

### ES9.0 RECUMBENT & UPRIGHT Bike Owner's Guide

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### **THANK YOU FOR SELECTING TRUE**

In 1981, Frank Trulaske launched

TRUE Fitness<sup>®</sup>, and began manufacturing handcrafted treadmills.

His team's obsession with quality has propelled TRUE to the top of the fitness 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 cutting-edge

innovations for their products. Such advancements include groundbreaking new features, state-of-theart manufacturing components, and technological breakthroughs.



"OUR ORIGINAL GOAL WAS TO BUILD THE WORLD'S BEST FITNESS EQUIPMENT, AND TODAY WE BELIEVE WE'RE DOING IT!"

-Frank Trulaske

While TRUE has expanded

its line of products, intensive quality control standards guarantee excellence in every phase of production. This results in the finest products available in the marketplace.

TRUE is the choice for workouts among beginners, rehab patients and top athletes worldwide.

Today TRUE Fitness offers a full line of premium elliptical

trainers, treadmills, upright and recumbent bikes, and flexibility equipment.



### **REVIEW FOR YOUR SAFETY** Important Safety Instructions

When using this exercise machine, basic precautions should always be followed, which includes 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 bike 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 bike.

Care should be used when mounting or dismounting the bike.

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

Disconnect all power before servicing the bike.

Do not exceed maximum user weight of 350 lbs.

Keep children and animals away.

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

## **TRUE** QUICK START

The best way to learn to use the ES9.0 bike is to keep pressing keys to see what happens — explore it at your own pace. Remember: *the bike must be plugged into a wall outlet using the supplied wall transformer. The power input jack is located on the lower right side of the bike.* 



- Begin pedaling.
- The display will wake up and prompt for your weight, workout selection, and workout time.
- Enter your workout parameters and press , or immediately press for a quick start into a manual workout.

The bike will retain your workout data for about 15 seconds after you stop pedaling.

Press the to change the workout data display.

Just Get On and Ride!

STARTING UP

Pausing Your Workout

CHANGE THE DATA DISPLAY

### **TRUE** TABLE OF CONTENTS

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#### Specifications/Features/Software are subject to change

### **TRUE** CHAPTER ONE

## RIDING YOUR BIKE

### IN THIS CHAPTER:

GETTING COMFORTABLE USING THE CHEST STRAP USING CONTACT HEART RATE FOR BEST RESULTS

Chapter 1: Riding Your Bike

Chapter 2: The Display Chapter 3: Pre-Set Workouts Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance



### **GETTING COMFORTABLE** CHAPTER ONE: RIDING YOUR BIKE

The body weight setting does not affect the calorie expenditure calculation. Unlike treadmills or other weight-bearing exercises, calories burned during exercise biking does not change with different body weights.

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



Adjust the seat so that when your leg is fully extended with your feet in the pedals, your knee is slightly bent.



Seat Adjustment

While standing next to the bike, pull out the seat adjust knob and lower the seat to the lowest position. Next, get onto the bike with one leg fully extended in a pedal, supporting most of your weight. Grasp the horn of the seat and pull it up under you to a snug fit, letting the ratcheting mechanism lock the

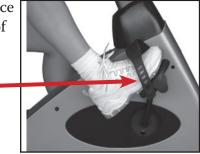


Upright Bike Seat Adjustment



### **GETTING COMFORTABLE** CHAPTER ONE: RIDING YOUR BIKE

Riders are most efficient if they place the ball of their foot in the center of the pedal.





Other riders are more comfortable if the arch of their foot is against the pedal. Riders are encouraged to be as efficient as possible, but use your own judgment in the comfort/ efficiency trade-off.

Most riders will find a comfort/efficiency sweet spot at a pedal cadence around 80 rpm. More serious riders desiring maximum performance typically pedal at around 100 rpm. For electromechanical and safety reasons, the bike will not provide the fully requested workload when your pedal cadence falls below 55 rpm.

Breathe in a regular and relaxed manner. Many exercisers do not breathe enough, which reduces their exercise capacity and comfort. You might want to try breathing deeper and more frequently to see if it helps your exercise regime.

