BLUE-COLLAR IRONMAN

BLUE–COLLAR IRONMAN

An Introduction to Lifelong Triathlon Training

Michael O'Shaughnessy
and
Dr. Frank D. Rohter

Edited by Dana Kantrowitz

Library of Congress Control Number: Pending
ISBN: Hardcover 1-4257-1750-0
Softcover 1-4257-1751-9

This book was printed in the United States of America.

www.bluecollarironman.com
M. O'Shaughnessy
PO Box 190
Winter Park, Fl. 32790
407-628-4430

To order additional copies of this book, contact:
Xlibris Corporation
1-888-795-4274
www.Xlibris.com
Orders@Xlibris.com

34546

CONTENTS

SECTION II

About the Author: Dr. Frank D. Rohter, Director of the Institute of Exercise Physiology and Wellness, University of Central Florida

Chapter 9: Triathlon Ethics

SECTION III

Chapter 10: Appendix

Dedications

My portion of this book is dedicated to my favorite athlete—my older brother, Jim O'Shaughnessy and to my children Lucky Boy and Shane the Proud, who inspire me to be a great father.

~Michael O'Shaughnessy

Dedicated to my wife Lorayne, my partner in life, and to Gerry Gergley, my partner in Academics and Triathlons.

~Dr. Frank D. Rohter

Acknowledgements

The authors wish to thank the following for their support of Blue-Collar Ironman:

The University of Central Florida, Dana Kantrowitz, Leslie Windram O'Shaughnessy, Tom Murphy, Hunter Kemper and Gerry Gergley.

Author's Note

The Road to the Ironman

Blue-Collar Ironman is an introductory book written for people who have an interest in discovering the sport of triathlons with an emphasis on the grand prize: the Ironman. This is the book I wish I'd had as I began my journey into this culture. My co-author, Dr. Frank Rohter, and I feel that there are no other resources with a straightforward, accessible approach to conveying the unique requirements for completing and succeeding in training, running, and finishing in these types of endurance races.

Dr. Rohter has been my mentor since college and introduced himself to endurance racing when he was a mere 55 years young. A doctor of physiology, he breaks down his analysis so you can better understand what is happening internally to your own mind, body, and spirit. My contribution offers a different perspective: a clear-cut explanation of what it takes to just survive the day. It is our hope that you can learn through our stories and instruction, and gain insight as to what it's like to train and compete in triathlons and the Ironman. Dr. Rohter and I have run in over 25 marathons, dozens and dozens of triathlons, half marathons, and half Ironmans. You name it—we've run it.

As triathletes, we all have the common goal of trying to better ourselves through these types of competitions. In *The Blue-Collar Ironman*, Dr. Rohter

and I also pursue the goal of self-discovery, as we explore the limits and challenges of what happens when we push ourselves. We sincerely feel the information and experiences we share here will open for you a whole new world of physical fitness and personal fulfillment.

Go get 'em!

~Michael O'Shaughnessy
Blue-Collar Ironman

History Of The Triathlon

1904—An event in the Olympic Games was called triathlon, consisting of the long jump, shot put, and 100-yard dash.

September 4, 1921—The Petit Perillon swim club in Marseilles, France, held an event called Course Des Trois Sports: The Race of Three Sports. The race consisted of a bicycle leg of about 7K, a run of 5K, and finished with a 200 m out-and-back swim, and was won by Lulu Helmet.

1972—David Pain, celebrating his 50th birthday, held a run-bike biathlon in San Diego, Calif., the first known multi-sport event in the United States.

September 1974—While advertising its new race, the *San Diego Track Club Newsletter* headline read, "Run, Cycle, Swim—Triathlon set for 25th," using the word "triathlon" for the first time in the modern sense.

January 1977—John Collins challenged those gathered at the Oahu Perimeter Relay Run awards ceremony to compete in the first Iron Man Triathlon, a 2.4-mile swim, 112-mile bike and 26.2-mile run.

February 18, 1978—Fifteen men started and 12 men finished the first Iron Man Triathlon, won by Gordon Haller in 11 hours 46 minutes 58 seconds.

May 1979—A *Sports Illustrated* article by Barry McDermott featured the Hawaii Ironman Triathlon. Entries increased to 108 the following year.

February 6, 1982—The unforgettable crawl to the Ironman finish line by second-place finisher Julie Moss shown on ABC Wide World of Sports inspired many to take up triathlon.

April 9, 1982—The United States Triathlon Association (USTA) and the American Triathlon Association, both founded earlier that year, decided to merge into one unified national governing body called the United States Triathlon Association.

September 12, 1982—The first triathlon offering prize money, the Torrey Pines Triathlon, was also the first United States Triathlon Series event, won by Dave Scott.

1983—The word "triathlon" was added to the Ninth Edition of *Webster's New Collegiate Dictionary.*

1983—A spin-off of the *San Diego Track Club News* called *Triathlon*, as well as *Tri-Athlete* founded by William Katovsky, were the first triathlon publications.

August 1983—The United States Triathlon Association changed its name to Triathlon Federation/USA.

1984—Timex Corporation created the "Triathlon" watch, and then joined with Ironman organizers to use the name "Ironman." It is now the top-selling watch in the world.

1985—Triathlon sparked the cross-training fitness boom. Nike features Pro-triathlete Joann Ernst in national ad campaigns, later made famous by Bo Jackson and Deion Sanders.

March 31-April 1, 1989—The International Triathlon Union (ITU) was founded at its initial Congress in Avignon, France. Les McDonald was elected president.

August 6, 1989—The first triathlon world championship was held in Avignon, France, using the Olympic distance of 1.5 K swim, 40 K bike, and a 10 K run. First ITU gold medal winner: Mark Allen.

June 13-16, 1991—The IOC recognized the ITU as the sole international governing body for the sport of triathlon at its 97th session in Birmingham, England.

1993—The Pan American Games approved triathlon for competition at the 1995 Pan Am Games in Mar del Plata, Argentina.

September 1993—Actor Tom Cruise completed an 18-mile bicycle leg as part of a relay team in the Malibu triathlon; other celebrities participating in the sport in subsequent years include Baywatch actress Alexandra Paul, comedian/actor Robin Williams, and singer/songwriter Alanis Morrisette.

July 23, 1994—The first Goodwill Games triathlon was held in St. Petersburg, Russia.

September 4-5, 1994—At the IOC's 103rd session in Paris, France, triathlon was named to the Olympic program as a medal sport at the 2000 Olympic Games in Sydney, Australia.

March 26, 1995—The first Pan American Games triathlon was held in Mar del Plata, Argentina.

February 26, 1996—Triathlon Federation USA changed its name to the USA Triathlon.

April 2, 1997—Judy Flannery, a world champion triathlete, was killed by a motorist while on a training ride. The story of her death, in light of her outstanding life, helped show how triathlon could be a beneficial part of a healthy and family-oriented lifestyle.

November 1, 1997—The USOC officially recognized USA Triathlon as an Olympic Sport Organization.

September 16-17, 2000—Triathlon debuted as an Olympic sport. The women's event, on the 16th, was the first medal awarded (the inaugural event) at the 2000 Olympic Games in Sydney, Australia. Gold medal winner:

October 17, 2006—*Blue-Collar Ironman: The* Everyman *Approach to Triathlon Training* is released as the premiere multi-generational tool designed to educate, motivate, and prepare triathletes of all ages for the challenge of a lifetime.

Source: U.S.A. Triathlon, Colorado Springs

Triathlon Glossary

Breakaway—Similar to a surge in running, when one or more athletes increase their speed significantly in an attempt to create distance between themselves and the rest of the competitors.

Drafting—Proceeding directly behind someone in an effort to gain an advantage by conserving energy. Weaker swimmers and cyclists utilize this tactic by finding the toes or wheels of other athletes to maintain a faster pace during the swimming and cycling portions. Drafting on the bike is legal in ITU professional racing, but remains illegal in USAT and Ironman events.

Duathlon—A multi-sport event similar to triathlon, usually in a run-bike-run format. The common world championship distance is a 10 km run, 40 km bike, and a 5 km run.

1.5k Swim— 0.9 miles, the distance of the swimming portion of an Olympic-distance triathlon.

40k Bike— 24.8 miles, the distance of the cycling portion of an Olympic-distance triathlon.

10k Run— 6.2 miles, the distance of the running portion of an Olympic-distance triathlon.

Olympic-format—The style of the triathlon that is contested in the Olympic Games and all international Games. It usually consists of a multi-

lap course in all three disciplines and a draft-legal format during the swimming and cycling portions. This style of racing is generally recognized by athletes grouped together during all three disciplines. Generally the finishing times are much closer in Olympic-format triathlon.

Surge—Similar to a breakaway in cycling, when one or more athletes increase their speed significantly in an attempt to create distance between themselves and the rest of the competitors.

