

Excel Series Owner's Manual

ES 5.0

ES 7.0

ES 9.0



my goal. my path. my machine.



Thank You For Selecting True

In 1981, Frank Trulaske launched True Fitness Technology, Inc. and began manufacturing hand-crafted treadmills.

His team's obsession with quality has propelled True to the top of the industry and has created one of America's oldest, largest and most respected fitness equipment manufacturers.

Over the years, True has designed, developed, patented and fabricated many new and cutting-edge innovations for their products: including advanced features, manufacturing components and technological breakthroughs.



"Our original goal was to build the world's best treadmills, and today we believe we're doing it!"

-Frank Trulaske

Intensive quality control standards guarantee excellence in every phase of production, resulting in the finest products available in the marketplace.

True treadmills are consistently rated #1 for their smooth, quiet and comfortable performance.

True is rapidly becoming the choice for workouts among beginners, rehab patients and top athletes world-wide.

Today True offers a full line of treadmills, upright and recumbent bikes, elliptical trainers, strength and flexibility equipment. True is proud to "Deliver The Best!"

Review for Your Safety

IMPORTANT SAFETY INSTRUCTIONS

When using this exercise machine, basic precautions should always be followed, including the following:

Read and understand all instructions and warnings prior to use.

Obtain a medical exam before beginning any exercise program. If at any time during exercise you feel faint, dizzy, or experience pain, stop and consult your physician.

Obtain proper instruction prior to use.

Inspect the treadmill for incorrect, worn, or loose components and do not use until corrected, replaced, or tightened prior to use.

Do not wear loose or dangling clothing while using the treadmill.

Care should be used when mounting or dismounting the treadmill.

Read, understand, and test the emergency stop procedures before use.

Disconnect all power before servicing the treadmill.

Do not operate electrically powered treadmills in damp or wet locations.



Review for Your Safety

IMPORTANT SAFETY INSTRUCTIONS

Do not exceed maximum user weight of 300 lbs.





Keep the top side of the moving surface clean and dry.



Keep children and animals away.

This treadmill is intended for residential use only.




All exercise equipment is potentially hazardous. If attention is not paid to the conditions of equipment usage, death or serious injury could occur.


Quick Start Guide

Quick Start into a manual workout by pressing , or set up a different workout by selecting a workout and adjusting settings if necessary. Use My Wheel,   keys, or numeric keys and press  to accept each setting.

You can keep tuning your workout setup by repeatedly pressing  to go to the next setting. Your workout starts only when you press .

Press  to begin your workout.

Adjust speed or incline at any time by using the dedicated **speed** and **incline** keys on the control pod, or press  or  and use My Wheel or numeric keys, pressing  to accept your adjustment.

Change workouts during your workout by pressing a Quick Workout key or the Pre-Set Workout key and pressing .

Change data readouts by pressing .

Pause your workout by pressing .

Before Your Workout

During Your Workout

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Model Differences

Your new treadmill is part of the True Excel Series treadmills. Since this owner's guide covers all four Excel models, you might notice descriptions of features that are different from your treadmill. The main differences are in the consoles.

Model Differences

ES 5.0

- Single-window LCD display
- Touch-sensitive keys
- My Wheel Controller
- HRC Planner
- SOFT Select
- Main controls on balance bar pod
- Cooling fans



ES 7.0

Adds to ES 5.0:

- Dual-window LCD display
- Audio system instead of fans

**ES 9.0**

Adds to ES 7.0:

- 3% decline
- Cooling fans




Starting And Stopping the Treadmill Safely

Place your feet on the straddle covers.

Attach the safety lanyard to your waistband.

Place the safety key on the key holder.

Set up your workout (see Chapter 1) and press  .

Stop the treadmill by reducing speed to 2 mph, then press .

Starting And Stopping Your Treadmill Safely



Basic Operation

In This Chapter:

My Wheel
Manual Operation Details
Quick Workouts
Quick Speed
Workout Time
Heart Rate Monitoring
Special Workouts
Classic Pre-Set Workouts
Actual Speed Display

Chapter 1: Basic Operation

Chapter 2: Heart Rate Control Workouts

Chapter 3: User Programs

Chapter 4: Gerkin Fitness Test

Chapter 5: HRC Planner


Chapter 6: Audio and Fan Accessories




Chapter 7: Designing an Exercise Program




Chapter 8: Care and Maintenance


Using the Keyboard


CHAPTER ONE: BASIC OPERATION

Selecting Workouts: Press any of the workout keys and press  to begin your workout using the default settings. The Special Workout keys have multiple choices under each key; press the key multiple times to access the additional choices.

Before pressing , you may adjust other settings like Workout Time and Body Weight, pressing  after adjusting each setting. Press  at any time to begin your workout. Note that HRC and HRC Planner workouts require settings adjustments.

Adjusting Settings: Use the numeric keypad, the   keys, or My Wheel (see next page) to adjust numeric settings. Press  to accept each settings adjustment.

Control Pod / Primary Controls: During your workout, press  to stop the treadmill and pause your workout. Press  to resume your workout. Press and hold  to clear your workout.

Change Data Display: During your workout, press  to change the data displayed.

Safety Lanyard: This magnetized cord must be in place on the treadmill balance bar location, and should be attached to your clothing. The treadmill will not operate if the lanyard is not attached.


Using the Keyboard

My Wheel My Wheel is typically used to adjust a numeric value.

Step 1. Press one of the four Settings Keys surrounding My Wheel. The display will indicate the value and its current setting, as in:

SPEED = 2.5

Step 2. Touch your finger anywhere on My Wheel, then drag your finger clockwise to increase and counterclockwise to decrease.

Step 3. Press  to accept your value change. If you do not press enter within 3 seconds, the original value will remain unchanged.

During Run Mode: Actions on My Wheel perform a change speed function, requiring the confirming  press as usual.

Note: any values adjustable by My Wheel are also adjustable by the numeric keys or the   keys.






Manual & Quick Workouts


CHAPTER ONE: BASIC OPERATION

Press Quick Start: Start the treadbelt at 0.5 mph at the default workout time of 30 minutes.


Setting Time or Distance Targets: Enter your weight and press . Now either enter a workout time and press , or press  to be prompted for a target distance.

You can keep adjusting your workout setup by repeatedly pressing . Your workout starts only when you press .

: Press this single key to quickstart the treadmill to 3 mph.

: Press this single key to quickstart the treadmill into the walk segment of Level 8 Speed Intervals, alternating between 2.2 mph and 5 mph in one-minute increments. See Special Workouts and Speed Interval workout section for how to change these speeds.

: Quick Starts treadmill to 6 mph.


: Press the Cool Down key to exit your workout into a walk. The cool-down speed at 0% grade is calculated to be 40% of your average workout intensity or 2.5 mph, whichever is lower.

Manual Operation Details

Quick Workouts


Quick Speed

Important: Quick speed keys change speed with a single key press, so take care in the keys you press.

Press , lighting the enable LED. Now the numeric keys function as speed change keys from 1 mph to 9 mph. Quickspeed is functional in any workout except fitness tests and Heart Rate Control.

Disable QuickSpeed by pressing  again.

Workout Time

Press the  key at any time to change your workout time from the default 30 minutes.

