walk [ ] Other	[ ] Treadmill [ ] Bike [ ] Free walk [X] Other	Total # of days of home exercise: 6
Time of day:	Time of day: 3 pm	Time of day: 2 pm	Time of day: 3 pm	Time of day: 4 pm	Time of day: 4 pm	Time of day: 4 pm	Total exercise heart rate (or RPE*): 583
Exercise heart rate:	Exercise heart rate:	Exercise heart rate: 112	Exercise heart rate: 120	Exercise heart rate: 116	Exercise heart rate: 115	Exercise heart rate: 120	# of days with heart rate (or RPE*) data: 5
Average RPE: (record one rating of exertion)	Average RPE: 13 (record one rating of exertion)	Average RPE: 13 (record one rating of exertion)	Average RPE: 14 (record one rating of exertion)	Average RPE: 14 (record one rating of exertion)	Average RPE: 13 (record one rating of exertion)	Average RPE: 14 (record one rating of exertion)	Total exercise minutes: 175
Total exercise min:	Total exercise min: 33					Total exercise min: 35	# of days with minute data: 5
Symptoms: (use codes below)	Symptoms: d (use codes below)					Symptoms: none (use codes below)	Symptom frequency: a: 0 b: 0 c: 0 d: 1 e: 0

Symptom codes:

- **a.** Fall or injury
- **b.** Chest pains/discomfort
- **c.** Palpitations
- **d.** Lightheadedness
- **e.** Symptoms related to drop in blood sugar during or jus

***Study Coordinator,** Calculate using RPE **only** for special circumstances. Refer to the Home Exercise Compliance Calculation Instructions located in the Manual of Operations.

Examples of missing data. Note the adjustment made to the # of days with heart rate data and minute data. Failure to perform this adjustment will result in incorrect (low) averages.

Example of a completed calculation area from the back of a patient diary.

Study Coordinator Calculation Area

	# of Days of Home Exercise	Total Exercise Heart Rate (or RPE*)	# of Days with Heart Rate (or RPE*) Data	Total Exercise Minutes	# of Days with Minute Data	Symptom Frequency
Week 1	6	701	6	210	6	a: 0 b: 0 c: 0 d: 0 e: 0
Week 2	6	583	5	175	5	a: 0 b: 0 c: 0 d: 1 e: 0
Week 3	6	703	6	235	6	a: 1 b: 0 c: 0 d: 0 e: 0
Week 4	5	473	4	195	5	a: 0 b: 0 c: 0 d: 0 e: 0
Week 5	6	703	6	245	6	a: 0 b: 0 c: 2 d: 1 e: 0
Week 6	6	701	6	200	5	a: 1 b: 0 c: 0 d: 0 e: 0
Week 7	6	702	6	239	6	a: 0 b: 0 c: 0 d: 0 e: 0
Week 8	6	711	6	240	6	a: 0 b: 0 c: 0 d: 2 e: 0
Week 9	5	358	3	163	4	a: 1 b: 0 c: 0 d: 0 e: 0
Week 10	5	581	5	201	5	a: 0 b: 0 c: 0 d: 0 e: 0
Week 11	6	709	6	239	6	a: 0 b: 0 c: 1 d: 0 e: 0
Week 12	6	707	6	237	6	a: 0 b: 0 c: 0 d: 0 e: 0
Week 13	6	701	6	243	6	a: 0 b: 1 c: 0 d: 1 e: 0
Week 14						a: b: c: d: e:
Week 15						a: b: c:
Week 16						a: b: c:
Week 17						a: b: c:
Week 18						a: b: c:
Week 19						a: b: c:
Week 20						a: b: c: d: e:
3-Month Totals:	75 [total # of days of home exercise]	8333 [total HR (or RPE*) over 3 months] ÷ 71 [total days with HR (or RPE*) data]		2822 [total minutes over 3 months] ÷ 72 [total days with minute data]		a: 3 b: 1 c: 3 d: 5 e: 0
Averages for CRF:		= 117 [average exercise HR (or RPE*)]		= 39 [average exercise minutes]		

Missing heart rate data. The difference between these 2 numbers reflects that the patient did not record heart rate data for 4 days.

Accurate data collection is critical to HF-ACTION.

Always double-check your calculations.

Notes:

If the patient records more than one exercise session per day (e.g., exercises on a bike for 10 minutes in the morning and then walks for 20 minutes in the afternoon), do the following:

- If 2 exercise heart rates (or RPEs*) are recorded on the same day, use the <u>average heart rate (or RPE*) for that day</u> when calculating the total heart rate (or RPE*) for the week.
- If 2 total exercise minutes are recorded (10 minutes on bike and 20 minutes of freewalk) on the same day, include the <u>total exercise minutes for that day</u> (30 minutes in this example) when calculating the total minutes for the week.

Transfer results recorded in <u>**bold**</u> boxes to the Exercise Compliance CRF page.

*Calculate using RPE **only** for special circumstances making target heart rate measurement invalid.

Missing minute data. The difference between these 2 numbers reflects that the patient did not record exercise minute data for 3 days.

Round to the nearest whole number.

Script/Worksheet for Telephone Calls

Patient Name: ___________________________ **Patient Number:** ______ - _______

Phone calls will be made to all randomized HF-ACTION patients every 2 weeks for the first 9 months of participation, monthly until the 24th month, and then every 3 months until the patient completes the trial. There should be 3 attempts made for each call. Each attempt should be made on a different day and at a different time, as appropriate. Use this worksheet to document up to 5 calls as well as to schedule upcoming calls.

	Call 1	Call 2	Call 3	Call 4	Call 5
Good morning/afternoon Mr/Mrs/Ms ____________ *(patient name)*, this is ____________ *(your name)* and I am calling on behalf of the HF-ACTION Trial.	**Date and time call scheduled:** __/___/____ *day month year* __:__ 00:00 to 23:59 **Date of call attempts:** __/___/____ *day month year* __/___/____ *day month year* __/___/____ *day month year* **Date call complete:** __/___/____ *day month year*	**Date and time call scheduled:** __/___/____ *day month year* __:__ 00:00 to 23:59 **Date of call attempts:** __/___/____ *day month year* __/___/____ *day month year* __/___/____ *day month year* **Date call complete:** __/___/____ *day month year*	**Date and time call scheduled:** __/___/____ *day month year* __:__ 00:00 to 23:59 **Date of call attempts:** __/___/____ *day month year* __/___/____ *day month year* __/___/____ *day month year* **Date call complete:** __/___/____ *day month year*	**Date and time call scheduled:** __/___/____ *day month year* __:__ 00:00 to 23:59 **Date of call attempts:** __/___/____ *day month year* __/___/____ *day month year* __/___/____ *day month year* **Date call complete:** __/___/____ *day month year*	**Date and time call scheduled:** __/___/____ *day month year* __:__ 00:00 to 23:59 **Date of call attempts:** __/___/____ *day month year* __/___/____ *day month year* __/___/____ *day month year* **Date call complete:** __/___/____ *day month year*
Heart Failure Status					
How are you today? How have you been feeling?					
Have you had any shortness of breath, swelling or have you been feeling more tired than usual?					
If diabetic, have you had any problems controlling your glucose levels *(blood sugar levels)*?					
How is your appetite?					
Have you been limiting your sodium and salt in your diet?					

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

How often are you weighing yourself?					
Have you been recording your weight in your patient diary? *(not required)*	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Has there been any change in your weight? ***If Yes:*** How many pounds in how many days?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Since the last time we spoke, has your healthcare provider been contacted regarding your health or symptoms? *(includes calls made by the patient, patient's family/friends, exercise trainer, or other study personnel; also includes contacts made as a result of the previous HF-ACTION phone call to patient)* ***If Yes:*** Number of contacts:	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Have you had any changes to your prescription medications as a result of these contacts?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Have patient describe contacts and record the following:					
Number of contacts resulting in non-diuretic medication changes:					
Number of contacts resulting in diuretic increases:					
Number of contacts resulting in diuretic decreases: *IMPORTANT: Do not include contacts made for reasons such as insurance/formulary changes.*					

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

Resource Utilization

Since the last time we talked, have you had any…					
Non-urgent healthcare provider visits?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
If Yes: Tell me about those visits.					
During the conversation, determine the provider type and visit location:					
Outpatient cardiac or orthopedic procedures?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
If Yes: Tell me about those procedures.					
Have the patient describe the procedure in enough detail to determine if any of the following occurred:					

Provider types include:
- *Cardiologist*
- *Orthopedic surgeon*
- *Other specialist*
- *Primary care physician*
- *Nurse practitioner*
- *Physician assistant*
- *OT/PT*
- *Mental health provider*
- *Nurse (RN, LPN, or home health aid)*

Visit locations include:
- *Clinic/Office*
- *Home*

Cardiac procedures include:
- **1** *ECG/EKG*
- **2** *MRI–cardiac*
- **3** *CT scan–cardiac*
- **4** *IV meds administration for heart failure*
- **5** *Cardiac catheterization*
- **6** *PTCA with non–drug-coated stent*
- **7** *PTCA with drug-coated stent*
- **8** *PTCA without stent*
- **9** *Echocardiogram–transthoracic (TTE)*
- **10** *Echocardiogram–transesophageal (TEE)*
- **11** *Rest multigated acquisition test (MUGA)*
- **12** *Cardiac exercise stress test with imaging*
- **13** *Cardiac exercise stress test without imaging*
- **14** *Cardiac pharmacologic stress test with imaging*
- **15** *Cardiac pharmacologic stress test without imaging*
- **16** *ICD (implantable cardiac defibrillator) firing*

Orthopedic procedures include:
- **17** *Fracture repair–upper extremity*
- **18** *Fracture repair–lower extremity*
- **19** *Diagnostic radiology for orthopedic problems*

Note: *Blood tests will not be collected. Only orthopedic and cardiac procedures (including ICD firing) will be collected on the CRF.*