Transition Area—The hub of the triathlon course, the place in which the athletes transform from swimmer to cyclist to runner. Races can be won or lost in the time it takes for athletes to change from one discipline to another.

T1—The swim-to-bike transition

T2—The bike-to-run transition

SECTION I

ABOUT THE AUTHOR

Michael O'Shaughnessy

Inspired by Dr. Frank Rohter and Professor Gerry Gergley, both of the University of Central Florida, Michael O'Shaughnessy completed his long-time goal of earning the title "Ironman" after completing The Great Floridian in October, 1997 at the age of 40. His highest-ranking finish in a triathlon was third in the Florida Challenge Half Ironman Clydesdale Division.

Michael played both football and baseball at the University of Central Florida and received his degree in Physical Education. He is a finisher of several marathons, including the 2000 LA Marathon. O'Shaughnessy is the author of *Millennium Woman: A Guideline to Personal Security and Financial Prosperity for Today's Woman*, which is now in its third printing in the United States and has a second printing in China. It is currently being taught in community colleges in Women's Studies programs for which Michael is often a keynote speaker. He is the creator and founder of a non–profit foundation called The Millennium Woman Foundation that creates educational scholarships for single moms and educational resources for women.

An avid workout enthusiast and adventurer, Michael became a Guinness World Record holder in June 2000 when, as part of a four-man team, he paddled from Cuba to the US (105 miles) on a 19-foot paddleboard using only his hands to propel his board. The Cuba to US Full Moon Paddle, created and produced by Michael as a Goodwill/Sportsmanship event, served as the inspiration for the documentary film *Big Blue River* and was chronicled by *National Geographic*, *Adventure*, the *LA Times*, *Surfer Magazine*, and the *Orlando Sentinel*, among other publications.

In 2001, Michael returned to Cuba with three other paddlers and set a long-distance paddle record of 112 miles for the sport. Bringing visibility to The Millennium Woman Foundation, he assembled a team of four women athletes to break both previous records set in paddling from Cuba to Key West in July of 2002 and 2003. After a failed attempt in 2002 and on the heels of Hurricane Claudette, 10-12 foot seas challenged the 2003 paddle expedition. Persevering in spite of the odds, the Millennium Woman team set a long-distance endurance mark for the sport by paddling for over 25 hours. The event made international news on CNN, UPI, Reuters, and AP. In his own expedition team, Michael paddled across this body of water more than any other individual in the sport of paddling. A three-time East Coast and five-time Florida State Paddleboard Grand Champion, he has competed several times in both

the famed Catalina Classic paddleboard race (32 miles) and the US Paddleboard Championships, placing as high as 3rd in his class, at age 43. Michael has also paddled from Molokai to Oahu. One-third of his goal of paddling the entire navigation of Florida's East Coast is complete.

In his spare time, Michael owns Michael O'Shaughnessy Inc., a real estate and development company. He continues to build The Millennium Woman brand with his wife, Leslie Windram, and has a daughter, Shane, and a son, Michael.

Chapter 1

Introduction

The Idea for *Blue-Collar Ironman*

Blue-Collar Ironman is written for the average man or woman who wants to conquer endurance racing's tallest mountain. The Ironman event is considered to be one of the most grand tests of one's personal endurance. Personally, I have found that the scattered information I've received from the leading triathletes in the world did not truly help me in my own personal struggle to conquer a triathlon. I was an average athlete trying to survive the sport and, too often, the articles I read were geared towards stellar or world-class athletes. I couldn't begin to match, for instance, the highly regimented work paces that these superhuman athletes routinely practiced. What worked for them was often just not practical for me. Although I had experienced only a few sprint triathlons in years past, I decided to begin by training for an Ironman distance triathlon and skipped the traditional approach of completing the shorter distance events first.

The beginning of my triathlon-training program was accomplished in collaboration with a friend who had the same goal. His athletic abilities were on the same level as mine. We were both decent, but novice, athletes capable of doing well in smaller triathlons. As we began to train together,

however, I quickly realized that we were following two different sources of information. As a result, we were forced to separate our training efforts. While my friend, for instance, could financially afford to pay for specialized training, along with nutritional evaluation and consultation, I preferred to limit my expenditures. My initial involvement in the sport, therefore, had a no-frills, "Blue-Collar" approach—hence, the Blue-Collar Ironman was born.

In preparation for reaching my Ironman distance triathlon goal, my buddy and I entered a Half Ironman distance competition in Florida called The Florida Challenge, which consists of a 1.2-mile swim, a 56-mile bike ride, and a 13.1-mile run. This event is, of course, a test to see if you are prepared for the full Ironman competition. If a competitor cannot complete this preliminary event, then he/she is not ready for the next step.

My friend had become a rather competent competitor as a biker and seemed adequately prepared. I had always been ranked amongst the middle of the pack in the 5-K, 10-K, or any other road races in which I had participated. At the end of the day of the Half Ironman competition, I was pleasantly surprised to learn that I had finished third in my class. I had also shocked myself by finishing first in the swim.

My friend, however, had encountered difficulties during the race. Although he eventually finished the event, he had become seriously dehydrated during the competition and spent the next few days in the hospital being fed intravenously. He was lucky, as dehydration can become a fatal situation. Despite this setback, he returned to the event the following year and completed the full Ironman.

I received my training tips from two veteran Ironmen who competed in Hawaii's Ironman and in Florida's Great Floridian competitions: Dr. Frank Rohter and Gerry Gergley. These athletes had also been my college mentors at the University of Central Florida and provided the inspiration that ultimately led me to pursue this most challenging event. Rohter and Gergley were early pioneers in the sport, originally competing in triathlons in 1978. They broke ground in this unique sport during a time when effective methods of preparation were virtually unknown. In essence, Rohter and Gergley ushered the sport to Florida and the East Coast. When I finally stepped up to the challenge myself, I was 40 and sought out these two veteran triathletes for advice. Ultimately, I combined

their wealth of knowledge with my personal experience to devise a training regimen that has served me quite well in my triathlon preparation.

My section of the book is for the blue-collar man or woman who seeks honest and straightforward recommendations on how to accomplish the goal of finishing an Ironman. This resource is for the average athlete who strives to experience success in this premier endurance competition. The training tips and development advice provided here serve as a guide for this amazing challenge. Veteran Ironman Dr. Frank Rohter shares his experiences and training tips in this book at his respective level of expertise. As fellow triathletes, we understand that what often proves to be the most useful advice is diverse, in-depth knowledge of the details. Our combined insight will help lead the blue-collar athlete to the level of performance at which he/she wishes to rise.

This section of the book will cover the mindset that is necessary for training and, most importantly, the intimate details of race day. The following information will address strategies on how to cope with each half-hour of what will most likely be a grueling 12—to 16-hour day.

My co-author and I wish you much success and know that when you finish an Ironman competition, you will have truly earned your place within an elite group of men and women. You are an Ironman.

Why an Ironman?

The motivation to train and compete in an Ironman was an internal one for me. The initial seed was planted by one of the co-authors of this book, Dr. Frank Rohter, and another inspiring triathlete, Gerry Gergley. These triathletes were both my college professors, as well as my mentors, when the triathlon sport was in its infancy (1979-1981). They practiced what they preached by challenging themselves and living healthy lifestyles. I revered their message, and knew that one day I would walk (run) along the path they had created. Seventeen years later, I found myself approaching the big 4-0 and felt that it was finally my time. I wanted to test my discipline. In my daily work, I utilized my ability to discipline myself in order to become successful, but in the last few years I had run out of new and exciting challenges. I had become an aging athlete, atrophying in the business world and longing for the physique and

endurance of my younger years. The pain and gain of competition I experienced in my college football and baseball days at the University of Central Florida was long gone, but I knew that I could reconnect with those feelings by training for and competing in the Ironman Triathlon.

I consider the Ironman competition to be the ultimate endurance and independent athletic challenge. From the beginning, I wanted to attain this goal by achieving a standard of triathlon excellence set forth by my mentors. Rohter and Gergley have been teaching or coaching Physical Education or athletics at the University of Central Florida since 1970. They are friends and mentors to thousands of students and athletes. I was not the first to go for the title of Ironman because of their inspirational (and contagious) enthusiasm for health and personal challenge, nor will I be the last. At the end of the day, I aim to serve, as my mentors have, as a catalyst to encourage someone else to pursue this experience.

Chapter 2

Triathlon Training and Performance Strategies and Experiences

Swimming

Open Water, Weather, and Swimming Without Walls

Be prepared to swim in rain, wind, rough water and even big swell conditions. If you train only in pools or picturesque, glassy lakes and you get to the race and the wind is blowing 35 miles an hour, your Ironman dream might be over before it ever begins. If you have the experience of working through some rough-weather swims, you will have the confidence and experience to know that you are capable of defeating such an obstacle—at a more precautionary pace. The only way to get experience swimming in different conditions is to get out of the pool and into open water.