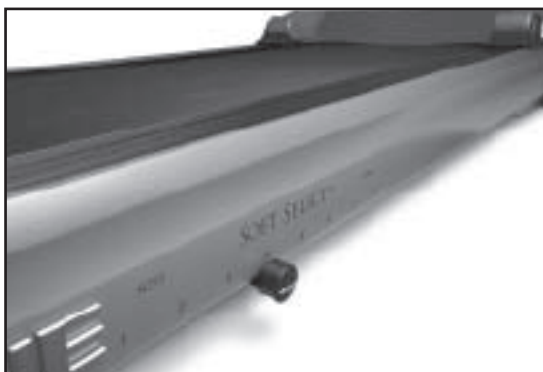
Body Weight

During workout set up, set a correct body weight *including clothes* so the treadmill can better estimate your calorie expenditure.

SOFT Select

This features lets you adjust the softness of the running surface. Move the lever on the right side of the treadmill from 1 (softest) to 8 (firmest).

SOFT Select is especially useful to accommodate users of different weights or those with special physical needs.



Heart Rate Monitoring

CHAPTER ONE: BASIC OPERATION

This treadmill can monitor your heart rate using either the chest strap provided with the treadmill or the metal grips on the hand rails (called contact heart rate or CHR pads). A chest strap transmits your heart rate to the treadmill via radio, and the CHR pads connect to a special computer circuit to extract your heart rate.

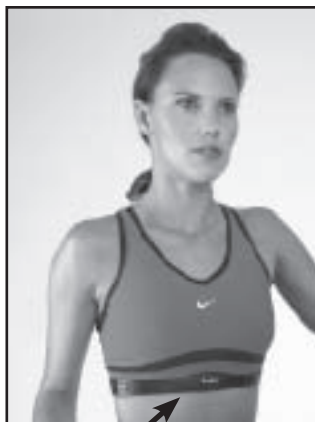


Although this treadmill functions fine without using the heart rate monitoring feature, this kind of monitoring gives you valuable feedback on your effort level. Chest strap monitoring also allows you to use Heart Rate Control, the most advanced exercise control system available.

When you wear a Polar® or compatible transmitter strap, the treadmill will display your heart rate as a digital beats-per-minute (bpm) readout.

The transmitter strap should be worn directly against your skin, about one inch below the pectoral muscles/breast line (see picture). Women should be careful to place the transmitter below their bra line.

Some moisture is necessary between the strap and your skin. Sweat from your exercise works best, but ordinary tap water may be used prior to your workout if desired.



Monitoring Your Heart Rate

Chest Strap Heart Rate Monitoring

Contact Heart Rate (CHR)

The contact heart rate (CHR) system lets you monitor your heart rate without wearing a strap.

Gently grasp the contact heart rate pads as shown.

When the system detects your hands, the Heart Rate label will start flashing in time with your heart beat. During this time, the system is analyzing and locking in your heart rate. Within about 15 seconds, your digital heart rate in beats per minute (bpm) should be displayed.

Important: The CHR System should only be used at speeds of 4 mph or lower. Above this speed the CHR accuracy is unavoidably unreliable due to large muscle movements.



Contact Heart Rate

CHAPTER ONE: BASIC OPERATION

For Best CHR Results

1. Exercise with smooth body motions.
2. Breathe smoothly and regularly, and avoid talking. (Talking will cause unrepresentative heart rate spikes of 5 to 10 bpm.)
3. Grip the pads lightly, not tightly.
4. Make sure your hands are clean, free of both dirt and hand lotions.
5. See Appendix A for more details on Contact Heart Rate monitoring.

When using a Heart Rate Control workout, it is best to use chest strap monitoring. These workouts work best with the extra accuracy gained from a chest-contact heart rate monitoring system.



A Note on CHR Accuracy





CHR monitoring may be a bit less accurate than a chest strap, since the heart rate signals are much stronger at the chest.

About 5% of the population cannot be picked up by any CHR system. This is because their heart is positioned in a more up-and-down manner in their chest, as opposed to leaning over to one side.

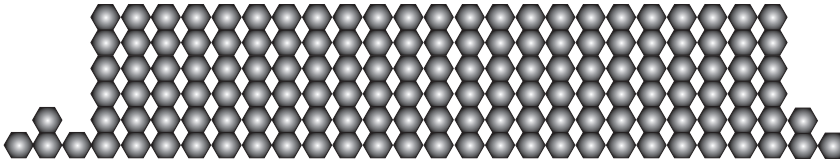
Special Workouts

CHAPTER ONE: BASIC OPERATION

Each workout has a four-minute warm up and a two-minute cool down. Speed or grade changes stay in effect until the next change is requested by the program. Changing the default workout time adds or removes segments; it does not stretch or compress the workout profile.

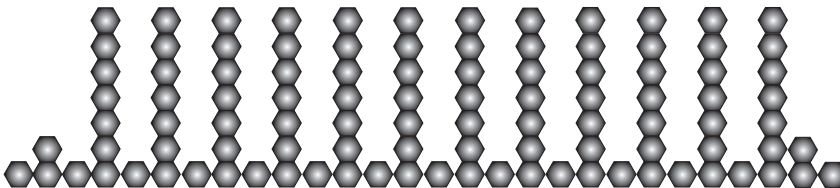
Change workout levels during your workout by pressing the  key, adjusting the numeric level, then pressing  . Change to a new pre-set workout during your workout by pressing the  key repeatedly and pressing  at your desired workout.

In a walking workout, all speeds are under 4 mph. Increasing levels increases speed from 2 to 4 mph and grade from 4% to 10%; speed and grade stay constant in the work section. Speed or grade changes in the work section are permanent



Changes in Grade

Walking intervals with grade alternate between hills and nearly flat *in two-minute segments*. Speed changes are permanent; grade changes affect the current two-minute segment only.



Changes in Grade

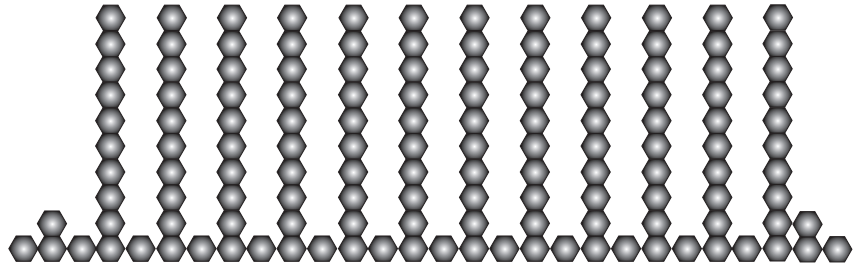
Pre-Set Workouts

Walking: Calorie Burn

Walking: Hill Intervals

**Walking and
Running:
Speed
Intervals**

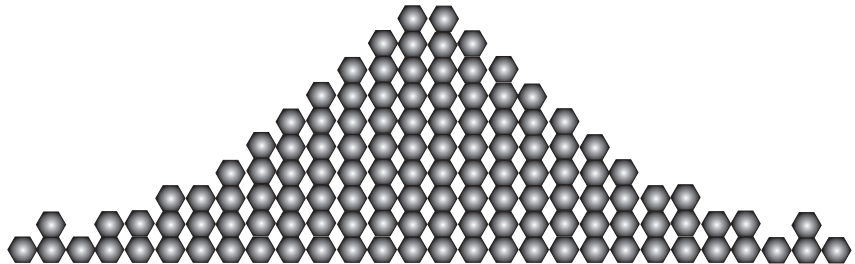
Zero-grade walking or running intervals are *in one-minute segments*. Grade changes are permanent; speed changes affect the current one-minute segment only.



Changes in Speed

**Walking and
Running:
Speed Ramp**

Zero-grade gradually increases speed then decreases speed, *changing once per minute*. Grade changes are permanent; speed changes affect the current one-minute segment only.