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** __ __ __ - __ __ __ __

Emergency room or urgent clinic visits? ***If Yes:*** Tell me about those visits. ***During conversation, determine the type and reason for each emergency room/urgent clinic visit:***	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Did the reason for this visit happen during exercise or within 3 hours after exercise? *Exercise = formal and nonformal programs, in a group or done alone.* *Exercise ≠ mowing the yard, gardening, housework, or low-intensity recreational activities, such as shuffleboard.*	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Hospitalizations? ***Includes only stays ≥24 hours*** ***If Yes: Ask the following questions about EACH hospitalization.*** ***Note:*** *Hospital transfers will be collected as one hospitalization on the CRF, but as separate hospitalizations on the Resource Utilization Rapid Report Form. Record additional hospitalization details on the back of this page, if needed.*	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Was the hospitalization planned or unplanned?					
What date were you admitted?	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year
What date were you discharged?	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year	__ __/__ __ __/__ __ __ __ day month year

Visit types include:
- *Emergency room**
- *Observation unit*
- *Hospitalization for less than 24 hours*
- *Urgent care facilities*
- *Heart failure clinics**

* *If ER visit, collect the date of first occurence; if urgent clinic visit due to heart failure exacerbation, collect the date of first occurence.*

Reasons for emergency room/urgent clinic visits include:
- *Heart failure*
- *CV disease*
- *Non-CV disease*
- *Unknown*

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

Where was this hospital located? *(obtain the name, city, and state of each hospital and record on the Resource Utilization Rapid Report Form)*					
What was the reason for the hospitalization?					
Did the reason for this hospitalization happen during exercise or within 3 hours after exercise? *Exercise = formal and nonformal programs, in a group or done alone.* *Exercise ≠ mowing the yard, gardening, housework, or low-intensity recreational activities, such as shuffleboard.*	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Did you have any procedures during the hospitalization?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes

Reasons for hospitalization include:

1 *MI*
2 *Unstable angina*
3 *Other CAD*
4 *Atrial fibrillation*
5 *Other supraventricular tachycardia*
6 *Bradycardia*
7 *Ventricular arrhythmia*
8 *ICD firing*
9 *Cardiovascular procedure (e.g., heart transplant, EPS, pacemaker, AICD)*
10 *Endocarditis*
11 *Heart failure*
12 *Hypertension requiring inpatient treatment*
13 *Peripheral vascular disease*
14 *Cardiac arrest*
15 *Presyncope/hypotension*
16 *Syncope*
17 *Stroke*
18 *TIA*
19 *COPD*
20 *Pneumonia*
21 *Septicemia*
22 *Urinary tract infection*
23 *Fracture of hip or pelvis*
24 *Biliary tract disease*
25 *Diverticulosis or diverticulitis*
26 *Gastrointestinal hemorrhage/obstruction*
27 *Renal failure*
28 *Fluid & electrolyte disorders*
29 *Diabetes requiring inpatient treatment*
30 *Cancer*
31 *Depression*

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

Try to determine if any of the following procedures occurred: ***Note:*** *The patient's primary and secondary cardiac procedures will be collected on the CRF. Primary = most significant, not necessarily the first.*					
Where did you go after discharge? ***Note:*** *For this question, discharge refers to the final discharge after any transfers have taken place.*					
Since the last time we talked, have you had to live anywhere besides your home? ***Note:*** *CRF will collect how many days the patient has lived in their home, a caregiver's home, assisted living facility, skilled nursing home, acute care hospital, or rehab facility.*	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
Since the last time we talked, have you received any intravenous (IV) medications for heart failure while at home? ***If Yes:*** How many days were you on this infusion?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes

Procedures include:

101 *Cardiac catheterization*
102 *Coronary artery bypass surgery (CABG)*
103 *PTCA with non-drug-coated stent*
104 *PTCA with drug-coated stent*
105 *PTCA without stent*
106 *Heart transplant*
107 *Valve surgery*
108 *Placement of intraaortic balloon pump*
109 *Placement/removal of left ventricular assist device (LVAD)*
110 *Thoracentesis*
111 *Placement of PA catheter (e.g. Swann Ganz)*
112 *Placement of venous catheter (e.g., Hickman, perm cath, etc.)*
113 *Placement/removal of automatic implantable cardiac defibrillator (AICD)*
114 *Combination AICD/pacemaker placement*
115 *Pacemaker placement*
116 *Bi-ventricular pacer placement*
117 *Cardiac resynchronization therapy (CRT)*
118 *Programmed electrophysiology test*
119 *ECG/EKG*
120 *Rest multigated acquisition test (MUGA)*
121 *Echocardiogram–transthoracic (TTE)*
122 *Echocardiogram–transesophageal (TEE)*
123 *Cardiac exercise stress test with imaging*
124 *Cardiac exercise stress test without imaging*
125 *Cardiac pharmacologic stress test with imaging*
126 *Cardiac pharmacologic stress test without imaging*
127 *MRI–cardiac*
128 *CT scan–cardiac*

Discharge locations include:

201 *Patient's home*
202 *Caregiver's home (Friend or family member providing assistance)*
203 *Assisted living facility*
204 *Skilled nursing facility*
205 *Rehabilitation center (separate specialty rehab facility)*
206 *Other location*

Script/Worksheet for Telephone Calls

Patient Name: _____ **Patient Number:** ___ ___ ___ - ___ ___ ___ ___

Exercise Assessment

If in Usual Care Group: Have you been participating in any formal or non-formal exercise programs, either on your own or with a group?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
If in Exercise Training Group: Have you been attending your supervised training sessions?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
How are those sessions going?					
Have you been performing your exercise training as prescribed? ***If No: Indicate the one primary reason:***	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes
On average, how many times per week have you been exercising at home?					
Have you experienced any symptoms such as angina, joint pain, or problems with falling or coordination during your home exercise?	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes	☐ No ☐ Yes

Patient-reported reasons include:

1 *Fall or injury*
2 *Chest pains/discomfort*
3 *Palpitations*
4 *Lightheadedness*
5 *Motivational problems**
6 *Patient withdrew consent for study treatment (exercise)*
7 *Symptoms related to hypoglycemia (drop in blood sugar)*
8 *Other patient-reported reason*

** If patient is not performing prescribed exercise due to motivational problems, Study Coordinators may contact the Adherence Core Lab Coordinator, at 919-681-6401 for assistance.*

Physician reasons include:

9 *Exacerbation of patient medical condition*
10 *CPX results preclude safe exercise*
11 *Recent hospitalization*
12 *Other physician reason*

Script/Worksheet for Telephone Calls

Patient Name: _____ Patient Number: ___ ___ ___ - ___ ___ ___ ___

Closing					
I will be calling you again in _____ *(2 weeks, 1 month, or 3 months)*, may we schedule a time that would be convenient for me to call? ***Record scheduled time at the top of the next column on the first page.***					
Thank you for taking the time to talk with me today. We appreciate your continued participation in the HF-ACTION trial. Please do not hesitate to call if you have any questions or concerns.					

~~Comments~~

Behavioral Change and Motivation Tips

Introduction to Motivational Interviewing

Motivational interviewing is an approach to assessment and intervention based on the Stages of Change model that is designed to identify and reinforce individuals' personal self-motivating statements and reasons to change behavior. This approach to health-promotion interventions emphasizes the use of individualized risk appraisal, identification of potential risk-reduction strategies, techniques to increase self-efficacy for behavior change, and strategies to prevent relapse and promote retention. It incorporates several strategies to facilitate transition from one stage to the next, thereby preparing an individual to initiate and/or maintain a recommended behavior. Objective feedback is provided and ambivalence about behavior change explored, with specific attention to eliciting an individual's personal goals and self-motivational statements, formulating personal goals in behavioral terms and problem-solving barriers to change. Reflective listening skills are particularly effective as a method of interaction with patients in eliciting and clarifying their personal goals and self-motivational statements. Motivational interviewing seeks to evaluate the discrepancy between participants' stated goals and their current behaviors in a style that increases motivation for change.

The following definitions can be used when discussing participation in HF-ACTION:

1. **Integrated participants**: those who faithfully follow through and attend appointments or, if they cancel, follow through and attend the next appointment. Integration is defined only in terms of contact, not in terms of success with goals of treatment.

2. **Reluctant participants**: those who:
    - repeatedly cancel appointments
    - repeatedly do not show up for appointments
    - repeatedly indicate that "now is not a good time"
    - screen calls and do not respond to messages

3. **Hard refusals**: those who state that they do not want to participate in the study and do not want any further contacts with anyone associated with the study.

Participation Red Flags

Even when interacting with adherent patients, be alert to situations that might suggest a patient is at risk for non-adherence. Some of these situations include:

- Patient's motivation to participate is not clear
- Patient has expressed or unexpressed reservations about randomization
- Patient does not fully understand commitment (i.e. long duration of study, time and effort requirements)
- Missed visits during screening
- Adherence problems (regarding record keeping, etc.)
- Lack of family support for participation
- Current family crisis or transition
- Frequent job changes
- Cultural issues that mitigate against protocol adherence
- Emotional problems (including low self-esteem)

Addressing Non-Adherence

When you identify a non-adherent patient, your primary goal is to find out what factor or factors are interfering with the patient's ability to adhere to the study requirements. Some of the possible barriers you are likely to encounter are:

1. **Logistical barriers** – e.g., child care, transportation. For these barriers, follow procedures for accessing the Transportation/Dependent Care fund to assist the patient.

2. **Time barriers** – e.g., work, family responsibilities, vacation. For these barriers, one approach is to assist the patient in planning a detailed exercise schedule. For example, have the patient choose a specific date to start exercising, and schedule the times that the patient will exercise for the first week. Ask the patient to imagine what kinds of things might come up that would interfere with their ability to stick to this plan. Coming up with solutions to potential barriers ahead of time may help to preempt adherence problems.