#### Pedal Cadence

FOOT

POSITION

#### BREATHING



### USING THE CHEST STRAP CHAPTER ONE: RIDING YOUR BIKE

The ES9.0 bike has two ways of monitoring your heart rate:

1. By using a chest strap that transmits your heart rate to the bike via radio.



2. By using the metal contact heart rate pads on the handlebars.



UPRIGHT HRC PADS



**RECUMBENT HRC PADS** 

Although your bike 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, which is the most advanced exercise control system available.

### ES9.0 BIKES OWNER'S GUIDE

Monitoring Your Heart Rate



## USING THE CHEST STRAP

CHAPTER ONE: RIDING YOUR BIKE

When you wear a Polar<sup>®</sup> or compatible transmitter strap, the bike 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.

> Examples of Heart Rates Found in Daily Life

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 An average 30-year-old might have a resting heart rate, when sitting totally still for several minutes, of 65. During hard exercise that can be sustained for 10 to 15 minutes it might be around 140 continuously. A maximum heart rate that requires maximal exercise for several minutes to attain is 185.

A 30-year-old in good shape might have a resting heart rate near 55, and might exercise for 20 minutes at a heart rate of 160.

A world-class distance runner or professional cyclist might have a resting heart rate near 45.

### ES9.0 BIKES OWNER'S GUIDE

#### CHEST STRAP Heart Rate Monitoring



### USING CONTACT HEART RATE CHAPTER ONE: RIDING YOUR BIKE

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

Gently grasp the contact heart rate pads as shown below.





When the system detects your hands, a red heart will appear in the Heart Rate field of the data display and will flash 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.

#### 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.

### ES9.0 BIKES OWNER'S GUIDE

CONTACT HEART RATE (CHR)



### FOR BEST RESULTS CHAPTER ONE: RIDING YOUR BIKE

- 1. Exercise with smooth body motions. Avoid excessive body motion, especially in your arms and upper body.
- 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.

When using a Heart Rate Control (HRC) 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. FOR BEST RESULTS



### CHAPTER TWO

### **THE DISPLAY** In This Chapter:

YOUR DISPLAY The Upper Panel The Lower Panel

Chapter 1: Riding Your Bike Chapter 2: The Display Chapter 3: Manual and Pre-Set Programs Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance



### YOUR DISPLAY CHAPTER TWO: THE DISPLAY

The bike display has two jobs: to let you control the bike operation, and to give you feedback about your workout. The controls are simple and designed to be foolproof; it's hard to press a "wrong" key. You can monitor eight different kinds of physiological data, and your workout progress is tracked graphically with the center matrix display

#### Watts: The amount of mechanical power the bike is receiving from Time: The amount of your exercise. This is not the same time remaining in your as the amount of power your body is using, since the average person is workout. If you press only about 20% efficient at generatthis becomes Heart Rate: you've been working out **Distance:** An ing mechanical power. \* In beats estimate of how per minute so far.\* **METs:** Your far you would have (bpm).\* METs rate.\* traveled on an out-**RPM:** Your pedal Work Level: The door road bike.\* cadence. \* selected workout level. Calories: An estimate of your calories burned. This doesn't include your basal metabolic rate, which is about 72 calories per hour for a 150-pound person.\* Caution: stop exercising if you feel pain, faint, dizzy, or short of breath HRC

THE UPPER PANEL

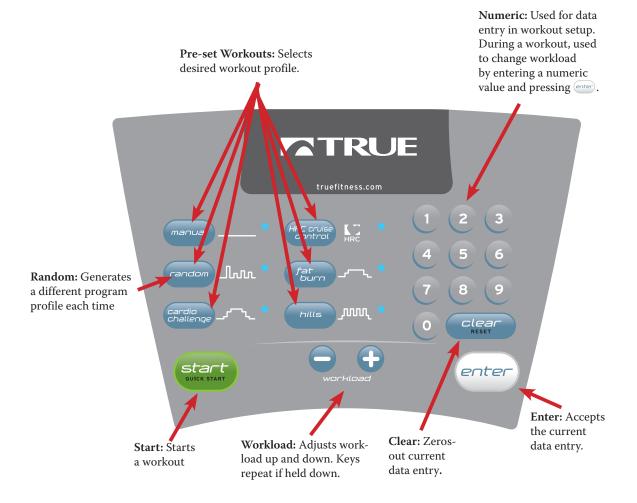
CHAPTER TWO: THE DISPLAY

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\*Pressing the "Change Display" key switches the readout from the top values to the bottom values and will light up the LEDs of the values now being displayed. If you press and hold the "Change Display" key for one second, the display will enter "Scan Mode" and switch between the two sets of values.