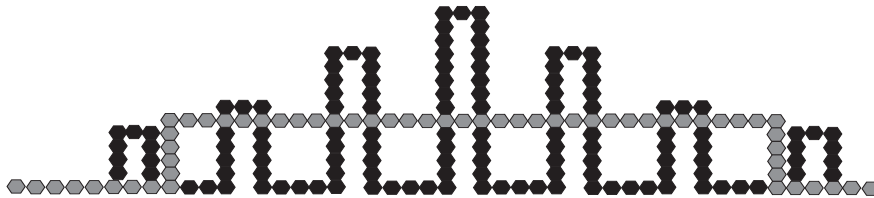
Changes in Speed

Classic Pre-Set Workouts

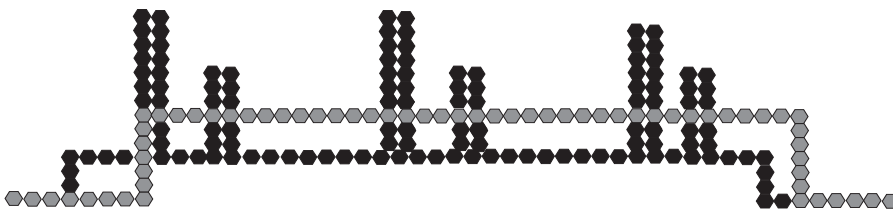
CHAPTER ONE: BASIC OPERATION

These are True's original four pre-set workouts. Changing the workout time stretches and compresses the workout profile, in contrast to the four new pre-set workouts. Other differences are explained below in the individual workout sections.

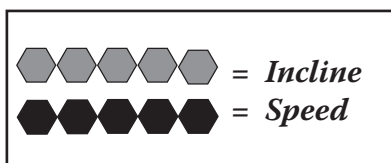
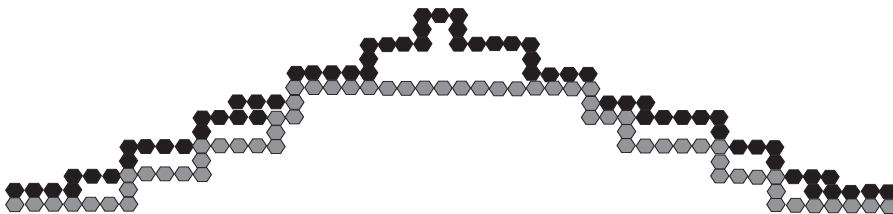
Incline changes in varying amounts; the new Hills workout has hills of the same size all throughout the workout.



Very similar to Hill Intervals, with varying incline changes.



Similar to Speed Ramp, except both speed and grade change.



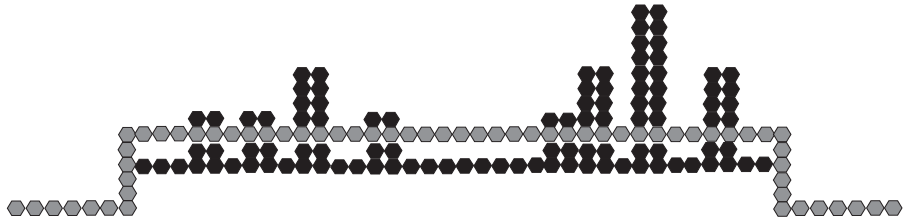
Glute Buster

Leg Shaper

Cardio Challenge

**Speed
Intervals 2**

Different from Speed Intervals 1 with the speed changing in varying amounts.

**Actual Speed
Display**

When the treadmill is changing to a new target speed, the matrix display readout will display the actual speed. As the speed is changing, the message center will display

TARGET = 12.0 MPH

Once the treadmill reaches the new target speed, the Speed readout will show the target speed.

Heart Rate Control Workouts

In This Chapter:

HRC Workout Introduction

Four Kinds of Heart Rate Control Workouts

The Easy Steps to a Heart Rate Control Workout

More Details on Interval HRC

Tips on the Warm Up Stage

How the HRC System Controls Your Heart Rate

Examples of HRC Workouts

Cruise Control

Examples of Walking Workouts

Examples of Running Workouts

Important Points About

HRC

HRC Safety Features

Chapter 1: Basic Operation

Chapter 2: Heart Rate Control Workouts

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HRC Introduction

CHAPTER TWO: HEART RATE CONTROL WORKOUTS

HRC Workout Introduction

True's heart rate control (HRC) workouts let the treadmill monitor your relative exercise intensity by way of your heart rate, then automatically adjust the workload to keep you at your target heart rate and thus your desired exercise intensity.

Your heart rate is a good measure of your body's exercise stress level. It reflects differences in your physical condition, how tired you are, the comfort of the workout environment, even your diet and emotional state. Using heart rate to control workload takes the guesswork out of your workout settings.



Consult your physician before using heart rate controlled workouts for advice on selecting a target heart rate range. Also, it is important to use the treadmill for several workouts in the manual mode while monitoring your heart rate. Compare your

heart rate with how you feel to ensure your safety and comfort.

See Appendix A for a chart that may help you pick a target heart rate.

You need to wear a heart rate monitoring chest strap to use heart rate control. See the “Monitoring Your Heart Rate” section in Chapter 1 for a guide to proper usage. It is not recommended that you use the contact heart rate system for heart rate control workouts.



Four Basic Kinds of Heart Rate Control Workouts

Various types of Heart Rate Control (HRC) are available on Excel Series treadmills. This section may describe some types of HRC that your treadmill does not have.




Time-based constant HRC: pick a target heart rate and exercise for an amount of time you select.

Cruise Control: while in any workout, set your current heart rate as your target heart rate by pressing a single key.

Interval heart rate training: the treadmill alternates work intervals at your selected target heart rate with rest intervals that are at $\frac{1}{2}$ workload. You set the length of both intervals.

Distance-based HRC (ES 7.0 and ES 9.0 only): set a target heart rate and select one of four distances, just like running a road course: 2 miles, 4 miles, 5 kilometers, or 10 kilometers.



The Easy Steps to a Heart Rate Control Workout

-
- 1 - Put on a Polar® or compatible transmitter chest strap as described in section Chapter 1.
 - 2 - Press the  key until you reach your desired workout, then press .
 - 3 - Enter your workout parameters. This includes target heart rate, maximum treadbelt speed, workout time or distance, and maximum incline. If you are using Interval HRC, pick your interval durations, too.
 - 4 - Press .

Choices During Workout Setup







CHAPTER TWO: HEART RATE CONTROL WORKOUTS

- 5 - **Warm up.** At the beginning of an HRC workout, the treadmill is in full Manual Control mode. Gradually increase your work level to slowly raise your heart rate to within 10 beats per minute (bpm) of your target heart rate.
- 6 - **Heart rate control stage.** Now the treadmill takes control of speed and incline, keeping your heart rate within a few bpm of your target. If you are using interval HRC, the treadmill alternates between work and rest intervals.
- 7 - **Cool-down.** At the end of your workout time or distance, the treadmill reduces workload by half and goes back into Manual Control mode, where you directly control your cool-down.