3. **Motivational barriers** – e.g., boredom, lack of energy, lack of interest, no clear reason stated. For these barriers, you will need to spend some additional time with the patient. It is important not to appear rushed or impatient. It is also important not to try to convince the patient why they should comply. One useful strategy is to identify the patient's initial motivation to participate in the study. There are four main reasons why the patient might have initially agreed to participate in the trial:

   - He/She perceived possible benefits from treatment
   - His/Her spouse, significant other, family, doctor, etc. wanted him/her to participate
   - He/She agreed for reasons other than personal benefit, such as contributing to science, pleasing the recruiting nurse, benefiting future patients, etc.
   - He/She did not really understand what he/she was signing on to.

Reluctance may be due to the fact that the original reason is no longer compelling or valid. As such, an understanding of the reason for the current reluctance can be aided by determining why the patient initially agreed to participate. The recruiting case coordinator is an excellent source of information about this and should be consulted very early. In addition, it is a good idea to meet family members and discuss the goals and requirements of participation before beginning treatment. The patient was "sold" on the idea initially, and it may be possible to do so again by reminding him/her what he/she expected to gain.

When exploring barriers to adherence, it is useful to keep in mind that the patient's stated reasons are not necessarily THE reason they have not been adherent. They may be unwilling or even unaware of the real reasons. We must strive to understand the real reasons in order to know how to intervene. Taking a direct approach to the situation can help the patient to be direct with you. For example, "You were so interested in being in this trial initially, but I sense a reluctance now. What accounts for that?" or "It seems like it has been hard for you to do the things we are asking of you. What would make it easier?"

Another useful strategy to enhance motivation is to have patients rate the importance of adhering to study guidelines, as well as their confidence in their ability to adhere to a regular exercise program.

> "How important would you say it is for you to become physically active? On a scale from 0 to 10, where 0 is not at all important and 10 is extremely important, where would you say you are?"
>
> "How confident would you say you are that, if you decided to become physically active, you could do it? On the same scale from 0 to 10, where 0 is not at all confident and 10 is extremely confident, where would you say you are?"

Based on responses to these two questions, patients will fall into one of four groups. Although patients may not fit neatly into one group, this approach can be useful in helping you to choose an approach to enhancing motivation and improving adherence.

1. Low importance, low confidence. These patients neither see the behavior as important nor believe they could engage in the behavior even if they tried. They will require help in building self-efficacy and identifying benefits of regular exercise.

2. Low importance, high confidence. These patients are confident that they could exercise if they thought it were important to do so, but are not persuaded that this is the case. They are unlikely to be adherent unless they come to believe that regular exercise is more important than they currently believe.

3. High importance, low confidence. Here the problem is not in willingness to change, since these patients express the desire to do so. The problem is low confidence that they could succeed if they tried. Your goal will be to help the patient build a sense of self-efficacy regarding their ability to engage in regular exercise.

4. High importance, high confidence. These patients believe it is important to exercise and also believe they could succeed if they try. If these patients are not adherent, logistical barriers may be involved.

Basic Approaches to Enhancing Motivation

There are a number of basic skills associated with motivational interviewing that should be used when interacting with patients in order to promote adherence and retention and prevent drop-outs. These strategies should be used with patients who are well-integrated in the study as well as those who demonstrate adherence problems. They can be used to address any of the barriers discussed above and well as to enhance overall motivation.

Use reflective listening skills

- Use open-ended questions
- Reflect patient's statements and feelings without repeating back verbatim
- Elicit and reinforce self-motivating statements
- Elicit information about "red flags"

Develop discrepancy

- Change is motivated by a perceived discrepancy between present behavior and the patient's personal goals or values
- The patient rather than the clinician should present the arguments for change

Roll with resistance

- Ambivalence is normal
- Avoid arguing for change; acceptance facilitates change
- Do not directly oppose resistance; resistance is a signal to respond differently
- Invite but do not impose new perspectives
- Use the patient as the primary resource in findings answers and solutions to problems and barriers

Support self-efficacy

- The patient's belief in their ability to change is an important motivator
- The patient, not the clinician, is responsible for choosing and carrying out change
- The clinician's belief in the patient's ability to change can become a self-fulfilling prophecy

Use problem-solving skills to work toward solutions to adherence barriers

- Identify/clarify the problem
- Brain-storm potential solutions
- Weigh the pros and cons of potential solutions
- Select and implement the most attractive potential solution
- Evaluate solution and revise or replace if necessary

Elicit change talk

- Discuss disadvantages of the status quo.
- Discuss potential advantages of behavior change.
- Discuss patient's confidence and hope about his or her ability to change.
- Discuss patient's intention, desire, willingness, or commitment to change.

Approaches to Avoid

- **Arguing for change.** Taking up the pro-change side of ambivalence on a particular issue and seeking to persuade the patient to change.

- **Assuming the expert role.** Structuring the conversation in a way that communicates that you "have the answers". This includes the question-answer trap of asking many closed-ended questions, as well as lecturing the patient.

- **Criticizing, shaming, or blaming.** Shocking or jarring the patient into changing by instilling negative emotions about the status quo.

- **Labeling.** Proposing a specific label or diagnosis to characterize or explain the patient's behavior. Focusing on what the patient "is" or "has" rather than on what he or she does.

- **Being in a hurry.** Sometimes a perceived shortness of time causes the clinician to believe that clear, forceful tactics are called for in order to get through to patients. However, this often has the opposite effect if the patient feels pushed or rushed.

- **Claiming preeminence.** Using the "I know what is best for you" approach. Ignoring the patient's goals and perspectives is more likely to produce resistance than change.

Adherence

Overview of Adherence Strategies

Adherence refers to the degree to which study participants comply with the study protocol, and will be assessed using a number of measures, including attendance at facility-based exercise sessions, completion of physical activity logs for home-based exercise, use of heart rate monitors, and self-reported percentage of time at or above their prescribed training range.

HF-ACTION will adopt a variety of approaches to promote adherence during the study, and to aid in drop-out recovery. The first set of strategies consists of commonly used methods of assisting participants in adhering to a study protocol. The second set of strategies includes methods designed specifically to promote adherence to facility-based and home-based exercise training in Exercise trainingparticipants. In addition, we will use motivational enhancement methods from the moment of recruitment in order to reinforce adherence during the study. Careful screening prior to randomization will be used to identify barriers to adherence. If barriers are felt to be insurmountable by study coordinators or investigators, they will have the discretion to not enroll the patient.

General Adherence Strategies

Five general strategies will be used to facilitate adherence to the intervention and to the follow-up assessments, and to retain study subjects throughout follow-up. These strategies include print reminders, interim phone calls, involvement by family and/or friends, logistical assistance, and incentives. During the initial screening we will determine patients' preferences for being contacted (e.g., mail, email, telephone) and attempt to incorporate their preferences into the follow-up process.

Reminders

We plan to provide all study participants with calendars indicating intervention and/or assessment sessions, and to send them reminders in advance of follow-up assessments.
In addition, to assist with patient retention and to maintain contact with and involvement of participants, quarterly newsletters will be written by the HF-ACTION team and provided to all regional centers for distribution to their patients. The newsletter will contain patient information,

such as heart healthy recipes. Birthday and holiday cards will also be sent to keep participants connected to the study and to study personnel.

Close Follow-up

Because the highest rate of non-adherence to prescribed therapies often occurs within the first 6 months, the HF-ACTION trial includes follow-up clinic visits and telephone calls to maximize adherence. Patients in the both arms of the study group will receive phone calls once every 2 weeks for the first 9 months; phone calls monthly for months 10-24; and phone calls every 3 months thereafter. Patients will attend clinic visits every 3 months for first 24 months and yearly thereafter.

Phone calls will be used to assess symptoms, determine adherence with the medical regimen, review education, and collect data on various outcomes. Phone calls also will provide positive reinforcement for patients in the exercise-training arm and will identify problems with adhering to the program. When making follow-up calls, Study Coordinators should follow the *HF-ACTION Script/Worksheet for Telephone Calls* provided in the Study Coordinator Tools Binder.

The frequency of follow-up will decrease as patients move further into the maintenance phase. However, if patients have difficulty with program adherence early in the trial, coordinators will be encouraged to contact patients to identify the key barriers. **Note:** Study Coordinators should <u>not</u> use the Script/Worksheet for Telephone Calls when making adherence-related contacts outside of the protocol-specified time points.

Patients in the exercise training group will have regular contact with the exercise physiologists overseeing their exercise training during the supervised exercise portion of their treatment. Study personnel will call patients who miss any exercise session during this phase. Patients' exercise will be monitored at these sessions to assess whether they are achieving target levels.

Family/Friend Involvement

Because spouses, partners, significant others, or friends who support patients in an exercise regimen may increase adherence, patients in the Exercise training group will be asked to bring to the orientation session an individual who is viewed as a primary source of social support. This person will receive monthly notices encouraging continued support of the patient in the program.

Logistical Assistance

We will thoroughly screen patients to identify potential barriers to adherence. The study coordinator will ensure that participants have sufficient logistical assistance to attend first screening visits and then intervention and assessment sessions once they are randomized. Issues that we anticipate commonly being addressed with patients include identifying means for transportation and arranging for child care. The coordinating center has set aside funds for regional centers to use in developing plans for logistical assistance. Funds will be distributed by the Recruitment and Retention Subcommittee based on regional and satellite center needs. If barriers are felt to be insurmountable by study coordinators or investigators, they will have the discretion to not enroll the patient.

Incentives

A system for providing incentives will be developed to reward adherence to home-based exercise guidelines, completing and returning activity diaries, and attending follow-up assessments. This may include study-wide and/or site-specific lotteries, as well as a system of earning points toward a reward (e.g., T-shirt, mug). The incentives will be for both the usual care group (for completing follow-up) and for the exercise training group (for completing follow-up and for adhering to the exercise regimen).