### THE LOWER PANEL CHAPTER TWO: THE DISPLAY





### **PRE-SET WORKOUTS**

### IN THIS CHAPTER:

How These Modes Work Workout Profiles How Your Bike Controls Your Workout

Chapter 1: Riding Your Bike Chapter 2: The Display Chapter 3: Pre-Set Workouts Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance



## HOW THESE MODES WORK CHAPTER THREE: PRE-SET WORKOUTS

Manual control mode changes workload in 10-watt increments. The workload stays the same at any pedal cadence (called constant power control) unless you drop below 55 rpm. Below 55 rpm, workload is reduced along with pedal cadence, to prevent the sensation of the pedals "locking up."

Three different pre-set workouts are available:

- *Cardio Challenge*, with the workload gradually rising until you reach the middle of your workout time, then gradually decreasing to the end.
- *Fat Burn*, with a warmup stage increasing to a steady-state workload for the majority of the workout, then a cool-down at the end.
- *Hills*, with four work intervals separated by four ٠ rest intervals.

The Random program creates a different workout profile each time you press the *random* key.

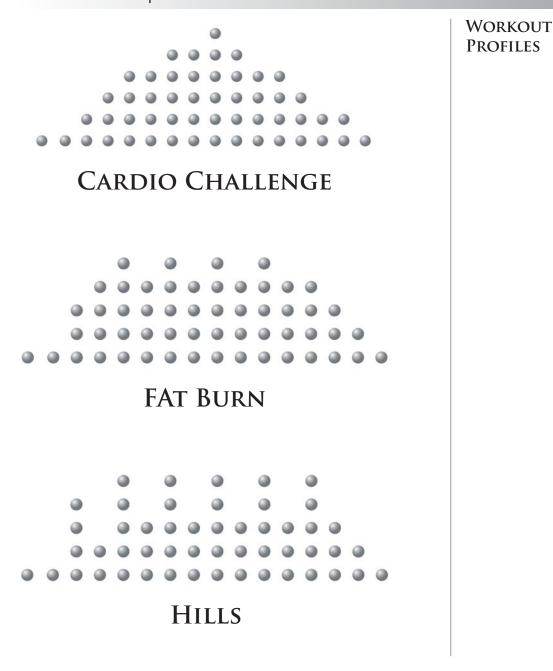
Sixteen different levels are available to change the difficulty of a workout. The workload intensities expand and contract depending on the level.

MANUAL MODE

PRE-SET WORKOUTS



# WORKOUT PROFILES CHAPTER THREE: PRE-SET WORKOUTS





### HEART RATE CONTROL In This Chapter:

INTRODUCTION TO HRC Types of HRC Heart Rate Control workouts Important Points About HRC

Chapter 1: Riding Your Bike Chapter 2: The Display Chapter 3: Pre-Set Workouts Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance



## **INTRODUCTION TO HRC** CHAPTER FOUR: HEART RATE CONTROL

TRUE's heart rate control (HRC) workout lets the bike monitor your relative exercise intensity by way of your heart rate, then automatically adjust the workload to keep you at 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. Thus, 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 bike 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.

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.



CONSTANT HRC

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# **TYPES OF HRC** CHAPTER FOUR: HEART RATE CONTROL

The ES9.0 bike has two types of heart rate control: TYPES OF HRC *Constant*: pick a target heart rate, and the bike will ٠ control your workout from the very beginning so that you reach your target within five to seven minutes. *Cruise Control*: while in any program, set your ٠ current heart rate as your target by pressing a single key. Remember to check with your physician before beginning any ex-MAXIMUM ercise program. He/She can help determine an appropriate target heart rate. Medications often affect heart rate.

HEART RATE AND TARGET HEART RATE



### HEART RATE CONTROL WORKOUTS CHAPTER FOUR: HEART RATE CONTROL

Constant HRC is the best-known type of HRC, and is the easiest to use. The bike will gradually raise your heart rate so that you reach your target within 5 to 7 minutes.