There is another aspect of open water that can surprise you if you have swum solely in pools. Swimming 2 miles without a single wall to push off of is going to be a rude awakening if you are not ready. Do not underestimate the amount of energy you save pushing off a pool wall

before every lap. For that reason, a 50-meter pool is preferable because you get half as many flip-turns off the wall, when compared to 25-meter pools. Try doing part of a swim workout without touching the pool walls to get a feel for the difference walls make. There will not be even *one* wall in an Ironman Triathlon.

Good swimming is dependent upon proper technique; your swim split can drastically be reduced as you develop a proper stroke, improve your breathing technique, and lock into a comfortable swimming pace. But part of the training experience goes beyond technique. If you are accustomed to swimming only in pools, the shorter sprint and Olympic-distance swims through lakes and oceans may prove unpleasant—even for experienced swimmers. I highly recommend including open-water swims in your training.

However, be aware that boats represent a very real hazard whenever you swim in open water that is not roped-off for swimmers or reserved for an event. Lakes, oceans, and even rivers can be good places to train, but be aware that boaters cannot see you. Training in open water is much safer if you drag a float that makes you more visible. Put a flag on a float and tie it around your waist and pull it behind you. The drag of the float is also good for training.

From Goggles to Training Timelines

When I started training for my first triathlon I had absolutely no swimming background. Turning laps in a pool was alien to me. I did have 33 years of surfing experience, but I had never been taught any kind of technique or learned a proper swim stroke. I realized that I needed to operate on a steep learning curve to become an Ironman because the swim represented a huge challenge by itself.

My transformation from a surfer into a swimmer began with ditching my baggy "board-shorts." This kind of bathing suit is simply too heavy and causes too much drag. Avid swimmers swear by the Speedo bikini underwear, but I wear the European tri-shorts, which are slim, short shorts, like jogging shorts. Goggles are a necessity and I would not suggest sparing the expense of a few good pairs. I had to start at square one and learn to train in a pool, but even in natural bodies of water without chlorine, when you are swimming triathlon distances in race conditions,

you are going to need the eye protection. You might have to try a couple different kinds of goggles to find ones that comfortably fit your face and form a tight seal around your eyes.

When training to swim any distance triathlon, your first swim training session may last only 15-30 minutes. If that is the case, understand that in order to get into an effective training schedule, you need to reach the point at which every time you hit the water, you swim for 60 minutes. Mentally prepare yourself to stay in the pool every minute of those hour-long sessions, even if you are exhausted.

As race day approaches and you are preparing to complete an Ironman, you need to be fully capable of swimming 3 miles at once. At least one month before the race, you should complete two or three 2-mile swims. With that experience behind you, you will arrive on race day feeling confident of your swimming abilities.

With enough time and persistence, your stroke will develop, and not only can you become proficient, but also competitive. Find a university, YMCA, or a gym with a 50-meter pool that you can use and you will find yourself swimming next to competitive swimmers. They are regulars at these facilities and many of them are or were on swim teams. You will happily be the recipient of a bit of free coaching, tips, and encouragement if you return to the same pool and work alongside the same swimmers over time.

If you have zero knowledge of swimming techniques and have no idea what body line, elbow digging, or kick rhythm are about, I would suggest paying for a lesson or two so you don't begin by creating bad habits. Or, try asking swimmers at the pool (who look like they know what they are doing) to observe your stroke and offer some suggestions. There are an endless number of aspects to good technique. For instance, to breathe more efficiently, exhale while looking straight down under the water. Then, tilt your face to the side and breathe.

If you are not a good swimmer, you need to start working early, learning, practicing, and mastering a proper technique. Do not expect to start working hard at this as race day approaches. You need to begin right away in order to fully develop the skills necessary to make your swim a comfortable and successful one.

How to Survive the Swim

Although your swim-leg preparation might be different from the athletic training you have been accustomed to, a new challenge still lies ahead. What I am referring to is the pack of churning triathlete arms, elbows, and legs that forms when a race announcer says "Go!" and hundreds of athletes all try to simultaneously follow the same route to the buoy. It can feel like you are one of many bumper cars out there—without the fun.

If you get stuck in the thick of the pack or somehow get into the lead and are not ready to stay there, it can become a rough and fearsome situation. There is nothing worse, at that moment, than having your goggles kicked off and having to stop, tread water, and readjust them. The other swimmers can pile into you while you are busy adjusting your goggles. (Remember, a swimmer's vision shifts from side to side, for the most part.) I highly recommend staying on the periphery of the crowd, unless you strongly believe you can lead the pack. If you find yourself in the middle of what may feel like a dogfight, and need time to recoup, just sidestroke off of the straight line the pack is following. You should not go too far off.

My advice is to be one of the last swimmers to take off; or, start a safe distance to the side of the pack, even if you are outside of the point at which you need to start the swim. Ultimately, everyone swims somewhat of a straight line (directly from point to point). Analyze the course well before the race starts, or if you have the opportunity, do an easy swim the day before if the buoys are up.

Stay Focused on Your Swim Pace

Endurance swimming is similar to running in the sense that it is literally a matter of getting your second wind and finding a comfortable rhythm. The atmosphere within a pack of swimming triathletes is not conducive to a methodical, deliberate swim effort, much less any kind of rhythm. As the swim progresses, there may be some separation from other swimmers. Practice breathing on both sides, looking left and right, during training sessions. Chances are another swimmer or a wave will force you to breathe on a different side and disrupt your rhythm. You've got to feel comfortable in any situation to last through the first part of the big day. Although you may already be tired of hearing this, it is to your advantage to come to terms with the fact that most people are not good swimmers; many become panicked during this portion of the race

because they thought their luck would somehow prevail. The reality of the situation is that the race day swim is a difficult one because you are caught up in the moment, there are dozens of people swimming around you, and you may get frightened because you cannot touch the bottom. If the depth of the water contributes to your weakness, it is mandatory that you put yourself in the water 6-9 months before this big day. Swim 3-4 times a week.

One important swimming tip is that you must maintain constant forward progress, otherwise you are going to be in the water for a long, long time. Try the crawl, the backstroke, or a sidestroke apple-grab technique for a moment to catch your breath, but just keep progressing forward. If at any time during a competition swim leg you do not feel comfortable, revert to the stroke that is easiest for you. Early in your training, determine which stroke makes it easiest for you to breathe. You can successfully finish the swim leg, even if you are not a water bug, as long as you find your place on the side and complete your 1:30-1:45 swim.

Porpoise Jumping and Facing the Crowd

Upon finishing the swim, you are going to be coming out of the water onto some kind of beach environment. As the water gets shallow, your hands or legs may find the bottom, disrupting the power of your stroke. There is a temptation to stand up and run, followed by the urge to start swimming again because you soon realize how much time and energy is required to run through three feet of water. Avoid this bout of inefficient indecision. Porpoise jumping is the best and fastest way to get through shallow water.

In practice, porpoise jumping looks intriguing. It involves jumping forward in the water, diving forward, and swimming underwater until you slow down; then take steps as if you are broad jumping and repeat the motion. Chances are, you will pass some fellow triathletes and if you are in the ocean, you might catch incoming surf. Another proven method to cutting the time between the finish of the swim and the bike transition is to get some practice body surfing. It is important to realize that you can actually ride some of the swells during the swim and as you make your way to shore through the waves.

When you run out of the water, there will be a screaming crowd. What happens to too many triathletes is that they just cannot help themselves; the

crowd's enthusiasm and yelling gets to them and they start running hard through the transition area. If you are competing in a sprint triathlon, there is not a lot of caution needed when putting on your shoes and getting right onto your bike. However, if you are tackling a half or full Ironman, *take your time*. Do not induce the accumulation of lactic acid simply because you are revived by the crowd. (During excessive exercise, lactic acid accumulates in your blood, and will slow you down or bring you to a halt. Take note of the additional sections of this book on the causes and affects of lactic acid.)

Stay calm. Do not get caught up in the enthusiasm of the spectators. The enthusiasm in transition tents and other staging areas is extremely contagious, but my advice is to conserve your energy. Race day is a long day, possibly 14 or 15 hours, and you will need every muscle fiber and ounce of energy you've got. Do not waste precious energy in a transition area when you should be concentrating on preparation and refueling.

When you finally make dry land, do not jump onto your bike for the next 8 hours without adequately preparing yourself first. Make sure you take the time to dry both of your feet and each toe, helping to prevent future blisters. Begin the bike with dry feet and dry socks. Make sure you are very comfortable before leaving this staging area. When you are facing over 100 miles on a bike, followed by a marathon, losing a couple of minutes is well worth the additional preparation and comfort you gain.

Survival Mode

One of the worst things you can do in any leg of the Ironman is to get into a competitive mode with the people around you (unless you are close to the *real* finish line). Keep in mind that competing in an Ironman is not about being the best. It is not the Olympics or a professional tournament. This is a day for you to discover your own potential. You are competing with yourself in one of life's toughest physical and mental tests. My personal motivation—what I believe to be the healthiest and most productive mentality—is the sheer prospect of surviving the day and crossing the finish line with a personally satisfying performance behind me. The Ironman is not about beating anyone—it is the rewarding culmination of much preparation, determination, and self-discovery.