Specific Adherence Strategies

Assessment of Motivation

As part of the HF-ACTION study, all patients will complete a series of instruments to assess readiness to initiate and maintain exercise at baseline and at 12 months of follow-up. These instruments will include the Stages of Change questionnaire (4 questions), Exercise Self-Efficacy questionnaire (5 questions), Decisional Balance questionnaire (16 questions), and Barriers Scale (10 questions). Based on the Stages of Motivational Readiness for Change model, adherence promoting strategies during exercise training will be used and tailored to individual patients.

Self-management Educational Program

The HF-ACTION investigators and coordinators will develop a self-management educational program to all participants and their families. The foundation of the program will be an educational manual that will discuss topics such as drugs and their side effects, fluid management, symptom exacerbation, and the importance of adhering to a low sodium diet. Tip

sheets will also be distributed to participants (e.g., exercising in the winter season, obtaining support for exercise regimen, etc.).

Orientation and Motivational Materials

All patients in the exercise training group will be given written information about exercise, including a formal exercise prescription, information about how to use the heart rate monitors, and what to do in the case of increasing symptoms. In addition, motivation- and stage-matched self-help materials will be provided as patients transition to home-based exercise.

Patient Diaries

Patients in the exercise training arm will be asked to keep a Patient Diary of their exercise performance during their supervised exercise program and when they transition to home-based exercise. These diaries will include exercise mode, heart rate, time, rating of perceived exertion, and symptoms encountered during exercise sessions. Diaries will be reviewed at follow-up clinic appointments by the Study Coordinators. Feedback will be provided based on the diary. Diaries will also be reviewed during telephone calls.

Heart Rate Monitors

All patients will receive a heart rate monitor at the start of the supervised training program. This will allow investigators to objectively document exercise intensity and to provide feedback to study patients regarding their adherence to the exercise prescription.

Cognitive Strategies

Relapse-prevention techniques and problem-solving skills will be reviewed with patients at regular intervals both face-to-face and on the phone. Discussion will focus on how negative attitudes about exercise can be modified by more realistic self-statements, identification of high-risk “adherence-compromising” situations (e.g., inclement weather, increased work responsibilities, feeling tired, etc.), and discussion of methods to cope with these situations more effectively. They will be encouraged to contact the satellite centers in the case of injury, illness, or increasing symptoms and taught what to do to get back on track when time and boredom become problematic for them.

Patient Retention

General Information

Retention will be a challenge in HF-ACTION, as it is in all clinical trials. In HF-ACTION, retention is likely to be an even greater challenge than in many trials because participants will be asked to continue clinic visits for up to 4 years. HF-ACTION provides a variety of benefits in an effort to maximize the number of participants who complete all follow-up visits. These benefits include the potential benefits of the study interventions themselves and medical monitoring. Essential aspects of maximizing participation and promotion retention are: 1) carefully screening and assessing barriers to adherence and retention; 2) carefully monitoring adherence problems (which often predict retention problems), trying to identify these problems early before participants refuse further study contact; and 3) applying specific strategies to address these problems. The methods most likely to maximize retention will vary by individual and by site, so each HF-ACTION site must design an appropriate retention plan for its participants. General retention strategies and those to be applied in special situations are described in the sections that follow. In addition, the coordinating center's behavioral psychologists should play an active role in training staff and investigators in adherence/retention problem identification, using motivational interviewing methods to promote adherence and retention, and developing and implementing drop-out recovery plans.

General Retention Strategies

HF-ACTION retention will be facilitated by general strategies that include: facilitating access to the center, maximizing availability of staff, providing participants tangible support and emotional support, and providing appropriate information to primary care providers and participants.

Facilitate Access to Center

Maps and Signs: The study site should be easy to find. Maps and good signage are essential. Maps often are available from sources within the institution. Detailed information such as elevator location, floor, and room numbers is needed to guide participants to the specific area. Signage may be harder to acquire than maps because it often requires organizational sanction.

Physical Setting: Clinic and exercise training areas should be in convenient and attractive areas containing, as appropriate, a waiting area with receptionist/secretary, rooms that provide privacy for data collection or counseling, and offices for the staff. Participants should be escorted by staff and introduced to personnel in each area used for study activities. Escorting should continue until the participant volunteers to travel from one area to another independently.

Transportation: Convenience and cost of transportation are two factors that will affect study retention, particularly among lower-income participants and those who reside or work in areas in which public transportation is not well developed.

Convenience: Location of and cost of parking garages or lots, distance from bus stops, perceptions of safety in gaining access to the building, as well as hassle associated with travel are factors that can affect appointment keeping and study retention.

- Information on public transportation stops and on parking garages should be included on location maps discussed above.
- Safety considerations should be addressed. Do not assume that participants know what is risky versus safe behavior related to parking and walking in the area around the study site. Escort services can be provided to parking or transportation areas.
- Concerns over travel during rush hour should be discussed with volunteers and used to guide the time visits are scheduled.

Cost: HF-ACTION sites should develop a reimbursement policy for transportation expenses incurred by participants. Centers may elect to pay parking charges, etc., for all participants or to reimburse on an “as needed” basis. Mechanisms for reimbursement vary depending upon institutional policies and local resources. Funds are available through the R&R committee to pay for transportation expenses and will be distributed by center application.

- Stamps to validate tickets or charge cards are common methods used to assign parking fees to study accounts.
- Tokens for public transportation can be purchased in bulk and given to participants at each visit.
- Charge accounts are available from taxicab and van services.
- Many communities have volunteer transportation services, such as for senior citizens, which can be utilized at low or no cost to the study.

The marketing and social services departments at your institution are potential resources for information on transportation issues.

Changes in Access to Health Care:

Access to health care services increasingly is influenced by regulations, primarily rules associated with reimbursement plans.

- Participants recruited from HMO's and other managed care plans may perceive that a change in their plan influences their continued participation in the study. Change in Medicare and Medicaid provisions also could affect retention of study participants.
- Some participants may lose health coverage while they are in the study.
- Changes in health care plans may mean a change in participants' primary care provider, introducing another factor that can influence retention. Monitoring of participant's access to primary health care services should continue throughout HF-ACTION to alert staff to changes that may threaten study retention.

Be clear with participants what will be covered as a part of HF-ACTION and what will not be. Participants should understand that they will need to maintain a primary care provider throughout the study.

Maximize Availability of Staff

It is critical that participants keep regularly scheduled appointments. Appointments serve many functions, one being monitoring of participants' progress. Individuals in the

standard care arm will be seen less frequently, and therefore may require the greatest encouragement to adhere to the appointment schedule.

Appointment Hours: Study participants should be considered "customers." As volunteers, they cannot be expected to alter schedules or to miss work as they would to utilize healthcare services.

- The hours that staff is available for HF-ACTION visits should be as flexible as possible to accommodate participants' schedules.
- Visits may need to be scheduled outside normal clinic hours such as in the evening or on Saturdays.

Availability Outside Business Hours: Participants should be able to talk with staff at times other than study visits. This includes evenings and weekends.

- Study personnel who are familiar with the protocol should respond to calls.
- The on-call clinician must also be familiar with the protocol or have a HF-ACTION staff member on call to answer questions.

Staff Willingness to Spend Time with Participants: The perception that the staff is willing to make extra efforts to accommodate participants' needs enhances retention. The amount and quality of time staff give participants may be as important as flexible schedules and access during non-business hours. This point is illustrated in a comment made by a participant to a study coordinator: "I like coming here because you listen to my stories."

Retention is enhanced when participants feel they are important and valued by the staff. This begins at the front door with friendly reception by staff and continues through the actions of staff over the duration of volunteers' participation in HF-ACTION. Pleasant, kind, helpful, and attentive staff will facilitate bonding and retention in HF-ACTION.

Facilitating Appointments: There are a number of strategies that sites should follow to facilitate participants keep appointments, including:

- Recording the next scheduled study appointment in the patient's HF-ACTION Patient Diary.

- Providing participants with wallet-sized appointment cards, which include the center's telephone number and "check-off" statements to help participants prepare for the next visit.
- Mailing written reminders or placing telephone calls to the volunteers a week before the appointment.
- Using home or off-site visits. Based on the center specification and location, any staff member going off site should be escorted. Visits of this type should only occur during safe hours of the day as specified by center. If a volunteer is scheduled for an off-site visit for testing, it is suggested that an escort accompany the volunteer as well.

Provide Tangible Support

Tangible support includes those items that enhance voluntary participation in HF-ACTION and minimize potential barriers to retention, fulfilling endpoint goals. These items include

- Reimbursement for parking
- Motivational/incentive items for achieving goals (items should have progressively greater value and require more effort to achieve)
- Medical monitoring/supplies directly related to HF-ACTION. This will be more apparent to participants in the exercise training arm, who will receive heart rate monitors and exercise equipment.
- Referrals as needed for medical services.

Clinics may choose to use recruitment funds to reimburse participants for baby-sitting, eldercare, or transportation.

Provide Emotional Support

Participants feel supported when they perceive the study staff as caring, and when they perceive themselves as full partners in the research process. The coordinating center's behavioral psychologist should lead efforts to provide participants with appropriate emotional support.

In general, the following actions increase participant perceptions of support:

- Helping the participant feel the study environment is safe and comfortable.
- Creating a relationship in which goals are jointly established.
- Expressing interest in important aspects of a participant's personal life.
- Asking about the participant's personal reactions to aspects of HF-ACTION.
- Acknowledging what the participant has reported.
- Creatively conducting study procedures (when possible) in a manner that best meets the specific needs of the participant and family members.