-
- Your treadmill can remember more than one workout setup for a heart rate control workout. The ES 5.0 has five target and two interval HRC setups; and the ES 7.0 and ES 9.0 have 5 target, 5 interval, and 4 distance-based HRC setups. It stores each set of workout parameters under numbered workouts, for example, "Target HR 1," "Target HR 2," "Interval HRC 1," etc. You can select these in later workouts so you don't have to re-enter your workout parameters, which tend to stay the same from workout to workout.
 - During workout setup, if you keep pressing , you will continue to scroll through the workout setup parameters. You can press  at any time to accept the current parameters and begin your workout.
-

During Workout Setup

During Your Workout

- Pressing any key other than  or  will exit HRC mode.
 - Adjust your target heart rate at any time during your workout by pressing , using the   keys as needed, and pressing  again. If you are lowering your target, you are limited to a 5 bpm change.
 - The time and distance accumulated during warm up are not counted against your selected workout time or distance; those values start at zero when the treadmill reaches heart rate control mode. This time and distance are accumulated into the workout summary data, as is your cooldown exercise.
-

More Details on Interval HRC

- Interval HRC works just like constant heart rate control up through the first work interval.
 - When your workout reaches your first rest interval, your workload is reduced by half, and kept at this rate throughout the rest interval.
 - The next work interval is initially set at an average of the workloads in the previous work interval.
-

Tips and How HRC Works

CHAPTER TWO: HEART RATE CONTROL WORKOUTS

Increase speed and incline gradually to slowly increase your heart rate to within 10 bpm of your target. For best results, you should take about five minutes to get to that point.

The treadmill operates in a manual control mode during the warm-up stage. You control both speed and incline. You may only increase speed and incline to the preset maximum values entered.

It is important that you start at a low level of effort and gradually increase your work load over several minutes until you approach your target heart rate. This allows your body to adapt to your workout. Increasing work load gradually will allow you to enter the heart rate control stage without overshooting your target.

Warming up too fast may cause you to overshoot your target. If this occurs, it may take several minutes before the computer software can control your heart rate. You may overshoot and undershoot your target for several minutes until stable control is achieved.

To raise your heart rate in HRC mode, speed will always increase until maximum speed is attained, followed by incline (if incline is used in the workout).

To lower your heart rate in the HRC mode, incline will always decrease until zero incline is reached, followed by speed (if incline is used in the workout).

Speed changes are in 0.1 mph increments. Incline changes are in 0.5% incline increments. This is equal to between 0.10 and 0.15 METs.


Tips on the Warm Up Stage

How the HRC System Controls your Heart Rate

**Examples of
HRC
Workouts**





- 1 - A user who physically cannot walk over 2.5 mph can safely use heart rate control by entering maximum speed of 2.5 in an HRC workout.
 - 2 - A runner can run up to a speed of 10 mph, without hills, by entering a maximum speed of 10 mph and a maximum incline of 0%.
 - 3 - A walker enters a maximum speed of 4.0 mph and a maximum incline of 6%. The walker is limited to a maximum speed of 4.0 mph and incline will be used if required to elevate the heart rate up to a maximum of 6%.
-

**Cruise
Control**

This is the simplest way to enter target heart rate training. While in manual or any program you can enter Target Heart Rate Control by simply pressing the  key. Your current heart rate will be set as the target.

For best results, you should be at least five minutes into your workout and warmed up. This will allow Cruise Control to more accurately control your heart rate.

Remember, you must be wearing a chest strap, and your heart rate should be displayed in the Heart Rate window.

To change your target heart rate press . Edit the target using   and press . If you are lowering your target, you are limited to a 5 bpm change. It is important to note that if you are raising your target, the speed and grade change safety limits (described next) may prevent the treadmill from raising your heart rate to your desired new target.

More Examples

CHAPTER TWO: HEART RATE CONTROL WORKOUTS

If you enter the HRC stage below 5 mph, the speed you enter will be the maximum speed of your workout. If you like to walk at a maximum speed of 3.8 mph, you should enter HRC at 3.8 mph.

If you enter the HRC stage above 5 mph, you will have an additional 1 mph of speed. If you enter HRC at 6 mph, your maximum attainable speed in the HRC stage will be 7 mph.

If at any time you enter the HRC stage with incline, you will have an additional 4% of incline available in the HRC stage. If you enter the HRC stage at 1% incline, your maximum attainable incline will be 5%.

If you do not enter the HRC stage with incline, no incline will be available during the HRC stage of your workout. Only speed will be used to control your heart rate.

-
- 1 - Enter HRC at 3.5 mph and 4% incline to allow a maximum speed of 3.5 mph and 8% incline.
 - 2 - Enter HRC at 4.2 mph and 6% incline to allow a maximum speed of 4.2 mph and 10% incline.
-

- 1 - Enter HRC at 6 mph and 0% incline to allow a maximum of 7 mph and 0% incline.
- 2 - Enter HRC at 5 mph and 2% incline to allow a maximum of 6 mph and 6% incline.

How Cruise Control Determines How to Change Your Exercise Intensity

Examples of Walking Workouts Using Cruise Control

Examples of Running Workouts Using Cruise Control

**Important
Points
About Heart
Rate Control**

The heart rate monitor transmitter strap provided with your treadmill should be worn directly against your skin at about one inch below the pectoral muscles/breast line. Women should be careful to place the transmitter below their bra line.

Some moisture is necessary between the strap and your skin. Sweat from your exercise works best, but ordinary tap water may be used prior to your workout if desired.

If the transmitter strap is adjusted or moved while exercising, communication may be temporarily affected.

If communication is lost for 30 seconds, the treadmill will automatically shut off.

The transmitter strap sends a low-level radio signal to the treadmill, so interference from other radio and sound waves (including everything from cordless telephones to loudspeakers) is possible. The good news is that interference is usually quite brief. If you continue to have intermittent heart rate display problems, consult your local service technician, as the transmitter strap batteries may be low.

Make sure you breath smoothly and regularly.

Talking during your workout usually causes heart rate spikes of five beats per minute or more, so avoid talking as much as possible.

Maintain a smooth walking or running motion.

A grounded outlet is critical for the HRC system to function properly. Use a dedicated 110 VAC, grounded outlet to help prevent interference.



HRC Safety

CHAPTER TWO: HEART RATE CONTROL WORKOUTS

Two users wearing the same kind of transmitter at the same time and in close proximity may cause false heart rate display readings.

Use only the transmitter provided with your True HRC Treadmill or a Polar® brand standard transmitter.

True's Heart Rate Control is patented under USPTO #5,462,504.

If your heart rate exceeds your target by 12 beats, there will be a 30% MET reduction in workload to reduce your heart rate.

If your heart rate exceeds your target by 20 beats, the unit will automatically shut off as a precautionary measure. (Be cautious when selecting your target heart rate so the 20 beat variance will not exceed your maximum heart rate as determined by your physician).

Technical Tips

Heart Rate Control Safety Features

User Programs

In This Chapter:

How to Record and Run User Programs



Chapter 1: Basic Operation

Chapter 2: Heart Rate Control Workouts

Chapter 3: User Programs

Chapter 4: Gerkin Fitness Test

Chapter 5: HRC Planner

Chapter 6: Audio and Fan Accessories

Chapter 7: Designing an Exercise Program

Chapter 8: Care and Maintenance



How To Record And Run User Programs

During a manually-controlled workout, the Excel Series treadmills always "records" the changes you make in speed or incline. The ES 5.0, ES 7.0 and ES 8.0 can save up to three User Programs

Note that this workout recording only takes place when you use the default manual mode settings; you cannot choose a target workout time or distance. Time must count up during your workout in order to be recorded.

Up to 36 changes in speed or incline can be recorded. Each speed/incline pair of changes must be separated by at least 30 seconds.