Conditions and Other Living Things

This important first leg (the swim leg) intimidates and inhibits the performance of many triathletes so early in the race because they simply

are not psychologically prepared. I think people hit a mental wall when they are faced with water conditions that are totally foreign to them. Until one ventures into open water, the thought that there are living things (besides fellow triathletes) swimming in the same body of water might not occur to him/her. Algae, seaweed, fish, jellyfish, alligators, and sharks are not an issue when training at the local YMCA. But you cannot waste mental energy worrying about these elements on race day. Besides, you will not encounter any live animals during the race; animals know better than to approach a rapidly moving pack of swimmers. Although, training solo in open water may be a different matter. Try finding another swimmer to buddy-up with, especially if you are unsure of the water. Yet, if marine life proves to be a concern in your mind, manage the fear before race day in order to avoid an unnecessary mental setback.

Allow me to qualify my suggestion. You are stepping up to a higher plateau of life experience simply be attempting an Ironman. The presence of aquatic wildlife can actually add to the excitement (with the exception of the jellyfish and algae). Neither you nor your fellow triathletes are going to die. If competitors died regularly from this minor and irrational threat, the races would not continue to be held in these environments.

I have much experience in regards to being in open water with large animals. I have been surfing for more than 33 years. Three times I have paddled on a 19-foot, 21 inch-wide Styrofoam paddleboard from Havana, Cuba to Key West, Florida (112 miles). I have paddled with no land in sight, in pitch dark conditions, in waters known for their massive populations of the largest great white sharks on the planet (the Gulf Stream, Molokai-Oahu, and the San Pedro Channel). I am confident that sharks will not bother you. While paddleboarding, I have crossed paths with Great Whites, and paddled in a pod of White Whales. I have trained in Florida's lakes at night and during the early morning hours, paddling over more than a few sleeping alligators (even stroking my hand over a gator's head one time). They all get a little skittish of swimmers. Drag a float behind you if you need to crawl atop something—a surfboard or wind-surfboard will also be sufficient. Avoid getting caught up in a state of panic over a little fish. Expose yourself to some open-water swims, which will not only help you to become physically prepared for an Ironman, but will also safeguard you against a debilitating fear of the first guppy that bumps into your foot.

Night Swims, Day Swims

I felt safe enough to swim train in open water at night. That way, I could reserve daylight hours for biking and running, when I needed the light to warn me of a real danger: cars.

Training during a busy life requires adjustment. Any time after the sun goes down, I feel, should be taken advantaged of. I used to combine training and outings with my wife. We had a routine during which I would swim 2-3 miles in the ocean and she would meet me at the beach near a place where we'd eat breakfast. Or, because her parents lived 60 miles away, I would ride my bike to my in-laws' home, while my wife drove much later. She joked that whenever we went out, I would find a new route to run, bike, or swim.

I have learned to really appreciate the swim and what effects it can have on one's body. Swimming is an effective aerobic and full-body workout.

If you are large or bulky in stature, you are going to have to start training for the swim early on because many larger swimmers actually sink. The more difficult a particular segment of the triathlon is going to be for you, the earlier you need to become accustomed to the techniques involved. Understand what it will take to get to the next transition area in the context of the whole day.

In my case, I involved myself with swimming very early in my training and quickly developed a comfort level, swimming one mile, then two. I trimmed down the swim training for the middle period of time leading up to race day in order to concentrate on another weakness of mine—biking. I returned to more extensive swim training only two months before race day, swimming about 5-7 miles each week.

Summary

If you are intimidated by the swim portion, or if you are a swimming novice, begin early in the year for technique training.
Swim at least 3 miles, two or three times, before race day.
Invest and train in friction-free swimwear.
Avoid needless competitive mental traps.
Swim train extensively until you reach a comfort level, and then taper off the frequency.

Cycling

My experience with biking was worse than my swimming experience when I started training for the Ironman. In each of the triathlons I had completed in the early eighties, I never had any training time on a bike. Part of my ignorance was due to my youthful invincible nature of thought. I didn't even own a bike. I arrived at more than one triathlon looking for a bike to borrow. My mentor, Gergely, was always competing in these races, as well, and came prepared with spare helmets and bikes. I depended on him for what I needed on race day. I know now why eighty year-old women passed me during those races. I wasn't interested in investing in such equipment at that time because I thought my involvement in triathlons might have been a passing fancy . . . and I didn't have the money.

When I approached the thought of doing an Ironman, I purchased, for about $85, a modest street 10-speed that looked the part. I got on the bike in March of that year (race day was in late October) and rode with a friend for about 1 hour. We may have traveled 10 miles. My fingers hurt, my buttocks hurt, and the road had traffic, broken glass, and was not intended as a real bikers' run. Looking at this now, it was very primitive to cover a substantial amount of miles on such a bike.

I called my mentors Rohter and Gergley and told them my goal, wanting to know if they had any suggestions on training for the bike portion. They said they were riding on Tuesdays and Thursdays and I could ride with them (about 35 miles each outing. They were not training for any race in particular, but rather keeping their blood flowing for biking). I showed up that first day proud to take part. Gergley took one look at my bike and said, laughing, "You're going to have to invest in a bike." I replied, "Hey, I'm not going to get sucked into buying all the bells and whistles just to look the sport." I was going to do it the blue-collar way and keep my money in my pocket.

The most important piece of advice I can offer in this chapter is the necessity and value of proper equipment. Absolutely everything that goes along with "the look" is also designed for comfort, safety, or a faster ride. Invest in the right materials from the start and save yourself the hassle of buying the wrong equipment first and soon realizing your mistake, as I did. It took only two runs with my mentors to understand that I would be

living on a bike for a long time. I immediately went out and came home with a $2,000 plus Soft Ride with all the bells and whistles. I traded in my gym shorts for biking shorts, and purchased tri-bars. I immediately realized what a sound investment I had made. Any real biker will tell you, you develop a relationship with your bike because of the intimate time you spend on it. I rarely bike today because of all the time I continue to contribute to paddling. But I know where my bike is and I'll never part with her, for she has carried me thousands of miles.

I learned a lot from biker friends who gave me pointers on everything from what gears to use for speeds, to pushing down with my heels and not my toes. Expect to cover about 150-200 miles per week, so you will soon discover your own tricks of the trade, as well.

What Kind of Bike?

Cannondale and Trek bicycles seem to be the most popular choices for triathletes. My advice is to go to a race and take note of the bikes being used. Ask questions. I chose a Soft Ride because of the theory that without a bar jarring you, your ride is softer, hence, the bike's name. I spent a lot of money, but I do not regret it.

Equipment

Must-haves include the following: a tri-bar, rear-viewing mirrors, a good helmet (one that is approved for triathlon racing), a bike repair kit, riding shorts, gloves, biking shoes, sunglasses, water bottle holders, an air pump, and a bike computer. There are many items you must have, all of which are important. At first, I honestly hated parting with so much money. I even bought the cheapest, ugliest shoes I could find. But I later realized that it is all worth the financial expense.

Training

During your last month of training, you should average 180-200 miles per week on the bike. This distance will not be hard to reach, as you will be peaking in your training and ability. Saturdays or Sundays should allow you to cover a sizable amount of distance, maybe 80-110 miles. It's a great feeling to cover 30-50 miles before most people have had their morning coffee.

Century rides (100+ miles) are important. Cover at least 3 during your training if you are preparing for an Ironman. Four months prior to race day, cover 50-100 miles per week. Your buttocks will create a comfortable spot on the bike with time.

Where to Train

Find yourself some good, wide country roads. You can usually find them by going to the nearest bike store and inquiring about the location of the best biking roads. A good road will offer you distance and a safe and scenic course. When driving, look at the sides of all roads and take note. Wherever you choose to bike, do not bike in the city or in heavy rush-hour traffic. When I see bikers doing this I assume it is for show because a biker can certainly not find his/her desired pace while biking through or alongside traffic. In addition, ride your bike over hills because all Ironman races have them. I have seen more than a few bikers come to Florida thinking it is completely flat, only to be blown away by the hills, not to mention the humidity.

If you are pressed for time in training and need to get out before the sun gets up, locate a circular course with night lighting. When the sun starts to rise, you can head out. I cycled around the University of Central Florida in safe lighting, beginning at 5 a.m., which allowed me to cover 13-17 miles before the sun came up.

Stationary bikes will never take the place of the real thing.

Transitions

Once again, when coming in from the swim, take the time to dry off your feet and toes. An Ironman bike portion will take you 6-7 hours. Once you leave the transition area, heading back if you've forgotten something is not an option. Before the race, check and recheck all that you need and regularly carry, including what foods you are bringing. And check the air pressure the day before the race, not on race day.