Provide Feedback to Primary Care Providers

All HF-ACTION participants should have an established source of medical care outside of HF-ACTION staff. Frequent follow-up with primary care providers is recommended. The goal is to establish a positive contact with the primary care providers from the beginning. This will demonstrate that HF-ACTION is monitoring the participant in a responsible manner, solicit provider support for HF-ACTION, and facilitate a positive response to HF-ACTION recommendations regarding the care of concurrent conditions, such as lipid disorders. It is the position of HF-ACTION that all participants should receive comprehensive management of CHF and other cardiovascular risk factors, notably hypertension and plasma lipids, regardless of the study arm to which they are randomized. The medical care should be in accord with current standards of care developed by the American Heart Association and the Heart Failure Society of America. HF-ACTION staff must have participants' permission to contact primary care providers.

Although HF-ACTION is not intended to provide general medical management to the participants, there are several steps being taken to assist healthcare providers in their efforts to help HF-ACTION participants reach therapeutic goals. Continuing communication with primary care providers may also facilitate retention of participants in HF-ACTION.

1. After the initial orientation session, the primary care provider of the potential participant will receive a letter from the site that will include the Health Care Provider Fact Sheet (basic information about HF-ACTION and specific

information about the exercise training arm) and a request for the referral of other potential participants. At the discretion of the regional center, a letter may also be sent asking the PCP whether this volunteer is appropriate for the study.

2. At randomization to HF-ACTION, information including: treatment group assignment of the participant, details of the treatment intervention (visit frequency and safety monitoring), baseline participant information about tests completed during screening, and a sticker for the outside of the chart with name and number of PI will be provided to the primary care provider.

3. Data that are obtained during scheduled study visits are mailed to primary care providers. Standards of care or generally accepted guidelines for interpretation and/or interventions related to these parameters will also be provided.

4. HF-ACTION staff will contact participants' primary care providers under other circumstances (e.g.; if a participant's involvement in exercise training is discontinued for safety reasons, or if adjustment or discontinuation of any medication may be appropriate.)

Provide Feedback to Participants

HF-ACTION participants are provided with CHF education materials and information on other cardiovascular risk factors.

1. At entry to HF-ACTION, all participants are provided with a program of patient education on CHF and other cardiovascular risk factors.

2. Data that are obtained during scheduled study visits are provided to participants and their primary care providers. Standards of care or generally accepted guidelines for interpretation and/or interventions related to these parameters will also be provided.

Continue Using Motivational Enhancement Methods

The recruitment section (section 2) of this manual discusses a training program that the behavioral psychologist at the coordinating center developed to assist staff and investigators who have contact with participants. This program will help study staff build skills in helping participants to identify their personal reasons and barriers to participation

in HF-ACTION, reinforce these reasons over time, and help to overcome barriers which are likely to arise. These methods are useful for fostering adherence and active participation over time. Hence, efforts to sharpen staff and investigator motivational enhancement techniques should continue throughout the study.

The HF-ACTION Newsletter

To build a sense of national unity and commitment among HF-ACTION participants and staff and to foster participant retention, HF-ACTION will produce a newsletter under the supervision of the Recruitment and Retention Subcommittee.

Identifying and Resolving Retention Problems

Keys to success here include:

- Staff sensitivity to signs of problems, so they can be identified at the earliest possible moment, when intervention is easiest and most effective.
- Careful documentation of problems, allowing timely and complete communication among staff and with participant to address problem.
- Interventions designed to effectively resolve problems, especially efforts to maintain positive communication with participants who are having difficulty committing to a regular schedule of clinic visits or exercise training sessions.
- Active participation of the coordinating center's behavioral psychologist in counseling study coordinators.

These keys to success apply regardless of the stage participants have reached in HF-ACTION or the level of difficulties. Efforts to address possible adherence and retention problems should be initiated during screening, especially during run-in. Any signs of potential difficulty identified below as "red flags" should be taken seriously and fully discussed with potential participants and among the staff. Special attention should be paid to: problems scheduling screening visits, frequent rescheduling, difficulty establishing or maintaining telephone contact, participant reservations about study burden, past problems in modifying behavior, complaints about procedures, or serious

reservations about randomization. The results of the behavioral run-in itself should be carefully evaluated for signs of difficulty.

Two additional points should be emphasized to potential participants prior to randomization.

- First, the critical need for follow-up visits even in the absence of protocol adherence should be made clear at this point and on a continuing basis. We need to make clear our governing paradox for patients in the training arm of HF-ACTION:

  "We really, really want you to stick to your exercise training program, but even if you decide you don't want to (or can't) right now, we really, really want you to stay in touch. We know there will be times when you will slip from your training protocol. Everyone will do that, and it is to be expected. There are lots of things to do over a long period of time when you are a HF-ACTION participant. Therefore, remember how important it is for the success of our study that you come to scheduled clinic visits no matter how you are doing with your study program."

  For those patients randomized to the control group:

  "We understand that you may have wanted to be in the training group, but even if you are disappointed right now, we really, really want you to continue participating. There are lots of things to do over a long period of time when you are a HF-ACTION participant. Therefore, remember how important it is for the success of our study that you come to scheduled clinic visits."

  This point should be made during run-in and on an ongoing basis.

- Second, given the critical importance of follow-up, the fact that study staff will make every effort (consistent with good sense and respect for the participant's privacy) to maintain contact during the trial should also be made clear. If the point is made early that we will try to maintain contact no matter what, it should be easier to do, if required. In addition, making this point might stimulate some useful discussion during run-in. Potential participants should be told that their continuing participation is so important, HF-ACTION staff will do all they can to

maintain contact, including calling, writing, and trying to reach an identified contact person.

Strategies to optimize retention during the course of the study include:

- Face-to-face counseling with the study coordinator or team problem solving session
- Choose an alternate team member with strong participant rapport to contact the participant
- Consultation with the HF-ACTION behavioral psychologist
- Plan for intensified efforts for retention for major visits

Specific Retention Problems

Specific strategies identified are to be documented in the participant's file. In addition to general strategies, appropriate to all potential retention problems, HF-ACTION staff should be aware of specific retention problems and ways to address them. These are discussed below.

Pre-randomization Issues: Pre-randomization red flags and methods to intervene with participants who are exhibiting these flags are discussed in the recruitment section of the Manual of Operations. Identifying participants who exhibit substantial barriers to participation is an extremely important aspect of enrolling volunteers who are likely to be able to maintain active participation throughout the study period.

Protocol Adherence Issues: Adherence problems (i.e., difficulty maintaining active participation in exercise training) should be noted, discussed among unblinded staff and investigators, and addressed as soon as possible, especially if the problem reflects a dramatic change from participants' prior behavior. Such changes should be considered a clear indication that the potential for retention problems has markedly increased. Adequate monitoring is possible only with a computer-based surveillance of all aspects of adherence.

Protocol Adherence Red Flags: Center staff and investigators should also be vigilant in order to identify early problems with adherence. Commonly, early indicators of adherence problems include the emergence of the following red flags:

- Missed visits
- Difficulty reaching participants by telephone or failure to return calls
- Rescheduling twice or more for a visit
- Training protocol non-adherence

Interventions for Protocol Adherence Problems: The staff member should try to "validate" the participant's feelings (e.g., "HF-ACTION demands a lot from people, really more than many people can be expected to do. What part of the program is hardest for you right now? Perhaps I can help make it a little easier"). Similarly, the study coordinator is probably the best contact when participants need more attention or a repetition of information. Interventions to be considered in addressing identified red flags include:

- Provide opportunity to meet in any reasonable location which is convenient to participants
- Emphasize the positive; praise all successes
- Emphasize general health issues and benefits from participation and follow-up
- Work out "modified treatment plan" to maintain some degree of adherence and avoid retention problems, such as by simplifying efforts until desired behaviors are re-established, then gradually increase intensity or complexity to protocol goal
- Work to create and maintain best possible study coordinator/participant match
- Encourage the PI and other investigators to hold regular sessions designed to help participants see the "big picture" (i.e., news about CHF and cardiovascular disease)
- Encourage PI to call participant to offer encouragement
- Maintain contact through newsletters and frequent calls, notes when indicated
- Offer extras, if acceptable to local IRBs, including birthday cards, incentives at each major visit, food for extended visits. These incentives should be used to

underscore the bonding between staff and participants, not to replace that basic social connection

- Address all concerns about study interventions; involve the Principal Investigator, if appropriate
- Be prepared to explain how questionnaires help achieve the study goal of evaluating exercise training in heart failure patients.
- Encourage family participation in activities and meetings

Participant Behavioral Issues: Sometimes participants say or do things that indicate they are dissatisfied or discouraged with certain aspects of their HF-ACTION experience. Staff and investigators should be alert for these signs and address participant concerns as quickly and effectively as possible. Since primarily a group intervention, comments of opposition or dissatisfaction may produce adverse effect on several participants if not addressed as soon as possible.

Participant Behavior Red Flags: Participant behaviors which suggest emerging adherence problems and are considered red flags include:

- Complaints about clinic visits or exercise training sessions
- Impatience during clinic visits or exercise training sessions
- "Distance" during clinic visits or exercise training sessions
- Lack of concern about non-adherence to protocol
- Expressed desire to stop exercising
- Complaints about burden of study (time required and questionnaires)
- Remarks or humor about study issues that the staff considers inappropriate

Interventions to Address Participant Behavioral Problems: For participants who feel ignored or taken for granted, the PI *may* be the best person to contact the participant. If the PI does initiate contact, he/she should focus on emphasizing the importance of HF-ACTION and of the participant to HF-ACTION. Care should be taken to avoid "guilt tripping" participants or

saying things that might be taken as manipulative. If the participant makes progress in adherence or attendance at appointments, the PI should re-contact the participant to express appreciation. Again, care is in order so as not to inadvertently come across as manipulative.

- Communicate caring and respect for participant in all actions.
- Acknowledge and discuss any concerns participant communicates and address as appropriate. A follow-up telephone call to discuss more fully or tell participant about what is being done to address concern can be helpful in facilitating adherence and minimizing risk of retention problems.
- Actively consult the coordinating center behavioral psychologist in efforts to resolve these problems.