To save a manual workout, press  as you normally would to end your workout. Now press and hold  until the display shows Save User 1.

You can save your workout in User 1, or press  to select User 2 or User 3. Press and hold  to save the workout program you have selected.

To use a User Program that you have saved, simply select it from the list of programs as described in "Pre-Set Program Operation" in the previous section.



Gerkin Fitness Test

In This Chapter:

*How to Determine Your Fitness Level
Using the Gerkin Fitness Test*

Chapter 1: Basic Operation

Chapter 2: Heart Rate Control Workouts

Chapter 3: User Programs

Chapter 4: Gerkin Fitness Test

Chapter 5: HRC Planner

Chapter 6: Audio and Fan Accessories

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Gerkin Fitness Test

CHAPTER FOUR: GERKIN FITNESS TEST

One way to measure your overall fitness is to take a Gerkin fitness test. Named after the Arizona researcher who designed this test, this submaximal treadmill test (submaximal means you work below maximum effort) is used to predict VO2 max: the volume of oxygen you can consume while exercising at your maximum capacity. This particular test has gained great popularity in the firefighter and law enforcement community. Like most fitness tests, it is classified as a graded exercise test (GXT). The test is stopped at the point your heart rate reaches 85% of your age-predicted maximum.

Select the Gerkin test under the Advanced Options key. Enter your age, which is used to calculate your test termination point.

The Gerkin protocol starts at 4.5 miles per hour at a 0% incline. It then increases speed or incline every 60 seconds. For example, at the seven-minute mark, the speed increases to 6 miles per hour while the incline raises to 8%.

When your heart rate reaches 85% of your age-predicted maximum, the test waits for your heart rate to exceed the target for 15 seconds, then terminates the test.

*The version of the Gerkin Protocol that True Fitness uses in its exercise machines is the new equation of $205.8 - 0.685 * \text{age}$. To better understand why we selected this method over the outdated "220 - age" maximal heart rate equation, you can review the scientific paper in Journal of Exercise Physiology, a PDF document located at <http://www.asep.org/Documents/Robergs2.pdf>.*

Using the Gerkin Test

Accuracy of the Gerkin Test

The scientific journal, Occupational Medicine, published a study in 2004 on the accuracy of the Gerkin test. The conclusion:

“The Gerkin treadmill protocol overpredicts VO2max in healthy men and women and, therefore, should not be used for predicting VO2max in individual firefighters, particularly if VO2max is a criterion for inclusion or exclusion from duty. At this time, a valid treadmill running test is needed for predicting the VO2max value of individual firefighters.”

However, for the fitness enthusiast who is interested in monitoring their fitness level, the Gerkin test can be used to measure progress over time.



HRC Planner

In This Chapter:

*What HRC Planner Is
HRC Planner Setup
Workout Suggestion
Maintenance Workout*

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Chapter 2: Heart Rate Control Workouts
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Chapter 4: Gerkin Fitness Test
Chapter 5: HRC Planner
Chapter 6: Audio and Fan Accessories
Chapter 7: Designing an Exercise Program
Chapter 8: Care and Maintenance

What HRC Planner Is

CHAPTER FIVE: HRC PLANNER

HRC Planner creates a 21- to 24-week training program with a progressive increase in workout intensity and duration. This program is based on a few simple parameters from you, the user, including: age, resting heart rate, current activity level, and fitness goal.

HRC Planner workouts typically range from 15 minutes at the beginning of a training program to 40 minutes by week 21.

If you are a new user, you will be asked a few personal questions: age, resting heart rate, current activity level, and fitness goal.

How to measure your resting heart rate: in general, sit very still, gentle breathing, no distractions, and no talking. Best results come first thing in the morning, with no food or caffeine intake for at least three hours. Measure with your fingers against well-known pulse points like your wrist or your neck, and count for at least 30 seconds, then convert to a beats-per-minute number.

Current activity level: choose from not active, moderately active (20 – 60 minutes of moderate to vigorous activity per week), and very active (more than 60 minutes of moderate to vigorous activity per week). See workout suggestion section for how this selection affects your training program as follows:

If you chose “inactive” as your current activity level, the training program will be a 24-week program recommending three workout days per week for the first three weeks, four days per week for the next 13 weeks, and five days per week for the final eight weeks, followed by a four-day-per-week maintenance program.

If you chose “moderately active” or “very active” as your current activity level, the training program will be a 21-week program recommending four days per week for the first 13 weeks, and five days per week for the final eight weeks, followed by a four-day-per-week maintenance program.

What HRC Planner Is

HRC Planner Setup

Fitness goal: choose from easy improvement, moderate improvement, or aggressive improvement.

Creating the Training Program: HRC Planner now creates and saves your entire training program.

HRC Planner does not keep track of how often you actually work out. If you train less often than suggested, your training program will require more total weeks.

Workout Suggestion

Workout Suggestion: Each time you select HRC Planner after you have created your training program, HRC Planner suggests your next workout, recommending a target heart rate and a workout length.

Adjusting the suggestion: You may choose the suggested workout, or you may skip “back” to an easier workout, or even skip “forward” to a more challenging workout. HRC Planner remembers the last workout you complete, and resets its internal pointer to that spot. The next suggested workout is always the workout after the last workout you completed, as determined by the 24-week training program.

Workouts Stay the Same for a Week: HRC Planner generates workouts to be the same for a week, so you will notice workouts are the same three to five in a row.

Using HRC for each workout: Since all HRC Planner workouts are heart rate controlled workouts, you set up each workout just like you do a normal True HRC workout. HRC Planner will suggest settings for your maximum speed and grade, but you may adjust these. Like any True HRC workout, HRC Planner remembers your HRC parameters for your next workout, and you may leave them the same or readjust them.



Audio and Fan Accessories

In This Chapter:

Fans on ES 5.0

Audio System on ES 7.0 and ES 9.0

Chapter 1: Basic Operation
Chapter 2: Heart Rate Control Workouts
Chapter 3: User Programs
Chapter 4: Gerkin Fitness Test
Chapter 5: HRC Planner
Chapter 6: Audio and Fan Accessories
Chapter 7: Designing an Exercise Program
Chapter 8: Care and Maintenance

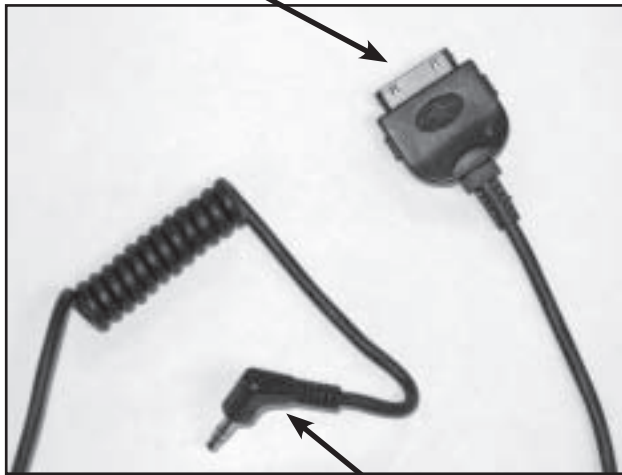
**Fans on
ES 5.0 &
ES 9.0**

The fans have two speeds plus off. The default is low speed.

**Audio System
on ES 7.0 and
ES 9.0**

This system can connect to any iPod™ with a dock connector. It can also connect to a generic music player through the player's headphone jack.

iPod™ Connector



**Generic mp3 or music
player connector**

Set your music player's volume to a medium setting, then use the treadmill's volume keys to control the speaker volume.