Find someone in the race that is moving at your pace and piggyback without drafting. If you have to urinate, do so while biking. Most races have plenty of water stations; so use the extra water to rinse your body. Stay hydrated and refuel continuously.

Refueling

Gergley brought lots of sandwiches. Rohter introduced me to Liquid Fuel, which is pretty good. Ironman bars can go only so far. I suggest Gatorade and lots of water. Every hour I would eat. Twice or three times an hour, I would drink.

Tricks

The last week before the big race, do not ride unless getting on your bike after a tune up. Tell the bike shop to which you take your business that you need the bike several days before you actually do.

When checking your watch during the race, only look at the next hour ahead of you. Never tell yourself, "four more hours." Look at each hour independent of the others; your job is to just get through that hour. It makes the day go by faster. Looking at the reality of the long day ahead can be demoralizing, especially if you start to feel bad or incur an injury.

Hazards

Fix a flat tire while you are in the safety of your garage because you are going to be tested soon enough and the time will present itself, most likely, when you are in the middle of nowhere. At that point, you will be glad you had the experience of fixing a flat with limited tools and a pump.

When biking, your mind and your reflexes need to be caffeine-sharp at all times. Feel free to enjoy the sites around you, but do not assume that there are no cars, or that the cars around you will see you and not pull out in front of you.

Road debris, such as glass or an animal carcass, can flip your bike. Be wary of hitting such hazards while looking in your rearview mirror.

Other bikers also present a possible danger. Biking rules of the road include the following: pass only on the left and yell out "on your left" or "left" several times while passing; stay on the right shoulder and avoid the middle of the road; if you are biking with others, it is customary to point with your left hand at any debris in the road as you pass it; alert other bikers if there is a car coming from behind by yelling out "car back."

The biggest hazard I can warn you against comes from my own training story. Never try to bike across a wet metal drawbridge. It serves only as a

cheese grater and you are the cheese because rubber tires cannot hold traction on wet metal (more on this later).

Avoid filling or topping off your tires the morning of the race. I have seen and experienced the possible danger of having a tire blowing minutes before a race was about to start.

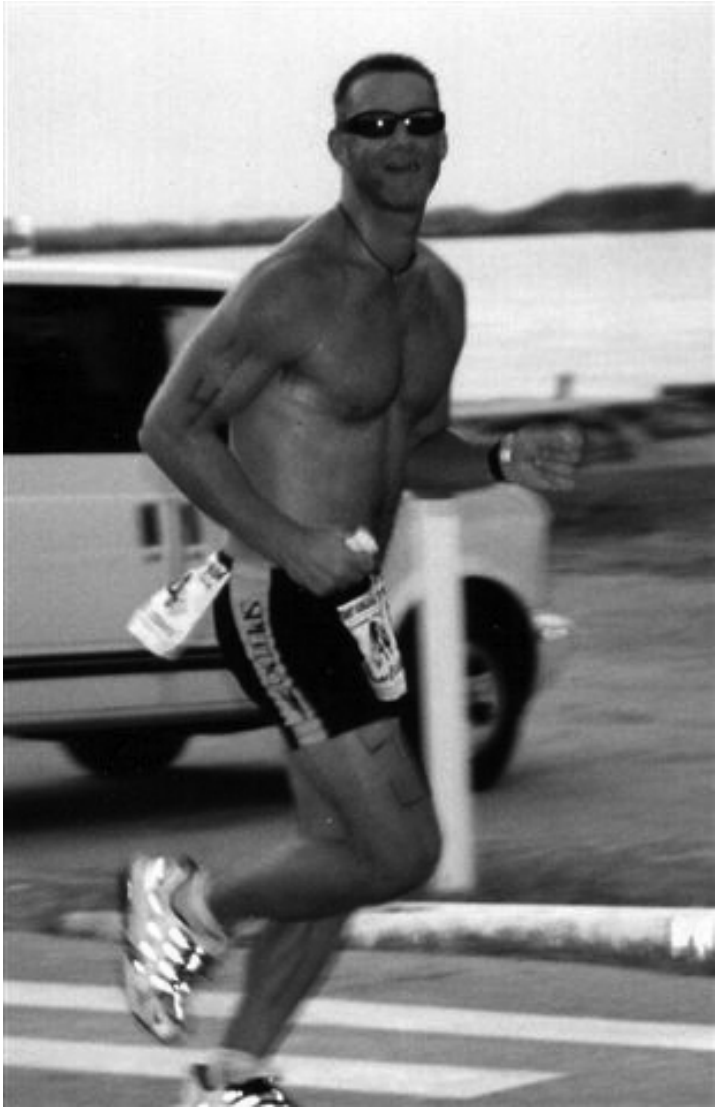
Never leave for a bike ride without your helmet or gloves. It is not a question whether or not you will fall. The question is when it happens, will you be wearing your helmet and gloves?

Running

The most important advice that I can offer for any size triathlon, especially the Ironman, is that *strong legs carry you home*. You can be a great biker and an excellent swimmer, but if you have not developed your legs for long distance endurance, then you have not adequately prepared yourself to avoid a major problem. The run portion of the race requires everything you can imagine to take you to the finish line.

The importance of the strength of your legs is closely followed by the fact that you must make it a top priority to avoid an injury. Every detail including the type of shoes you wear, fuel intake, stretching, and running technique is important and must be analyzed and reanalyzed to deliver the safest race day possible. During an Ironman, you are asking your body to make the transition from biking for 6-8 hours to running for another 4-7 hours (or more). Surviving an Ironman does not require a continued run effort; many triathletes walk through the aid stations or walk intermittently during their marathon efforts—finishing an Ironman is having survived one. It is not unusual to see people creating mind games during the 12-14 hour of the event. Many run a couple hundred yards, then walk, then run a couple hundred yards more. You do whatever it takes to get through those gruesome 26 miles. But at the end of the day, be assured that it is the strength of your legs that will deliver you.

There are certain milestones in your training that I highly recommend to prepare you for long endurance runs. Have a reasonable blood flow going through your legs when you begin your training. This means you run recreationally at least a few times a week. This does not require covering a lot of miles, but you should not begin serious training while you are so far removed from the act of running.



If you are a novice runner, visit a bookstore on the first of the year (assuming your Ironman is in the Fall) and purchase *Runner's World Complete Book of Running*. *Runner's World* magazine is also an excellent source. These informative texts will guide you through the different levels of preparation and understanding for the sport of running. You can muscle your way through the swim and you can develop into an acceptable biker, but you must gain the knowledge and understanding of what it takes to run long distances in order to complete an Ironman.

There are two training levels. The first involves running 3-7 miles. The second stage of training requires becoming comfortable running 10-20 miles. If you begin in the Spring with the goal of discovering how long you can comfortably run before your training really starts, your runs may last only 25-45 minutes. As a rule, early in training, runs should last no less than 1 hour. In other words, during June or July (if your Ironman is sometime in October), you should run for no less than 60 minutes. Milestones include finding a comfort zone during 1-hour runs and graduating to 1½ hour and 2-hour runs. By August and September, you should run for no less than 2-3 hours, or 10-12 miles. There should be a time in your training when you are typically running 9-16 miles, with the occasional run covering 20 or more miles. During this training you will become comfortable covering distance runs, and will undoubtedly feel good about yourself. A good training day might include a morning run (10-14-miles) completed by 7:30 a.m. (before the day's heat has set in), and a late-afternoon swim of 2 miles or a 35-mile bike run.

Reflecting back on my own run training, I would advise building up to and surpassing 45 miles per week 1-2 months prior to your race day. What guided me was my motivation to dedicate myself to the hours required of me, which led me to my desired level of endurance. I concentrated on how I was feeling and my form.

Equipment: Do Clothes Really Make the Ironman?

Purchase 2 pairs of good running shoes that are made for long distance running, which means they provide a significant amount of cushioning and support. Do not spare on the expense. Invest in quality running shoes and purchase new shoes no less than every 300-400 miles. To help prevent injury, alternate between two different types of shoes. Owning two pairs is also recommended because some days you are going to run in the rain and the very next day you do not want to run in wet shoes. You need to be prepared to run, rain or shine, in dry shoes. When purchasing shoes I would advise buying from a local running store in order to make any new acquaintances who may know about run training and could offer some advice.

When it comes to sweatbands, wristbands, and hats, it is your own personal preference. Runners' socks are useful because they can also be worn while biking. In addition, double-layered versions help prevent blisters. Look for a good watch; I use the Ironman® watch because it has

everything you need for multiple timing. You must have sunglasses since wind and glare are both competing for your focus. When it comes to the standard uniform of choice, known as the "bikini brief," you must wear what makes you comfortable. I purchased the European triathlon shorts that are tight but similar to a mini bike short.