Note that as you tire during your workout, especially in the last third, workload will usually have to be reduced to keep you at a steady target heart rate.

Cruise Control is the simplest way to enter Constant HRC training. While in manual or any program you can enter Constant HRC by simply pressing the HRC Cruise Control 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 HRC Cruise Control. Edit the target using of / or numeric keys and press (enter).

#### Constant HRC

#### CRUISE CONTROL



### **IMPORTANT POINTS ABOUT HRC** CHAPTER FOUR: HEART RATE CONTROL

The heart rate monitor transmitter strap should be worn according to the guidelines in *Chapter 1*.

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

If communication is lost for 30 seconds, the bike will exit the HRC workout into a manual workout.

The transmitter strap sends a low-level radio signal to the bike, so interference from other radio and sound waves (including everything from cordless telephones to loudspeakers) is possible. The good news is that this 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 breathe 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.

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



### DESIGNING AN EXERCISE PROGRAM

IN THIS CHAPTER:

THE F.I.T. CONCEPT DEFINED UTILIZING THE F.I.T. CONCEPT BEGINNING YOUR F.I.T. PROGRAM Establishing and Maintaining Fitness Weight Management Sports Training Program

Chapter 1: Riding Your Bike Chapter 2: The Display Chapter 3: Manual and Pre-Set Programs Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance



### THE F.I.T. CONCEPT DEFINED CHAPTER FIVE: 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 using your bike at low workloads. As you use your bike regularly, higher workloads may be more comfortable and more effective.

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



### MORE F.I.T. CONCEPT OVERVIEW CHAPTER FIVE: DESIGNING AN EXERCISE PROGRAM

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 workload on the bike to raise your heart rate to the level recommended by your doctor.

#### METs

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

#### **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.

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### **UTILIZING THE F.I.T. CONCEPT** CHAPTER FIVE: DESIGNING AN EXERCISE PROGRAM

The F.I.T. concept is 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 Bike. Using the bike 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 bike 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. One formula to calculate average maximum heart rate for one minute is:

220 - 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.

It's also important to know your target training zone or target heart rate. The American College of Sports Medicine (ACSM) suggests 55% to 65% for lower-conditioned users, 75% to 80% for moderately conditioned users, and up to 90% for well-conditioned users.

#### Your Fitness Program

#### DETERMINING Your Needs



## **BEGINNING YOUR F.I.T. PROGRAM** CHAPTER FIVE: DESIGNING AN EXERCISE PROGRAM

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

You are not warmed up until you begin to perspire lightly and breathe deeper. Warming up prepares your heart and other muscles for more intense exercise and helps you avoid premature exhaustion. Start slowly, exploring different workloads until you can comfortably sustain your exercise level. 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.

BEGINNING YOUR EXERCISE PROGRAM



### YOUR F.I.T. PROGRAM CHAPTER FIVE: 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 exercising smoothly.

### **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 AND MAINTAINING FITNESS** CHAPTER FIVE: DESIGNING AN EXERCISE PROGRAM

If you can sustain 12 but not 20 continuous minutes of exercise in your target heart rate zone:	Establishing Aerobic Fitness
Exercise three to five days a week.	IIIINL35
Rest at least two days per week.	
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.	
If you can sustain 20 continuous minutes in your target heart rate zone, begin to increase the length and intensity of your workout:	Maintaining Aerobic Fitness
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.	



### WEIGHT MANAGEMENT Chapter Five: Designing an Exercise Program

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.

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). Managing Weight



## A SPORTS TRAINING PROGRAM CHAPTER FIVE: DESIGNING AN EXERCISE PROGRAM

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:

HOW TO CARE FOR YOUR BIKE

Chapter 1: Riding Your Bike Chapter 2: The Display Chapter 3: Manual and Pre-Set Programs Chapter 4: Heart Rate Control Chapter 5: Designing an Exercise Program Chapter 6: Care and Maintenance

### 

### HOW TO CARE FOR YOUR BIKE CHAPTER SIX: CARE AND MAINTENANCE

Your ES9.0 bike doesn't require any routine maintenance, not even lubrication. Keeping it clean is the most important task.

*After every workout:* Perspiration should be wiped from the control console, contact heart rate pads, shrouds, and seat.



*Weekly:* Wipe down your ES9.0 bike once a week with a waterdampened soft cloth. On the contact heart rate pads, use a glass cleaning solution. 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.