Be open to discussing issues participant wants to talk about even when not related to HF-ACTION.

Participant Medical Issues: In a study of predominately middle-aged and older participants with CHF, medical issues involving participants and their families may make it difficult for some participants to keep scheduled HF-ACTION appointments.

Participant Medical Red Flags:

- Hospitalization
- Prolonged illness

Interventions for Participant Medical Problems: All efforts should be made to encourage participants struggling with medical problems to remain active in HF-ACTION. HF-ACTION medical staff should be consulted about these issues, and, if appropriate, participants' medical providers should be contacted to follow up on the medical problems and/or to enlist participants' primary care physicians in emphasizing the importance of staying involved in HF-ACTION.

- Talk to participant about how health problem may affect participation
- Discuss benefits (if any) of HF-ACTION participation in light of health problem

- Offer flexible appointments, including home or hospital visits, when appropriate
- Inform intervention staff if participants are involved in the exercise training intervention so that the intervention can be adjusted to suit participants' medical needs

Participant Psychosocial Issues: Many HF-ACTION participants will experience psychosocial crises (including family problems or transitions, major job changes, and other events) during the course of the study. These events may produce major problems for retention, especially among participants whose coping resources are limited.

Participant Psychosocial Red Flags:

- Specific complaints concerning lack of family support or active efforts by family members to sabotage participants' participation in HF-ACTION
- Major family crisis, illness, or transition
- Major job transition
- Major psychosocial problems

Interventions to Address Participant Psychosocial Problems:

- Take an open, inquiring attitude to find out what is going on for the participant
- Help participant find resources to cope with problems
- Encourage family support for participation in HF-ACTION
- Help participant make contact with other participants for support and facilitation of adherence
- Offer encouragement and support as well as more frequent contact if participant wants that and time is available
- The Study Coordinator, Principal Investigator, and Co-Investigators should collaborate with the participant to generate a plan for appropriate action

Center Transition Issues: Over the course of the study, many things will change at HF-ACTION regional and satellite centers, including staff, and even location. For some participants these changes may threaten continued involvement in the study. HF-ACTION staff should pay close attention to how individual participants respond to center changes and offer the support each participant needs to make a comfortable transition.

Center Transition Red Flags:

- Reassignment to new study coordinator
- Reassignment to new center personnel for any procedure or test
- Less frequent interaction with staff
- Delays in timely progression of clinic visits or exercise training sessions

Interventions to Address Center Transition Problems:

For participants who seem to be bothered by some aspect of the center organization or procedures, the study coordinator might be the best person to contact the participant. The study coordinator is probably known to all participants, and should be able to communicate the "big picture" of the center.

- Let participant know in advance about changes at the center
- Introduce participant to new personnel
- Listen to and address any participant concerns
- Ensure privacy for all discussions, so participant feels secure comments are confidential

Retention Monitoring and Assistance/ Drop-out Recovery

Recruitment and Retention Committee

The Recruitment and Retention (R&R) Committee (composed of Principal Investigators, Co-Investigators, Program Coordinators, and Retention Coordinators, the coordinating center, and the NHLBI), will will meet on a regular basis, either face-to-face or by conference call.

General Information: Knowing that retention of participants for HF-ACTION will be a challenge and that difficulties will be encountered, the primary purpose of the R&R Committee will be to provide on-going retention assistance to all HF-ACTION centers. The R&R Committee will monitor retention continuously and identify problems early on in order to work with the centers to find solutions that will facilitate meeting overall retention goals.

Retention Monitoring: A system to monitor adherence and retention is important for early identification of participant problems so that timely retention and recovery efforts can be implemented.

Local Monitoring

HF-ACTION data forms facilitate the collection of data on retention of participants. The Missed Visit Form will be the source of data to track individual participant and center patterns of missed visits.

Central Monitoring

Beginning with screening, information gathered on each potential participant will be captured centrally by the coordinating center and tracked. The study's website will allow centers to generate reports that show the current status of all their participants and center-specific retention rates. Additional reports will be prepared by the coordinating center and made available to individual centers and the Steering Committee. The R&R Committee will utilize information gathered locally and centrally to generate progress reports and allow for timely identification of study-wide, center, or individual participant retention problems and potential solutions.

Study-wide reports of retention will be reviewed by the Executive Committee and a summary will be presented at each meeting of the Steering Committee. Study-wide reports will allow identification of overall retention success and problems. Center-specific reports will identify local problems, to be addressed with help from the R&R Committee. Individual participant reports will help staff focus their efforts on participants with adherence or retention problems.

The study coordinator for individual participants will be responsible for monitoring the tracking reports and initiating team conferences for retention strategies or efforts to reengage inactive participants.

Processing and Reporting: To facilitate the processing, reporting and problem-solving elements of the retention process, each center will be assigned a contact person who is a member of the R&R Committee. The role of this contact person will be: to review and provide feedback concerning the center's progress toward achieving their retention goals; to serve as a resource contact for the center; and to lend support and encouragement to the center. In order to utilize the collective resources of the R&R Committee, centers are encouraged to contact this person with any questions or issues they identify in their retention efforts. Each R&R Committee member will be assigned one or more centers (other than their own) for which they serve as contact person. They will have access to adherence and retention information from each of their centers from web-based reports.

R&R Committee members will meet at regular intervals, generally by conference call. It is anticipated that these will be at least once a month during the initial enrollment period. A dual purpose of the conference calls will be to formalize reports to the Executive Committee and to begin the process of defining specific approaches to retention problems at the center and/or study-wide level. Study-wide data regarding the number of participants who are missing appointments or inactive will be reviewed, along with the reasons for these problems. These data will be compared among clinical centers, and if large differences are found, explanations for these differences will be sought. It will be the responsibility of each center to facilitate this review process by providing center-specific summaries of their retention activities, if requested. Problem-solving plans will be developed by R&R Committee.

Each center will be kept abreast of national and local retention progress based on web-based reports, retention summaries issued by the coordinating center, and the regular retention reports provided by the R&R Committee to the Executive Committee. These retention reports will reflect the progress of the study as a whole and allow centers to measure how their efforts compare to others.

Strategies for solving retention problems will be center specific based on individual site and study-wide retention data. These strategies will be defined and implemented through a series of hierarchical responses that will be applied study wide. The stepped response is designed to address more serious retention problems with more aggressive assistance.

The following responses serve mainly as a process to approach retention problems; considerable flexibility will be required in the implementation of the responses. The actual response will be determined by the R&R Committee on a continuing basis, depending upon center-specific factors and study-wide retention progress. If a significant number of centers fail to meet retention goals, it may be necessary to reassess study-wide retention strategies and develop recommendations to enhance overall HF-ACTION retention.

Level 1 Response: R&R Committee Liaison Consultation

If retention at a HF-ACTION centers falls below goal, the R&R Committee contact person assigned to the center will actively communicate with center staff to gather more information regarding possible problems, and steps planned to address these problems. This information will be communicated to the R&R Committee at its next meeting or monthly call.

Level 2 Response: Written Response

If a center does not improve retention and approach or reach their goal within three months following a Level 1 response, the center will be asked to provide to the R&R Committee a written evaluation outlining the center's perception of the problem and planned approaches to improving retention. As part of this report, the study coordinator and Principal Investigator will each provide a brief written assessment and each will sign-off on the final document. This report will be reviewed at the next meeting or monthly call of the R&R Committee.

Level 3 Response: R&R Committee Review

If retention goals are still not being met within three months of a Level 2 response, the center will be discussed in detail at the next meeting of the R&R Committee with the center liaison serving as the discussant. A representative of the center will be encouraged to attend this meeting. A detailed analysis with specific strategies will be developed. The R&R Committee contact person will contact the center weekly to monitor progress and offer support.

Level 4 Response

If a particular center still remains below the retention goal within three months after a Level 3 response, the R&R Committee will work with the coordinating

center to be sure that appropriate site visitors are included in the next regularly-scheduled, study-wide site visit at the center. The Study Coordinator and Principal Investigator of the center will be required to participate in this process. Site-visitors will be identified by the R&R Committee and will be members of the HF-ACTION study group. Following the site visit, the chair of the site visit will submit a written report and recommendations to the center, Executive Committee, and the R&R Committee. A written response by the center will be expected within one month following receipt of the report.

Drop-out Recovery Program

Each center should develop a drop-out recovery process under the guidance of the coordinating center's behavioral psychologist. All staff should understand that when participants feel pushed to meet study goals, the risk that they will drop out of the study increases. It is important that participants not feel so pushed to adhere with study requirements that they refuse further contact. It is better to maintain contact with participants, even infrequent contact, than to have them declare themselves as drop outs from the trial. Thus, the first aspect of a drop-out recovery program is for all staff to learn to back off from encouraging participation before a line is crossed after which participants refuse further contact.

The second aspect of a drop-out recovery program is identifying those participants who exhibit red flags of the variety identified earlier in this chapter. The coordinating center's behavioral psychologist and other members of the center staff team should discuss methods to re-engage participants who are on the verge of dropping out. Helping participants talk about why they do not want to continue in HF-ACTION may be helpful in leading to efforts to work with participants and engage them in effective problem-solving to address their concerns. Engaging participants in topics unrelated to HF-ACTION can also help maintain contact. Maintaining even minimal contact with participants during periods when motivation to be active in HF-ACTION is low makes it easier to re-engage them in the study when stressors and barriers to participation lower.

DCRI Data Management

Case Report Forms (CRFs)

One CRF binder will be provided for each patient randomized into HF-ACTION. Page-specific CRF instructions are printed contralaterally, except for the patient self-report forms. Refer to the *Study Coordinator Tools Binder* for patient self–report form instructions. Each CRF binder contains Baseline, 3-Month, 6-Month, Final Visit, and the Study Completion/Death CRF pages. In order to protect your storage space, CRF supplies for the 9-month visit through year 3 will be held and shipped only when appropriate.