CAUTION: Do not connect your music player while the treadmill is moving due to risk of static shock damaging electrical components. Make sure the treadmill is stopped and your feet are on the straddle covers before you connect your music player.

Designing an Exercise Program

In This Chapter:

What is the F.I.T. Concept?

Using the F.I.T. Concept

Your Fitness Program

Determining Your Needs

Beginning Your Exercise Program

Establishing and Maintaining Aerobic Fitness

Managing Weight

Sports Training

Chapter 1: Basic Operation
Chapter 2: Heart Rate Control Workouts
Chapter 3: User Programs
Chapter 4: Gerkin Fitness Test
Chapter 5: HRC Planner
Chapter 6: Audio and Fan Accessories
Chapter 7: Designing an Exercise Program
Chapter 8: Care and Maintenance

The F.I.T. Concept Defined

CHAPTER SEVEN: DESIGNING AN EXERCISE PROGRAM

The workout portion of your exercise program consists of three major variables: Frequency, Intensity, and Time.

Frequency: How Often You Exercise

You should exercise three to five times a week to improve your cardiovascular and muscle fitness. Improvements are significantly smaller with less frequent exercise.

Intensity: How Hard You Exercise

Intensity of exercise is reflected in your heart rate. Exercise must be sufficiently rigorous to strengthen your heart muscle and condition your cardiovascular system. Only your doctor can prescribe the target training heart range appropriate for your particular needs and physical condition.

Start with exercise that stimulates you to breathe more deeply.

Alternate days of moderate and easy exercise to help your body adapt to new levels of exertion without unnecessary strain.

If you are just beginning an exercise program, you may be most comfortable walking at a speed of 1-2 mph. As you use your treadmill regularly, higher speeds may be more comfortable and more effective.

Inability to maintain a smooth, rhythmic motion suggests that your speed and/or elevation may be too great.

If you feel out of breath before you have exercised 12 minutes, you are probably exercising too hard.

**What is
the F.I.T.
Concept?**

As your fitness level improves, you will need to increase your workout intensity in order to reach your target heart rate. The first increase may be necessary after two to four weeks of regular exercise. Never exceed your target heart rate zone. Increase the speed and/or incline on the treadmill to raise your heart rate to the level recommended by your doctor. The incline feature can be used to greatly increase the workload without increasing speed.

METs

One MET is the amount of energy your body uses when you're resting. If a physical activity has an equivalent of 6 METs, its energy demands are 6 times that of your resting state. The MET is a useful measurement because it accounts for differences in body weight. See *Appendix C* for more details.

Time: How Long You Exercise

Sustained exercise conditions your heart, lungs, and muscles. The longer you are able to sustain exercise within your target heart range, the greater the aerobic benefits.

To begin, maintain two to three minutes of steady, rhythmic exercise and then check your heart rate.

The initial goal for aerobic training is 12 continuous minutes.

Increase your workout time approximately one or two minutes per week until you are able to maintain 20-30 continuous minutes at your training heart rate.

Utilizing the F.I.T. Concept

CHAPTER SEVEN: DESIGNING AN EXERCISE PROGRAM

The F.I.T. concept and chart are designed to help you begin a program tailored to your needs. You may wish to keep an exercise log to monitor your progress.

You can get valuable fitness benefits from your True Treadmill. Using the treadmill regularly may increase the ability of your heart and lungs to supply oxygen and nutrients to exercising muscles over an extended period of time. The treadmill will also help you develop added muscle endurance and balanced strength throughout your body.

Calculate your maximum heart rate as a first step in developing your fitness program. The formula to calculate average maximum heart rate for one minute is 220 beats per minute minus your age. To find your pulse, locate a vein on your neck or inside your wrist, then count beats for ten seconds, then multiply by six. (See chart in *Appendix A*.)

It's also important to know your target training zone or target heart rate. The American Heart Association (AHA) defines target heart rate as 60-75 percent of your maximum heart rate. This is high enough to condition, but well within safe limits. The AHA recommends that you aim for the lower part of the target zone (60 percent) during the first few months of your exercise program. As you gradually progress you can increase your target to 75 percent. According to the AHA, "Exercise above 75 percent of the maximum heart rate may be too strenuous unless you are in excellent physical condition. Exercise below 60 percent gives your heart and lungs little conditioning."

Using the F.I.T. Concept

Your Fitness Program

Determining Your Needs

In addition to monitoring your heart rate as you exercise, be certain of how quickly your heart rate recovers. If your heart rate is over 120 beats per minute five minutes after exercising, or is higher than normal the morning after exercising, your exertion may be too strenuous for your current level of fitness. Reducing the intensity of your workout is recommended.

The age-adjusted target heart rates indicated in the chart in *Appendix A* reflect averages. A variety of factors (including medication, emotional state, temperature, and other conditions) can affect the exercise heart rate appropriate for you.

Warning: Consult your doctor to establish the exercise intensity (target heart rate zone) appropriate for your age and condition before beginning any exercise program.

Warm-Up: Slow and Deliberate Exercise

Beginning Your Exercise Program

You are not warmed up until you begin to perspire lightly and breath more deeply. Warming up prepares your heart and other muscles for more intense exercise and helps you avoid premature exhaustion. Begin each workout by walking even if you plan to run. Start slowly, exploring different speeds until you can comfortably sustain your speed.

A good suggestion is a minimum of three minutes. Perspiration on your brow is a good indicator of a thorough warm-up. The older you are, the longer your warm-up period should be.

Your F.I.T. Program Continued

CHAPTER SEVEN: DESIGNING AN EXERCISE PROGRAM

Workout: Brisk and Rhythmic Exercise

The workout trains and conditions your heart, lungs, and muscles to operate more efficiently. Increase exercise in response to your heart rate to train and strengthen your cardiovascular system. Concentrate on moving your arms and legs smoothly. Walk naturally and avoid jerking motions that can cause pulled muscles, sprained joints, and loss of balance.

Cool-Down: Slow and Relaxed Exercise

Cooling down relaxes your muscles and gradually lowers your heart rate. Slowly reduce your workload until your heart rate is below 60 percent of your maximum heart rate. The cool down should last at least five minutes, followed by some light stretching to enhance your flexibility.

Beginning a Fitness Program

If you cannot sustain 12 continuous minutes in your target heart rate zone, exercise several times a day to get into the habit of exercising.

Try to reach and maintain 60-65 percent of your maximum heart rate. Alternate exercise with periods of rest until you can sustain 12 continuous minutes of exercise at 60-65 percent of your maximum heart rate.

Begin exercising in three to five minute sessions.

Establishing Aerobic Fitness

If you can sustain 12 but not 20 continuous minutes of exercise in your target heart rate zone:

Exercise three to five days a week.

Rest at least two days per week.

Maintaining Aerobic Fitness

Try to reach and maintain 60-75 percent of your maximum heart rate with moderate rhythmic exercise.

Begin with 12 continuous minutes. Increase your time by one to two minutes per week until you can sustain 20 continuous minutes.

Managing Weight

If you can sustain 20 continuous minutes in your target heart rate zone, begin to increase the length and intensity of your workout:

Exercise four to six days a week or on alternate days.

Try to reach and maintain 70-85 percent of your maximum heart rate with moderate to somewhat hard exercise.

Exercise for 20-30 minutes.