Transition Runs

Transition runs are fulfilled by covering a fair amount of miles on your bike immediately followed by a run, even if you only run about 1 mile. It is the dynamic of the transition that you need to experience. The range of motion and physical demands of each part of this race vary greatly. The transition itself is often challenging because the blood flow in your legs has become accustomed to biking and the new action is a wake-up call to your legs. I suggest a slow run, even a fast walk, until the blood resettles, and then gradually increase your pace. I personally never ran a significant amount of miles after biking quite a distance. I completed a number of transition runs to get a feel for the change my body and mind would encounter. Quite honestly, your legs are initially going to be locked up and it is important to understand it will take a little while for your blood flow to return to all of your muscles. With all of the biking and running you will cover during your triathlon training, you will create the strongest and best-performing legs you've ever had.

Five Proposed Training Principles

Progression: By increasing the length of your training runs, you will discover a stronger understanding and familiarity with this discipline. *Runner's World* recommends adding 1 mile per week to your long runs until you reach 20 miles (or 20 weeks). I recommend running 3-4 times per week (1 month prior to race day), with each run covering more than 10 miles when you near your peak in training. Charting your runs should indicate an increase in terms of both duration (time) and length (mileage) as the weeks progress. You will dedicate a minimum of 20 weeks (4-5 months) of training for that one special day.

Recuperation: Rest days are an essential part of a complete training schedule. Your body needs to spend one entire day each week without any leg exercise. Include treatment, stretching, or massaging in your days of rest. Taking a couple of Advil or Aleve can be beneficial. Your

entire body should spend a day repairing itself. The whole purpose of training is to break the body down so it builds itself back up and becomes stronger. When you do not allow time for the healing to occur, problems will undoubtedly arise. Forty-eight hours of rest is typically what the body needs to recover from a strenuous workout. Incorporate a productive and effective balance of exercise and rest into your training.

Finding Your Pace: Maintaining a comfortable pace is critical to having your body run for long distances without overheating. Your own strong and manageable pace should be found during training. Getting caught up in someone else's race is an easy pitfall for many competitors. Always run your own race—the most effective competition is the one against yourself. Push yourself during your training, but most importantly, find a comfortable pace that will allow you to compete for an endless distance. During race day, finding this pace will serve as a comfort in itself.

Weekly Mileage: Over-running can lead to over-training, signs of fatigue, dead legs, and a lack of enthusiasm and enjoyment while running. Set your mileage goal for each week. Include both long and short runs. Using Saturday as the first day of each training week allows you to cover the bulk of your miles during the first two days and tailor the rest of your week accordingly, allowing Fridays to be well-deserved days of complete rest. By doing this, you will stay on top of your schedule and avoid the need to catch up on mileage as the week comes to a close, which can be overwhelming. Use the training log provided in this book (Appendix C) as an example for your own weekly strategy. Planning ahead, charting your progress, and sticking to a manageable (and productive) schedule will help motivate you to find the discipline to reach your training goals. Training and completing an Ironman revolves around one important quality: discipline.

Experience is Key: I do not recommend competing in too many triathlons (unless they are longer ones) to compensate for a lack of training. But, running (for the experience, rather than the competition) in longer races or triathlons will give you first-hand knowledge of the dynamics and logistics of racing that you can apply to your real race day. Through practice, you will gain an understanding of the mechanics and techniques involved in handling the race's major

transitions (such as the move from biking to running), which is critical for successfully finishing an Ironman.

Tricks of the Trade

If at all possible, run on the actual course at which you plan to compete in an Ironman. If that is not possible, drive the course in a car a couple days before the race. While you are in training it is valuable to have a course (whether it is a neighborhood course or country course) with water available, even if you've planted water bottles on the course in advance. I highly recommend running courses that make you run completely out and away from your starting point (rather than on a short, circular-type path) so there is not the temptation to turn back or loop around and cut the run short. Get accustomed to drinking generous amounts during your long runs. It is not only safer for you to drink plenty of fluids, but your body needs it, whether or not your mouth feels thirsty. Fluids should be taken in small doses about every fifteen minutes after about 10 miles. Be aware that taking in too much water will lead to a swirling feeling in your stomach that can be uncomfortable at best.

Training Story

One bright Saturday I left my house at 4 a.m. to run 23 miles out and back. It was a fine idea to run 23 miles, but I did not take the time to plan this entire run before I took off. After you reach the half-marathon distance, small nuisances can manifest to real concerns. In my case, there was no water available. My run was in a commercial district of Daytona Beach, Florida and I found myself running up and down curbs, which leads to muscle strain. The only water available was sulfur water from sprinklers or fountains laced with chlorine. For long runs such as this, prepare yourself. Travel the path in your car just prior to running and place water bottles on the course. Nobody will take them and they will definitely come in handy when you need them. I made it 11 miles, came to terms with my dehydration, and turned around to beg at a 7-11 convenience store for some Gatorade. Never set out for a run or bike ride without some pocket money for emergency situations. Some other personal tips that I recommend include the following simple suggestions: chew gum—it keeps your mouth closed most of the time; try concentrating on your form, on the heel-toe motion with your arms tucked close to your sides (this form helps you avoid expending energy by moving your arms too much); playing mind games can also be helpful

on a lonely road to overcome the monotony. I like to mentally create math equations that have to do with my time and mileage on the course—nothing too complicated, but simple minutes-per-mile computations are constructive and mentally distracting at the same time. I consistently monitor my technique and running form, becoming comfortable with the necessary heightened sense of awareness to injury and the condition of my form.

From Bike to Run

The transition from biking to running marks the beginning of the last third of race day and without question it will be the most trying. If it normally takes you 4 hours to run a marathon, prepare yourself for a 6-hour marathon on race day, since this will be your 8th or 9th hour of continuous movement. Take your time in the transition area again, making sure that your shoes are on securely with a tight fit. Put band-aids on any spots that may be susceptible to injury. Put baby oil or Body Glide® in any crevices in your arms, groin area, and toes. It is important to reapply sunscreen if needed because the sun may be blistering you and possibly robbing you of energy. Most likely, you will be catching the sun as it is going down when you begin the marathon. You want to wear a hat to protect you. Once again, remember that when you leave the transition area, you are leaving behind your chance to prepare yourself for the next stretch of the race.

At the onset of the marathon, you may want to walk your first 100 yards and then start to jog very slowly until you find a comfortable mid-level pace for your run. As a reminder, your body needs the time to return the blood flow to your legs and warm up the muscles for movement in a direction different than the one it experienced on the bike. Ultimately, you want to build up to a certain comfort speed during the run, but never stop. Chances are, at some point during the marathon, whether it occurs at the 10- or 13-mile mark, walking will become common for many triathletes. Because of this, you want to get as many miles behind you as possible before your body overrides your mind and starts to control you. During this time, different muscles will be sending messages to your brain, telling you that your body is, in a sense, short-circuiting. You are going to develop blisters because this isn't your typical marathon. I highly recommend finding a running partner during race day whom you can mirror. You will find different people going at different speeds. Hook-up with a runner who may be going your speed; he/she will pull you

along, in a sense, during some of the stretches and you will surely pull him/her along during others. You can always adjust your pace with someone else if the person you've initially chosen is going too fast or slow. Do not perceive this as competition. It is important to note that it is easy to strike up conversation with these fellow participants, which is positive. My advice is to let those who want to talk do 90 percent of the talking because you expend energy when you talk. This type of relationship with your fellow triathlete helps take your mind off of what your body is doing and the miles pass by quicker. I would not get caught up in racing another triathlete. I view the Ironman as a day of personal triumph. My goal is to deliver myself across that finish line. If someone wants to race the last 20 yards, his/her energy only fuels my own.

Stretching Techniques

Stretching is not an option; it's a necessity. This is fundamental in preventing injury and gives you time to focus on the goal you've set for yourself. The most important stretch is the foot plantar, which stretches the Achilles tendon and ankle. It is highly recommended that you visit a foot doctor and buy a round heel/Achilles tendon stretcher. Pay special attention to leg, ankle, calf, Achilles tendon, thigh, and trunk rotation. Time yourself, dedicating 10-15 minutes to stretching. Use this time to prepare your muscles and your mind.

Treadmills

I had never trained on a treadmill until recently. It is a softer run and a little easier on you. You can intensify your run and raise your heart rate, but nothing can replace doing long runs on pavement or through the woods. It can serve as a good filler, but I don't recommend that you train on a treadmill the entire time.

Preparation for the Big One

Getting into the Olympic and half Ironman distance races is the obvious prerequisite for you to feel and test the level of your conditioning. I ran a half Ironman before my full Ironman and I must admit that the half Ironman was ten times more difficult. These are good milestones to accomplish. You are not trying to win, but rather to get a feel for what works and doesn't work for you regarding food, liquid consumption, and equipment, among other details. I did not do any sprint triathlons. If you have very little experience in triathlon competitions, I would highly

recommend completing a few. If you do have experience, reserve your Saturdays and Sundays for long distance biking and training days.