Expert service and maintenance at a reasonable cost are available through your factory-trained, authorized TRUE Fitness dealer. The dealer maintains a stock of repair and replacement parts and has the technical knowledge to meet your service needs. HOW TO CARE For Your Bike



### APPENDIX A

### Maximum Heart Rate and Target Heart Rate

### **TRUE** APPENDIX A

TARGET HEART				
AGE	60%	75%	85%	
20	120	150	170	
25	117	146	166	
30	114	143	162	
35	111	139	157	
40	108	139	153	
45	105	131	149	
50	102	128	145	
55	99	124	140	
60	96	120	136	
65	93	116	132	
70	90	112	128	
75	87	109	123	
80	84	105	119	
85	81	101	115	
WEIGHT LOSS RANGE				
AEROBIC TRAINING RANGE				
INCREASED PERFORMANCE RANGE				
values from ACSM guidelines				

TARGET HEART RATE CHART

### ES9.0 BIKES OWNER'S GUIDE

### TRUE

### APPENDIX A

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

Robert Robergs, editor of the prestigious *Journal of Exercise Physiology*, conducted a study in 2002 of the maximal heart rate equation 220 - age. He found this equation "has no scientific merit for use in exercise physiology and related fields."

In his survey of research in this area, Robergs found several other simple equations that were significantly more accurate. The best equation he found was derived in 1994 by Oten Inbar:

205.8 - (0.685 \* age)

The ES9.0 console uses the Inbar equation. Even though this is the best available equation, it still has a possible range of error of +/- 6 beats per minute.

Other similar equations that are also more accurate than 220 - age are:

206.3 - (0.711 \* age) (Londeree, 1982)

206.0 - (0.700 \* age) (Tanaka, 2001)

208.8 - (0.734 \* age) (Robergs meta study, 2002)

Roberg's paper can be found here: <http://www.asep.org/Documents/Robergs2.pdf> Check with Your Physician

A NEW HRmax Equation



### APPENDIX B

### Specifications



### **TRUE** APPENDIX B

	Recumbent	Upright
BRAKE SYSTEM	Eddy Current	Eddy Current
WORKLOAD RANGE	30 to 350 watts	30 to 350 watts
BELT	Poly-V	Poly-V
DISPLAY TYPE	LED	LED
DATA READOUTS	Time, Work Level, Distance, Watts, RPM, Mets,	Time, Work Level, Distance, Watts, RPM, Mets,
	Heart Rate, Calories	Heart Rate, Calories
MESSAGE CENTER	16 Characters	16 Characters
HEART RATE MONITORING	Contact + Wireless	Contact + Wireless
HRC (HEART RATE CONTROL)®	YES	YES
WORKOUT		
HRC CRUISE CONTROL	YES	YES
WORKOUTS	Cardio, Fat Burn, Hills, Random, Manual	Cardio, Fat Burn, Hills, Random, Manual
PRE-SET WORKOUT RESISTANCE	16	16
LEVELS		
MANUAL WORKOUT RESISTANCE	16	16
LEVELS		
ONE TOUCH WORKOUT KEYS	YES	YES
THUMB SWITCHES	YES	NO
PAUSE FEATURES	Indefinite	Indefinite
POWER SOURCE	110VAC External	110VAC External
FRAME	Robotically Welded, Heavy-Gauge Steel Tubing	Robotically Welded, Heavy Gauge Steel Tubing
FOOTPRINT	50"H x 25"W x 65.65"L (127cm x 64 cm x 167 cm)	57"H x 25"W x 43"L (145 cm x 64 cm x 110 cm)
BIKE WEIGHT	205 lbs (93 kg)	120 lbs (54 kg)
MAXIMUM USER WEIGHT	350 lbs (159 kg)	350 lbs (159 kg)
SEATBACK	Reclining	N/A
CRANK SYSTEM	One-Piece Forged Steel with Sealed Bearings	One-Piece Forged Steel with Sealed Bearings
READING RACK	YES	YES
ACCESSORY / WATER BOTTLE	YES	YES
HOLDER		
WARRANTY	Frame (Lifetime), Parts (5), Labor (1)	Frame (Lifetime), Parts (10), Labor (1)



Founded 1981

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