Consistent aerobic exercise will help you change your body composition by lowering your percentage of body fat. If weight loss is a goal, combine an increase in the length of your workouts with a moderate decrease in caloric intake. For weight control, how long and how often you exercise is more important than how hard you exercise.

Exercise four to five times a week.

Weight and Sports Training Programs

CHAPTER SEVEN: DESIGNING AN EXERCISE PROGRAM

Try to reach and maintain 60-75 percent of your maximum heart rate with moderate exercise.

Exercise for 30-45 minutes at 60-65 percent of your target heart rate.

Here are some tips to achieving your weight management goal:

Consume most of your dietary calories at breakfast and lunch, and eat a light dinner. Do not eat close to bedtime.

Exercise before meals. Moderate exercise will help suppress your appetite.

Take exercise breaks throughout the day to help increase metabolism (calorie expenditure).

When you are training to improve strength and performance:

Exercise four to five days a week. Alternate exercise days and intervals of hard to very hard exercise with easy to moderate exercise.

Exercise for 30 minutes or longer.

Warning: these strategies are intended for average healthy adults. If you have pain or tightness in your chest, an irregular heartbeat, shortness of breath or if you feel faint or have any discomfort when you exercise, **stop!** Consult your physician before continuing. Remember, every workout should begin with a warm-up and finish with a cool-down.

**Sports
Training**

Care and Maintenance

In This Chapter:

Treadbelt Lubrication

Regular Cleaning

Treadbelt Adjustment

Treadbelt Tension

Chapter 1: Basic Operation
Chapter 2: Heart Rate Control Workouts
Chapter 3: User Programs
Chapter 4: Gerkin Fitness Test
Chapter 5: HRC Planner
Chapter 6: Audio and Fan Accessories
Chapter 7: Designing an Exercise Program
Chapter 8: Care and Maintenance

Lubrication and Cleaning

CHAPTER EIGHT: CARE AND MAINTENANCE

Your True treadmill is constructed of quality materials and manufactured to provide many years of faithful service. Simple routine cleaning and a preventive maintenance program will extend the life of your treadmill.

To prevent electrical shock, be certain the treadmill is turned off and unplugged from the electrical outlet before performing any cleaning or routine maintenance.

For average use of your treadmill, True recommends you lubricate under the treadbelt once per year. For heavy use, which is more than 10 hours per week, True recommends lubricating every six months.

Please contact your dealer to obtain the proper lubricants.

Daily: Perspiration should be wiped from the control console and treadmill surfaces after your workout.

Weekly: You should wipe down your treadmill once a week with a water dampened, soft cloth. Be careful not to get excessive moisture between the edge of the overlay panel and the console, as this might create an electrical hazard or cause the electronics to fail.

Important: do not clean or wipe under the running belt.

Monthly: Clean dust and dirt that might accumulate under and behind your treadmill once a month. Small rubber particles from the soles of walking shoes will accumulate alongside the belt and also behind the unit.

Treadbelt Lubrication

Regular Cleaning

Expert Service

Expert service and maintenance at a reasonable cost are available through your factory-trained, authorized True dealer. The dealer maintains a stock of repair and replacement parts and has the technical knowledge to meet your service needs.

Your treadmill's running belt has been properly aligned at the factory. However, when the treadmill is used on an uneven surface, please follow these instructions:

Treadbelt Adjustment

- 1 - Stand beside the treadmill, place the safety key onto the control panel and follow operating instructions for running the treadmill at 5 mph.
 - 2 - If the belt is off-center to the right, turn the left roller adjustment bolt counter clock-wise 1/4 turn. If the belt is off-center to the left, turn the left roller adjustment bolt 1/4 turn clockwise.
 - 3 - Let the machine run for several minutes to check the alignment. (Belt alignment does not need to be perfect). If more correction is needed, turn the adjustment bolt 1/4 turn and check again.
-

Treadbelt Tension

CHAPTER EIGHT: CARE AND MAINTENANCE

Turn both rear roller adjustment bolts counter-clockwise until treadbelt just begins slipping when walking on it, then turn both rear roller adjustment bolts clockwise in equal quarter turn increments until treadbelt stops slipping.

Note: Be sure to run on treadbelt to ensure that the treadbelt does not slip while under load.

Treadbelt Tension

SYMPTOM	CAUSE	SOLUTION
Circuit breaker on treadmill trips when the power cord is plugged into wall.	A. Damaged motor	Service required
	B. Damage or defective motor power supply board	Service required
	C. Damaged motor control circuit board	Service required
Circuit breaker on treadmill trips when inputting speed and starting	D. Restricted belt or flywheel	Check and remove obstruction or call dealer
	E. Treadbelt over tensioned	See adjustments in Assembly Guide
Computer display LED's do not illuminate.	A. No power to treadmill	Restore power at electrical outlet or reset circuit breaker if in "on/off" position.
	B. Circuit breaker trip	Reset Circuit Breaker
	C. Upper wire harness not connected or completely connected.	Service required
Incline Motor and tread motor will not turn on	A. Upper wire harness damaged or not connected or completely connected	Service required
Incline motor does not operate but the treadbelt moves	A. Incline wire harness damaged or not connected	Service required
Scrambled digits on computer LED's	A. Damaged computer board	Service required
	B. Upper wire harness damaged or partially connected	Service required
Squeaking noise from motor while using the treadmill	A. Poly V-belt slipping	Service required
	B. Motor brush noise excessive	Service required

Symptom/Solution Guide

CHAPTER EIGHT: CARE AND MAINTENANCE

SYMPTOM	CAUSE	SOLUTION
Treadbelt tracks left to right	A. Uneven floor	Move treadmill to even surface or level with shims. See Adjustment section.
	B. Rear roller not properly adjusted	See Adjustment section.
Treadmill trips household circuit breaker	A. Defective breaker	Replace breaker
	B. Circuit too small	Use 20 amp circuit
	C. Circuit over-loaded	Remove the other electrical appliances on same circuit
	D. May trip GFI circuit.	Have circuit checked by electrician.
Treadbelt feels unsmooth, jerks intermittently	A. Object between belt and deck	Remove object between belt and deck
	B. Object under belt	Remove object from under belt
	C. Loose tread motor drive belt	Service required
	D. Loose treadbelt tension	See Adjustment section.

Error Codes	E1:INCLINE	Incline moving when not commanded to.
	E1:RANGE	Difference between zero position and maximum incline not sufficient.
	E1:STALL	Incline not moving when commanded to.
	E2:OVERSPEED	This error occurs when an acceleration of greater than 2.1 mph occurs. Error cleared by turning off power switch then turning it back on.
	E2:CAL	Treadmill cannot achieve target speed. Re-calibrate treadmill.
	E3:RECAL	This error occurs when a data error is detected in the EEPROM. Replace the control panel.
	E4:KEY STK [stop]	Caused by pressing and holding the stop key for more than five seconds.
	E5:SENSOR	This message is displayed when there is no speed feedback.
<i>All errors require service by a qualified technician. To clear the error, turn power off and back on again.</i>		

Service Messages

CHAPTER EIGHT: CARE AND MAINTENANCE

The following service messages will be displayed as they occur, as well as for the subsequent six safety key insertions. These messages will be displayed until a key is pressed. Every time these messages are displayed, a tone will sound twice.

- S1:LUBE** This message is displayed when lubrication of the deck is recommended.
- S2:CLEAN** This message is displayed every 500 miles. Prompt to clean treadmill.
- S3:MOTOR** This message is displayed every 2500 hours. Prompt to check motor brushes.