Technique and Form

Since it takes 8 minutes to get your second wind (and find your comfort zone), do not push yourself too hard during those first 8 minutes. Rather, concentrate on form. You will naturally reach the point at which your lungs will work proportionately with your blood flow and oxygen intake. At this point, you mentally and physically become a machine, not altering your stride and movement to a great extent. Your form should be that of heel-toe, arms tucked, and body staying upright. I wouldn't clench your fists, but keep your hands balled. Avoid having too much rotation in your torso, as an athlete has when sprinting. Observe other people running and analyze their form. You will find runners working harder than they have to and you can learn from this. Develop your style and take some tips from the local runners' club. Preparation and focus will result in mental readiness. How will you know if you are ready for a marathon? Run 24 miles on your own 1 or 2 months prior to race day. Remember that the 2 weeks prior to race day are for fine-tuning and strengthening, but training is essentially finished by this stage.

Biomechanics

My knowledge on this topic is relatively limited when compared to that of my professorial co-authors. What I am aware of is that your performance is dependent upon technique, form, and rhythm. Biomechanics is the way in which your body is moving to move you towards the finish line. There are mechanics that can work against you and mechanics that can work to your advantage. If you think you are an inefficient or uncoordinated-looking runner, most likely, you are. Thus, you are making the run portion harder on yourself. If you would like a professional or experienced individual's feedback on your running form, try contacting a local high school or college track coach and tell him/her you are interested in hiring him/her for a 1-hour consolation. Most likely, a track coach (if he/she isn't too busy) will be willing to do this and it should not be an expensive endeavor. Hopefully, you will find someone who is enthusiastic about running and the prospect of competing in an Ironman. You will probably discover that observing this coach's team during a workout or practice may also help.

Some general guidelines for efficient endurance running mechanics include the following. Moving your arms requires a greater amount of

energy and is unnecessary unless you are sprinting (when sprinting, your arms motor your legs). Keeping your head tilted or in a lowered position can make you run faster. Lifting your head straight up or back will cause you to slow down. Finding a comfortable speed, aerobically—one that allows you to plant your heel to toe movement on each stride—is preferable. Keeping your arms tucked in, so as not to rub against your body, helps you maintain a more streamlined form. Concentrating on the placement of your feet and keeping a rhythm that is both manageable and productive will be comforting to your entire body. Opening up your stride will place additional strain on your workout.

There are three groups of muscles performing the actual task of running. The primary muscles are those that pull you forward. The secondary muscles are those that provide some assistance, but in a secondary direction. The third group of running muscles are those that hold everything in check in the direction opposed to the primary muscles. Each of these three muscles groups is important, and therefore should be stretched before use. Maintaining proper foot placement and an optimal stride will save you distance over the course of a long distance run. For more information on Biomechanics, take a Kinesiology course. Most likely the knowledge will not make you run faster, but it will help you understand what your body and its components are doing while you are busy training for your first Ironman.

Fueling

Physiologically, once you've worked-out your body for 2 hours, you have depleted your available fuel. Refueling with Gatorade, Ironman Bars, Red Bull energy drinks, and half sandwiches works for me. On race day, you will see your fellow triathletes refueling with everything from high-tech bioengineered foods to homemade concoctions. Since nutrition and refueling are an extremely important part of reaching the finish line, you must discover (basically through trial and error) during training what works best for you. Eating hearty foods and drinks worked for me, while my co-authors are much more scientific in their decisions for food and drink consumption while racing.

Summary on the Sprint, Half, and Full Ironman

To complete a half or full Ironman, dedicate the time and distance necessary during training to reach the finish line on race day. You should reach your peak 1 month prior to the day of your Ironman. Your should

cover no less than 10 miles every time you run, while your long runs should cover 17-18 miles. At this point in training, you should be very comfortable with the idea and act of running. If not, you may be pushing yourself too hard (so that your runs are physically uncomfortable), or not doing enough stretching or getting enough rest. Another problem might be your nutritional regimen. For the last 2 months of your training, I highly recommend getting regular massages. Aside from these suggestions, your mental state and the confidence that will build with effective training will help you accomplish your goal of becoming an Ironman.

Strategies for Training

Running is running, but smart running gives you an edge.

Take a route that is a complete circle because once you are out there, the only way home is finishing the distance.

If your Ironman race has hills, train on some hills.

Always concentrate on your form and technique.

Implement warm-ups and stretching into your routine.

Make sure there is a water supply available on your route.

Run a route that has the least amount of cars and traffic.

Cover the majority of your week's miles during the early part of the week, beginning with Saturday.

Avoid bumpy road surfaces.

Time all of your runs so you can measure and monitor your progress.

Make transition runs; after a bike ride, run 1-3 miles to get the feel of the transition.

Workout with weights at least once a week to maintain strength. A strong runner will finish.

Chapter 3

Race Day: Blue-Collar Ethic/ Blue-Ribbon Experience

Review of All Legs

Planning, time, dedication, sore muscles, and endless miles have brought you to this day—the day you hope to cross a threshold and become an Ironman. You will succeed because you have endured months of personal and physical challenges while diligently training for this event. Do not allow yourself to think, however, that your training will pay off to such an extent that the big day will be an automatic success. Such complacency might cause you to make a critical mistake that could cost you the entire day.

During the course of the race, many of your competitors will drop out of the event for one reason or another—even during the swim portion. During the second leg of the triathlon, competitors fall by the wayside due to equipment failure or injuries. Some competitors are not able to reach the finish line because of the mental perseverance the event requires. It is a terribly demoralizing occurrence for the athlete who comes this far and does not finish the triathlon. This will not be your

situation, however, because you will have the necessary mental and physical tools within you from the start of the race.

It is recommended that you spend the week before the competition resting and healing every inch of your body. Your stringent physical training is set aside for a week of concentrated mental preparation. After months of dedicating 3-6 hours each day to training, it is actually a difficult task to get through this week of idleness. But, the resulting buildup of energy and micro-muscle healing will greatly benefit you, helping you to set a strong pace on race day.

Every Ironman competition begins several hours before sunrise. You probably will not have a problem waking up and preparing yourself at such an early hour because your body will be raging with adrenaline. Sleeping the night before a major challenge such as this is typically a light and brief experience.

Arrive at the designated race check-in area early enough to resolve unforeseen problems such as traffic, parking, registration, and equipment failures. Reserve extra time before the race begins for mental preparation and for another rundown of your checklist. During this time, *do not add more air to your bicycle tires.* If you do, you could find yourself with a flat tire during the bicycling event. In EVERY triathlon someone adds one more pound before the morning of the race and blows a tire. The air in your tires should hold up from the previous day or two.

Positioning yourself properly for the swim portion of a triathlon will help you set the right pace for the entire event. To successfully complete the triathlon, you should treat the entire event as a noncompetitive race. It is worth repeating that your strongest competitor is yourself. If you position yourself within the dense pack of swimmers, you will find that you are struggling to compete with every other triathlete for a space in the water, thus, needlessly expending valuable energy and risking possible injury. Position yourself at the far side of the pack during the swimming phase and s*tay to the side.* If you are a slow swimmer, it is especially important that you do not begin your swim until the majority of the pack has assumed its position in front. You want to avoid having every swimmer trying to swim over you, possibly causing serious injury. Maintain your own predetermined comfort pace. Do not try to keep up with a fellow triathlete's pace, which may cause you to exhaust yourself early on. Most

likely, you will pass many of your fellow triathletes at one point or another during the event as you proceed at your own designated pace.

The swimmers who jump out in front are most likely those who are swept up in the competitiveness of race day, and are soon laboring simply to complete the swim. These swimmers find themselves out of breath because they have increased the speed of their most efficient (comfortable) paces. What follows this initial mistake will be a long, grueling day. So be conscious of your pace; simply find a comfortable, steady stroke and concentrate on maintaining it. The swim portion may seem longer and harder than you expected from your months of training due to the tension created by the actual competition. Your pace, however, will most likely be faster than it was during training because of the adrenaline you will be producing on race day. Try to stay clear of the pack and you should find yourself making it successfully to the swim event's finish line.

As far as equipment is concerned, your goggles should be new enough not to break, but should have enough wear on them to fit comfortably. It is not unusual to have your goggles knocked off by an errant kick, so be sure to wear goggles with straps that aren't likely to break if you have to readjust them during the swim. Do not stop to argue with your fellow competitor over such an incident. This would be a pointless waste of time and energy and you would simply find yourself in the middle of another problem, such as being the cause of a confusing pileup of irritated swimmers.

Be prepared to swim in any water condition. The water may very well be freezing and the waves could easily be breaking on race day, for instance. Since there is no way to alter race-day conditions, you must prepare yourself during training by completing long, straight swims in a lake, ocean, or river, which obligates you to swim without the benefit of pushing off the edge of a pool and will expose you to different water conditions.