One Additional CRF Pages box will be provided per site. This box contains Exercise Compliance CRF pages, Cardiovascular Event Forms, Additional Telephone Logs, Additional Hospitalization CRF pages, Data Clarification Forms (DCFs), and Missed Visit Forms. Complete these pages on an as-needed basis throughout the study. The CRF write protector includes general CRF instructions and a medication list. When completing CRF pages, insert a write protector between the pages to prevent the transfer of stray marks.

Refer to the *Forms Flow Chart* in this section for an overview of all CRF pages and associated worksheets/forms. Use this chart to determine if and when documents should be submitted to Duke Clinical Research Institute. In general, sites should submit white and yellow copies of visit-specific CRF pages ***within 14 days of the study visit***. Maintain the pink copy of the CRF at the site in the patient's CRF binder.

A batch of CRFs for registry patients will also be provided. Maintain blank and completed pink pages for registry patients in the Registry CRF box.

CRF supplies (binders, forms, etc.) may be reordered, as needed, throughout the trial; however, Data Clarification Forms (DCFs) and Missed Visit Forms are printed on regular paper. Copies of these forms may be printed from the HF-ACTION website (http://members.hfaction.org).

DCRI Data Management System and Operational Procedures

A Clinical Data Specialist (CDS) at Duke Clinical Research Institute (DCRI), in collaboration with the Lead Statistician and Information Technologies Programmers, will be responsible for managing the design, programming and implementation of automated systems to support the clinical trial. The CDS is responsible for directing the duties of personnel who will receive data

forms, manage, track and enter data forms, and query missing and inconsistent data. The CDS will coordinate the flow of work for the data management team, which will consist primarily of programmers, a central files group, data entry and query teams.

Data Entry

The programmed data entry screens will undergo a user-acceptance testing and validation process. All CRFs will be double-data entered. CRF data will be entered within 2-3 business days of receipt.

Back-up Security

The DCRI backs up the entire clinical database and the IVRS databases daily to a secure tape back-up system.

Quality Control

The DCRI retains a high level of quality control by utilizing highly trained data management staff, double data entry and verification of all data entered. Quality checks are conducted frequently by a Clinical Data Specialist; weekly automated Quality Control Reports are generated and reviewed by a Clinical Data Specialist. In-house audit of the database system is scheduled during three different stages of the trial.

Data Clarification Forms (DCFs)

Data queries will be electronically programmed in the Clintrial database. All query programming will undergo independent validation. Clintrial data quality programs will be run in batch mode nightly on all data that has been entered. An audit trail will be maintained. Queries will be printed on a DCF which will be reviewed by data management personnel for appropriateness and accuracy before being sent to the site. DCFs will be faxed to sites within several days of CRF receipt. Once a DCF is received at the site, and clarification/resolution has been documented on the DCF, the signed DCF will be faxed to Data Management for database entry and the original maintained in the appropriate CRF at the site. If urgent resolution is required, phone queries may be performed. In this event, sites will receive written documentation of the phone resolution response to be maintained with the appropriate CRF. As needed, Site Management personnel may assist in obtaining query resolution when sites are slow to respond. Sites will be encouraged to call their site monitor with questions regarding DCFs. Manual DCFs may be generated by a site or by Site Management. Both electronic and manually generated DCFs will require the approval and signature of the Study Coordinator.

Forms Retention

All original data forms received at DCRI are kept in locked, secured cabinets in DCRI Data Management for the duration of the study. In addition, a copy of all forms is stored in a central secure location. After the study is completed and the data base locked, original forms will be archived and stored in accordance with Good Clinical Practice Guidelines. Additionally, a copy of all forms and source documents will be archived at the site in accordance with Good Clinical Practice.

Forms Flow Chart

The following forms/worksheets/diaries/tools are provided for the HF-ACTION trial:

	Physical Location	Submission Location and Method
Patient Checklist *Checklist of study procedures. Highly recommended tool for Study Coordinators.*	Study Coordinator Tools Binder	Do not submit
Inclusion/Exclusion Worksheet *Checklist of all inclusion/exclusion criteria.*		
Patient Contact Information *Tool to enhance patient follow-up.*	Study Coordinator Tools Binder	FedEx a copy to DCRI in Confidential Submission Envelope
EuroQoL Thermometer *Worksheet for patient to complete. Patient response will be transcribed onto CRF.*	Study Coordinator Tools Binder	Do not submit
6-Minute Walk Worksheet *Tool for 6-minute walk. Information collected will be transcribed onto CRF.*		
Supervised Exercise Training Prescriptions *Form for providing the patient's assigned exercise prescription to the cardiac rehab centers. Initial and Follow-up Prescriptions are provided.*	Study Coordinator Tools Binder	Fax to the patient's cardiac rehab program
Heart Monitor Dispensing Log *Log to help Study Coordinators keep track of heart monitor units given to patients.*	Study Coordinator Tools Binder	Do not submit
Script/Worksheet for Telephone Calls *Combination script and worksheet to be used during follow-up phone calls.*		
CPX Worksheet *Worksheet used to collect exercise testing results. The CPX Core Lab uses this to set target training heart rates.*	CPX Binder	Fax to CPX Core Lab at 919-681-9274
Patient Expectations Evaluation *Worksheet for patient to complete immediately after CPX testing. Patient response will be transcribed onto CRF.*	CPX Binder	Do not submit
Patient Diaries *Two types of diaries are provided. Both collect resource utilization information. The version for exercise patients collects daily home exercise information and will be used to calculate home exercise compliance. Store completed diaries with the patient's study records.*	Inside plastic baggie in start-up kit	Do not submit

See http://members.hfaction.org for examples of these forms.

Forms Flow Chart

	Physical Location	Submission Location and Method
Supervised Exercise Training Worksheet *Worksheet completed by exercise trainers at exercise sessions. May be faxed in batches of three to Study Coordinator. Study Coordinators should photocopy all completed worksheets and submit copies to the DCRI with the CRFs.*	**Supervised Exercise Training Binder**	**FedEx copies of all worksheets to the DCRI**
Checklist for Cardiac Rehab Programs *Guide designed for exercise trainers.*	**Supervised Exercise Training Binder**	**Do not submit**
Patient Certificates *Certificates of achievement for exercise trainers to give to patients after 18 and 36 sessions.*		
Home Exercise Guides *Form with home exercise instructions to be given by exercise trainer to the patient.*		
Baseline, 3-Month, and 6-Month CRF Pages (3-part NCR paper) *Must be completed within 14 days of the study visit. Submit white and yellow pages.*	**Patient CRF Binder**	**FedEx to DCRI**
Final Visit CRF Pages (3-part NCR paper) *Final visit CRF pages required for all randomized study patients. Complete when a patient withdraws consent for continued participation (verbally or in writing), the patient dies, or when the study is completed. Store completed pink copies in the Patient's CRF Binder.*		
Study Completion/Death CRF Pages (3-part NCR paper) *Required when a patient withdraws consent for continued participation (verbally or in writing), the patient dies, or when the study is completed. Store completed pink copies in the Patient's CRF Binder.*		
Resource Utilization Rapid Report Form (goldenrod-colored page) *Form for reporting resource utilization (hospitalizations, etc). Fax at* ***each study visit regardless of resource utilization.***	**Patient CRF Binder and in Visit-Specific CRF boxes**	**Fax to Linda Davidson-Ray at 919-668-7051**
9-Month, 12-Month, and 15-Month CRF Pages (3-part NCR paper) *Must be completed within 14 days of the study visit. Store completed pink copies in the Patient's CRF Binder.*	**9-Month, 12-Month, and 15-Month CRF Pages Box**	**FedEx to DCRI**
18-Month, 21-Month, and 24-Month CRF Pages (3-part NCR paper) *Must be completed within 14 days of the study visit. Store completed pink copies in the Patient's CRF Binder.*	**18-Month, 21-Month, and 24-Month CRF Pages Box**	**FedEx to DCRI**
3-Year CRF Pages (3-part NCR paper) *Must be completed within 14 days of the study visit. Store completed pink copies in the Patient's CRF Binder.*	**3-Year CRF Pages Box**	**FedEx to DCRI**

Forms Flow Chart

	Physical Location	Submission Location and Method
Exercise Compliance CRF Pages (3-part NCR paper) *Collects exercise compliance calculated by the Study Coordinator. Use the Home Exercise Compliance Calculation Instructions or the Home Exercise Compliance Calculation Tool (Excel spreadsheet) to complete this CRF page. Submit with the associated visit-specific CRF pages. Store completed pink copies in the Patient's CRF Binder.*	**Additional CRF Pages Box**	**FedEx to DCRI**
Cardiovascular Event Forms (3-part NCR paper) *Required only if the patient experiences a cardiovasuclar event. Submit with the associated visit-specific CRF pages. Store completed pink copies in the Patient's CRF Binder.*		
Additional Hospitalization and Additional Telephone Log CRF Pages (3-part NCR paper) *Additional CRF pages for use as needed. Submit with the associated visit-specific CRF pages. Store completed pink copies in the Patient's CRF Binder.*		
Data Clarification Forms *Form for correcting data that has already been submitted to the DCRI. May be completed by Study Coordinator or Site Monitor.*	**Additional CRF Pages Box**	**Fax to DCRI at 919-668-7100**
Missed Visit Forms *Must be completed within 14 days of the missed study visit.*		

Adverse Events and Serious Adverse Events

Definitions

The following definitions of an adverse event (AE) and serious adverse event (SAE) are based on NHLBI policy.

Adverse Event

Any untoward medical occurrence in a patient or clinical investigational subject administered an investigational intervention and which does not necessarily have a causal relationship with this treatment.