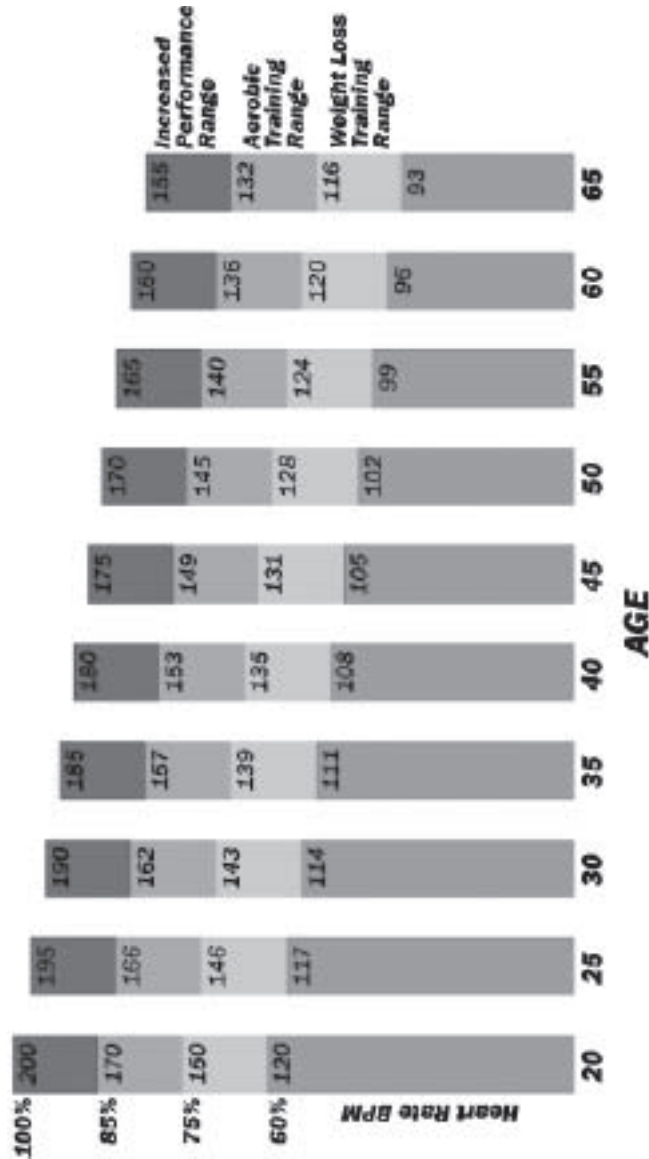
Diagnostics-Service Messages



Target Heart Rate Chart

*A Guide to Help You Pick an Initial Target
Heart Rate*

APPENDIX A - TARGET HEART RATE CHART



Remember to check with your physician before beginning any exercise program. He can help determine an appropriate target heart rate. Medications often affect heart rate.



METs Table

*How Speed and Incline Affect Workload,
Expressed in METs*

Grade

METs Table		0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
	WALKING	1.0	1.8	1.9	2.0	2.2	2.3	2.5	2.6	2.7	2.9	3.0	3.1	3.3	3.4	3.6	3.7	3.8
		2.0	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.7	5.0	5.3	5.6	5.8	6.1	6.4	6.7
		3.0	3.3	3.7	4.1	4.5	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8	8.3	8.7	9.1	9.5
	IN-BETWEEN	4.0	5.6	6.0	6.4	6.8	7.2	7.7	8.1	8.5	8.9	9.3	9.7	10.1	10.6	11.0	11.4	11.8
		5.0	8.7	9.0	9.3	9.7	10.0	10.4	10.7	11.1	11.4	11.8	12.1	12.4	12.8	13.1	13.5	138
	RUNNING	6.0	10.2	10.6	11.0	11.4	11.8	12.3	12.7	13.1	13.5	13.9	14.3	14.7	15.2	15.6	16.0	16.4
		7.0	11.7	12.2	12.7	13.2	13.6	14.1	14.6	15.1	15.6	16.1	16.5	17.0	17.5	18.0	18.5	19.0
		8.0	13.3	13.8	14.4	14.9	15.5	16.0	16.6	17.1	17.7	18.2	18.8	19.3	19.9	20.4	21.0	21.5
		9.0	14.8	15.4	16.0	16.6	17.3	17.9	18.5	19.1	19.7	20.4	21.0	21.6	22.2	22.8	23.5	24.1
		10.0	16.3	17.0	17.7	18.4	19.1	19.8	20.4	21.1	21.8	22.5	23.2	23.9	24.6	25.3	26.0	26.7
		11.0	17.8	18.6	19.4	20.1	20.9	21.6	22.4	23.2	23.9	24.7	25.4	26.2	26.9	27.7	28.5	29.2
		12.0	19.4	20.2	21.0	21.9	22.7	23.5	24.3	25.2	26.0	26.8	27.6	28.5	29.3	30.1	31.0	31.8

Miles Per Hour



METs Explanation and Formulas

*The Metabolic Formulas Behind Energy
Expenditure Estimates
A Note About Calorie Expenditure
Calculations*

METs Explanation and Formulas

As stated earlier, the MET is a unit of exercise measurement that takes into account body weight. Since energy expenditure in a weight-bearing exercise such as running, walking, or stairclimbing is directly proportional to body weight, the formulas to calculate METs are a bit simpler than for, say, an exercise bike. For example, 7 mph running is always 11.7 METs, no matter who you are.

A MET is defined as 3.5 ml/min/kg of oxygen usage by the body, where:

ml is milliliters, the actual measured volume of gaseous oxygen

min is minutes

kg is bodyweight in kilograms

This energy consumption rate corresponds to about 72 calories per hour for a 150-pound person, which approximates the average basal metabolic rate of the general population.

The best formulas for treadmill energy expenditure also use oxygen usage by the body, or VO₂. The two formulas are:

walking VO₂ = (2.68 * speed) + (0.48 * speed * incline) + 3.5

running VO₂ = (5.36 * speed) + (0.24 * speed * incline) + 3.5

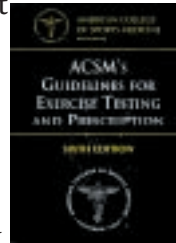
To get METs, divide the result by 3.5.

(Noted exercise physiologist David Costill's speed constants for walking and running are 3.06 and 4.86, respectively.)

APPENDIX C - CALORIE EXPENDITURE & CALCULATIONS

True treadmills use the calorie expenditure formula as described in Guidelines for Exercise Testing and Prescription from the American College of Sports Medicine. This is the most widely accepted formula for running and walking.

The ACSM guide says that running burns calories twice as fast as walking, e.g., a 150-pound person jogging at 5 mph requires 548 calories per hour, while walking at 5 mph requires 274 per hour. See Appendix C for more details.



A Note About Calorie Expenditure Calculations

(Other respected researchers such as David Costill think the ACSM overstates the energy difference between running and walking. Costill believes running requires 60% more energy than walking, not 100% as calculated by the ACSM. Using the same example, Costill's calculations result in 496 cal/hour for running 5 mph, with 313 cal/hour for walking 5 mph.)

One potential source of calorie estimate error is that the treadmill doesn't know if you are running or walking, so it has to make some assumptions. It assumes you are walking at 3 mph and slower, and running at 5 mph and faster. Between those two speeds, the treadmill combines the walking and running formulas to make its best guess.

Variations in human exercise efficiency are another potential source of error, with differences of plus or minus 10% common in the population



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865 Hoff Road
O'Fallon, MO 63366
800.426.6570

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