An AE can therefore be any unfavorable and unintended sign (including an abnormal laboratory finding), symptoms, or disease temporally associated with the investigational intervention, whether or not considered related to the investigational intervention. (ICH 1996)

Serious Adverse Event

Any untoward medical occurrences that may result in any of the following outcomes:

- Death
- Is life-threatening
- Requires inpatient hospitalization or prolongation of existing hospitalization
- Results in persistent or significant disability/incapacity
- A congenital anomaly/birth defect in a child born to the patient
- Important medical events that may not result in death, be life-threatening, or require hospitalization may be considered a serious adverse event when, based upon appropriate medical judgment, it may jeopardize the patient or subject and may require medical or surgical intervention to prevent one of the outcomes listed above

Disability is defined as a substantial disruption of a person's ability to conduct normal life's functions (Federal Code of Regulations 21 CFR 312.32)

Recording of AEs and SAEs on the Case Report Form

For the purpose of the HF-ACTION study, the following AEs and SAEs will be collected:

- Deaths
- Hospitalizations
- Hospitalization/observation unit stays lasting <24 hours
- Emergency room visits
- Urgent clinic visits
- AEs occurring while exercising *(including angina, syncope/presyncope, palpitations, symptomatic hypoglycemia and/or falls)*
- All cardiovascular events *(including worsening heart failure, acute coronary syndrome, arrhythmia, and stroke)*

For the purpose of this protocol, hospitalizations will be identified as **planned** or **not planned**. Specific information on congenital anomalies will not be collected. At the end of the study or at death, an attempt will be made to ascertain if any permanent disabilities occurred related to the intervention. AEs and SAEs will be collected **from randomization through follow-up** and recorded on the CRF.

Expedited Reporting of SAEs

SAEs resulting in a death associated with exercise training, defined as occurring while exercising or within 3 hours after exercising, must be reported to the DCRI within **5** calendar days of knowledge of the patient's death by completing and faxing the Study Completion/Death Form (CRF page 127) to: DCRI Safety Surveillance at **1- 919-668-7138.** After faxing, the Study Completion/Death Form should be submitted to the DCRI with the other CRF pages. The discharge summary and/or autopsy report, and/or brief summary describing the out-of-hospital death should be submitted with the CRF. DCRI Safety Surveillance may request additional data and/or data clarifications on Study Completion/Death Form as needed.

IMPORTANT: Each site must comply with their IRB requirements for reporting AEs and SAEs, as appropriate. The DSMB will review all relevant safety data on a routine basis and promptly notify the NHLBI and the HF-ACTION Executive Committee of any safety concerns. For additional questions, contact DCRI Safety Surveillance team at **1- 919-668-8624**.

From: _____

Fax Number: _____

Phone Number: _____

Date: _____

Page 1 of ____

SAFETY SURVEILLANCE

Phone: 919.668.8624
Fax: 919.668.7138

Site Number: _____ Patient Number: _____

The following are included in this transmission:

- ❑ Study Completion/Death Form
- ❑ Other

_____

_____

ALL DEATHS OCCURRING *DURING or WITHIN 3 HOURS AFTER EXERCISE TRAINING* MUST BE REPORTED WITHIN 5 DAYS OF KNOWLEDGE OF THE PATIENT'S DEATH TO DCRI SAFETY SURVEILLANCE.

Please fax this form to DCRI Safety Surveillance at 919-668-7138.
Please contact DCRI Safety Surveillance at 919-668-8624 if you have any questions.

Clinical Events Committee (CEC)

The purpose of the CEC is to provide unbiased, retrospective adjudication of the major clinical endpoints. For HF-ACTION, the CEC may also be referred to as the Endpoint Subcommittee (ES).

If any of the following clinical events occur at your site to HF-ACTION study patients, obtain the items listed below.

Event	Submit the following for CEC adjudication:
Hospitalizations (all-cause) **Death (all-cause)**	Required documentation: • Hospital discharge summary *If discharge summary is not available, submit copies of other supporting source documentation. For deaths occurring outside the hospital, submit a note describing what is known about the death.* • ECGs for hospitalizations or deaths related to MI *Submit both rest and event-related ECGs with dates and times.* If available, also provide: • Autopsy report, if applicable • Cardiac diagnostic, interventional, or operative reports • Other event-related source documentation such as progress notes, transfer notes, CT reports, consultations, or nursing notes

Submit documentation with the CRF to the DCRI, whenever possible. However, if the source is not available at the time of CRF submission, then submit within 14 days. FedEx submission supplies are provided.

Note: Before submitting any source documentation, remember to include the patient's study number and initials on all items. Delete <u>all</u> patient identifiers, i.e. patient's name, address, social security number, etc. Source documentation submitted must be in English. Sites will be responsible for translations accordingly.

Additional source documentation may be requested for CEC review if information previously collected is not sufficient to rule on an endpoint. Additional documentation requests will be faxed on a *CEC* Data Clarification Form (DCF).

If you receive a faxed *CEC* DCF,

- Do sign and date the CEC DCF.
- Do submit the source documentation requested via fax within 14 days. Remember to label the source documents with the patient's study number and initials, <u>and</u> delete all patient identifiers.
- Do NOT attempt to verify or alter any study data on a *CEC* DCF.
- Do maintain the *CEC* DCF in your patient study file.

**If a hospital discharge summary is not available, please submit a note describing the course of the hospitalization.

*A source document is an original record, form, or report where patient information is first written or reported. Source documents may include operation reports, ECGs, x-rays, hospital/clinic records, consultation reports, discharge summaries, laboratory reports, etc.
When submitting source documentation, please send photocopies from the medical record (no originals).

HF-ACTION Coordinating Center and Committees Directory

HF ACTION Coordinating Center

Name	Role	Address	Phone	Fax	Email	Office Contact
Dan Bensimhon	HF ACTION Cardiology Fellow	DUMC Duke Center for Living #253 Durham, NC 27710	919-970-7345 (p)		Bnisi001@mc.duke.edu	
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Tanya Goyal	Adherence Post Doc	DUMC 4567 South Hospital Durham, NC 27710	919-681-6401		Goyal002@mc.duke.edu	
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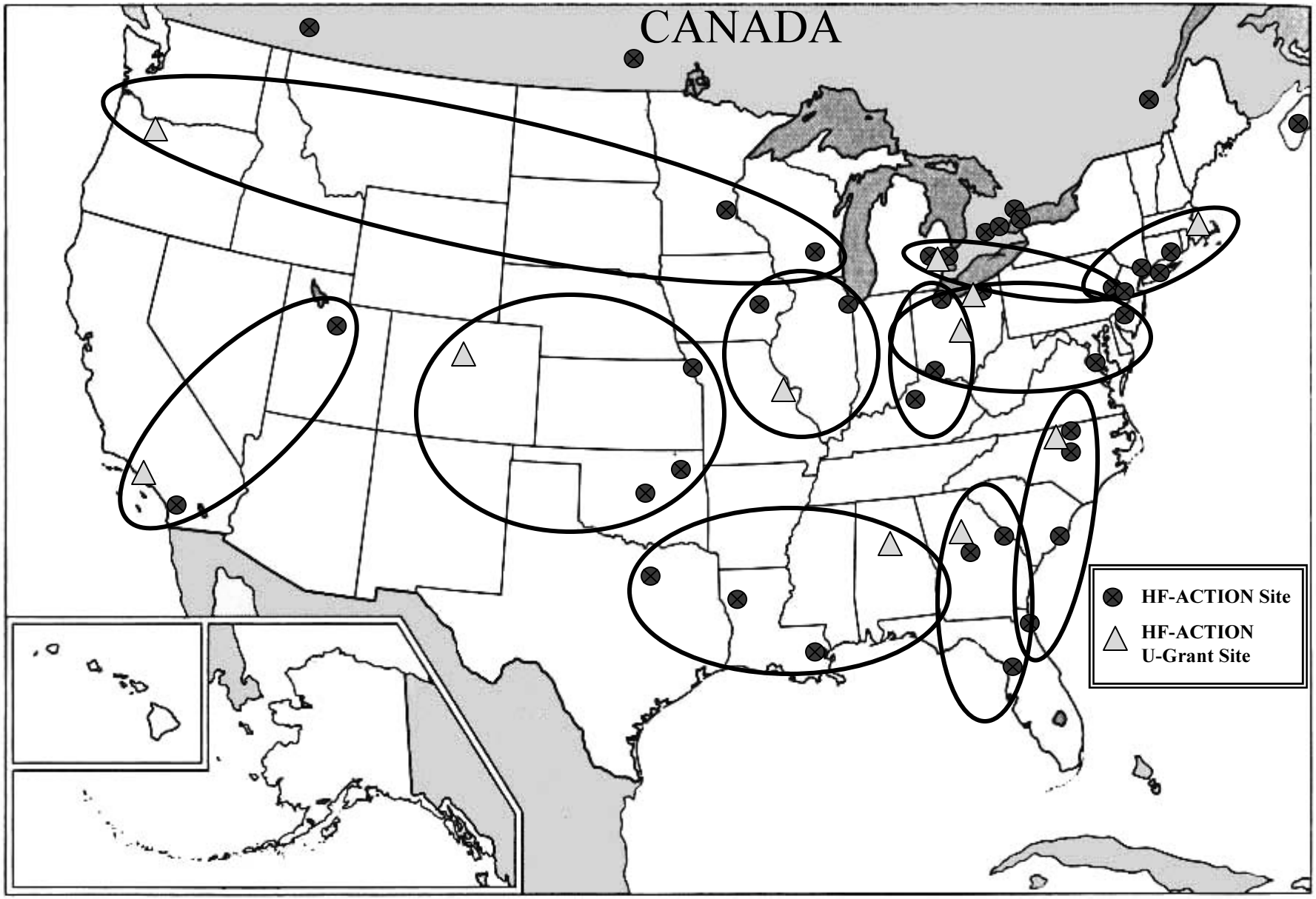

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