To prevent irritating and distracting rashes from developing during race day, it is a good idea to lubricate body areas that rub against each other. The degree of exposure and physical exertion you will be experiencing may cause a lot of first-time rashes to appear in places that you might have never expected.

Your swimwear will most likely be your uniform for the day, so wear something that will be comfortable for each event. If you trained in a

wetsuit, then swim in it, if wetsuits are allowed. Whatever you choose to wear, your training attire should mimic that of race day.

As you complete the swimming phase of the competition and come through the transition area, there will be a tendency to run triumphantly past the cheering crowd. Although the shouts of encouragement are a positive reinforcement, they may wind you up too much. Remember that you have another 12-15 hours to complete the triathlon. Once you've located your transition bag filled with all your needed transition paraphernalia, you will most likely enter into a changing tent that transitions you to the bicycle marathon. While in the tent, take your time to eat and drink, as well as to change your clothing and gear. Again, do not allow yourself to get caught up in the celebratory yells of your fellow athletes. You must apply a theory similar to that known in war: the soldiers yelling and whooping as they charge the frontlines in war are the ones most likely to die first. Save your voice and energy. Those who are yelling are probably competing in their first triathlon. Later on, they will wish they had conserved the energy they had freely abandoned in the name of excitement earlier in the day. If you are trying to win the race, your preparation in the transition area should be swift and calculated. Simply put on your gear, eat what works for you as a power booster, and proceed to the next phase of the competition.

Other items to add to your transition area checklist include sunscreen, chewing gum (which keeps your mouth closed while you are racing, thus resisting dry mouth), and sunglasses. Once you have carefully assembled and checked your gear and clothing, take some deep breaths and make your way to your bike.

Similar to the swim leg, the bicycling event is an enormous undertaking, with the weather adding its own elements to the race. Having bike trained through every possible weather condition will be helpful in mentally preparing you for any weather-related challenges that might lie ahead.

In your training, you have completed some century rides (100+ miles). Biking consumes more energy than each of the other legs of the triathlon. Because of this, you need to eat and drink appropriately. Sipping a combination of water and a "hydro-fuel" (consisting of energy supplements) will keep you energized. Eat what you discovered worked best for you while training. Again, chewing gum gives you something to do during the long hours of the bicycling portion of the race and, most

importantly, keeps your mouth closed, which stops your mouth from excessive drying.

The bicycle ride will likely last 6-8 hours, so settle into your own comfortable pace as you mentally review your technique. Keep your head up at all times, as one wreck may ruin your entire race day. Be cautious of bikers in front and in back of you. If you find that someone is riding at your comfort speed, stay with him/her, but do not begin to race that person or any other fellow triathlete. Pay close attention to your pace, not the speed of those around you.

As mentioned earlier, one trick that has worked for me is to anticipate and prepare for only the next hour. You will be overwhelmed if you try to anticipate the entire day. Before you know it, the sun will be setting and you will be within sight of finishing this glorious day!

It is best to know the terrain of the bicycle course before the big race. If you have traveled to this race from a distance, arrive several days prior to race day and, if you can, drive the course the day before the race begins. Know the hills. What many assume will be a flat Ironman course, such as that of Florida's Great Floridian, is not so flat when you're pushing your bike up and down its hills. Know the terrain of your Ironman and, if possible, do some training on the actual course.

After riding your bike continuously for 112 miles, you will probably be burned from the sun and gritty with dirt and sweat. Your legs will also be tired of repeating the same motion. After this grueling experience, however, comes the real test of the Ironman: the marathon. When you descend from your bike, you are going to feel unstable and strained, so do not rush through the transition area. Remember that once you leave the transition area, you can not turn back. Take your time, shake out your legs, rub your aching muscles, and take some deep, controlled breaths.

Before the marathon, re-lubricate your armpits and any other crevices that may cause rubbing. On the marathon course, you will not be able to prepare and readjust yourself as you can at this point. Preparing and dressing for the run portion of the triathlon should be a calculated ritual before race day. You should not think twice before drying your feet, especially your toes. Apply vaseline to your toes, then tape your toes together if you've experienced rubbing while training. Put on dry socks.

Reapply sunscreen and grab your sunglasses, if you run-trained with them on. Eat your power-booster supplies and consume more liquids.

When beginning your run, slowly go through the motions. You may even walk the first 100 yards. In triathlons, the transition from biking to running is usually a fast one. Your leg muscles, however, are fixed in a certain position after so many hours of cycling and it's hard to settle into a comfortable running stride because of restricted blood flow. The blood flow is restricted because your legs have experienced a limited range of motion (the size of the rotation of the pedal) while biking. When you are transitioning, the strain on your muscles can be painful. For this race, I recommend easing into it.

Your body and mind have been working for 7-10 hours now. Your feet have been dried and you have stretched your muscles, limbering your body as much as possible. You are ready to finish the day. Find someone you can run alongside of at a manageable pace. The buddy system is invaluable in this race because it gives you something else on which to focus your attention. You may use several different running partners during this event.

Do not allow yourself to contemplate the complete length of the race. Create smaller goals you can accomplish as you go along. Later in the race, you will concern yourself with the mile ahead of you and then the mile after that. Do not look across any distances that allow you to watch the race ahead of you (as you can, for instance, in some races that go around lakes). Doing this can be demoralizing, since you may feel like you will never make it to that point far ahead. Mental and physical control is what will get you to the finish line.

If there are hills in the race, I suggest slowly running downhill. As a general rule, run as long as you can without stopping. Although you may be able to go only 8-12 miles without stopping, just run as far as you can. Concentrate on plodding along, one foot at a time, and focusing on your technique. As you take water or other fluids to prevent dehydration, be careful not to spill the water on you, as it may run down to your shoes and make them wet and heavy. This situation will only add to the challenge of the marathon. Since you will have already exerted yourself for 7-10 hours at this point, a small change like heavy, wet shoes could affect your performance.

As you run the marathon, the sun will most likely be setting. The first 10-13 miles may not feel too bad, but the last 12 miles are usually one of the greatest mental and physical challenges that an athlete will ever face. You truly become an Ironman by surviving these last remaining hours of the race. You will have to mentally excite and rejuvenate yourself to get through this.

Some athletes walk after grabbing their refueling requirements from the aid stations, then pick up the pace when they're comfortable again. As the race goes on, however, these walks become longer. At this stage of the marathon, it is important to have a buddy to encourage you to continue. As the race takes its toll on your body and mind, potential discomforts have to be avoided or else they become magnified. For instance, I developed a major blister, and found that the only way to keep going was to remove my sock and place it between my two rubbing toes. I then put my shoe back on, having quickly solved the problem. To avoid pain that shot through certain muscles, I had to run a different style in order to continue.

At this point in the race, some of your muscles will most likely be numb. I have heard from and witnessed a few athletes who have found that walking or running backwards loosens up these muscles. In addition, be careful not to eat too much when refueling, as it may not sit well in your stomach during the race. Try consuming small portions of whatever energy-booster works for you. Nursing yourself through each aid station will be your goal at this stage, along with concentrating on only your upcoming hour of accomplishment.

Along the way, you will see exhausted athletes lying by the wayside, ambulances hauling away runners who cannot go on, and strong competitors reduced to tears and emotional breakdowns. It will become lonely and hard to finish this daunting race, but you will soon become one of the few athletes able to call him/herself an Ironman. As you near the exalted finish line, however, refrain from racing with any fellow triathlete. Save yourself for the final 100-200 yards. Even though your body will be beyond exhaustion, hold your head up high. You have succeeded in achieving a tremendous goal.

Don't expect to be able to sleep the night after you have successfully completed your first triathlon. You will not be able to sleep because of the adrenaline rush, so just enjoy the moment. It is said that if you run in

one triathlon, you will run in two. Your first triathlon will show the world that you can survive it. The second time around will be for you.

Good luck and Godspeed.

Five Survival Tips During the Run on Race-Day

Keep your feet dry. It is too easy to get your shoes wet when drinking fluids, but you will regret it. The wetness adds weight, causes blisters, and can make running uncomfortable. After the bike portion of the race, during the transition, take your time and dry off everything. Apply band-aids, tape, baby oil, and dry running socks. Over-protect your feet. Halfway through a race, rubbing will become a threat on your ability to continue.

Protect your body from the elements. Without feeling it, you will most likely get sunburned during the bike portion of the race. The sun essentially pulls energy from you. The sun will continue to deplete you of energy if you do not wear a visor and sunscreen.

Oil your body in places where the sun can't reach. I prefer baby oil. Many triathletes use Body Glide®, which works very well. Wherever skin will rub, you will get very uncomfortable blisters. Remember to lubricate your armpits, thighs, under the buttocks, etc. The discomfort from which you will save yourself is well worth it.

Walk, don't run. If you face a hill or just need to walk, then walk. My first steps (100 or 500) of the run are walking steps just to get my blood accustomed to flowing in a different direction in my legs. My co-authors may disagree with this theory because of their competitive nature, but I am looking for as much comfort this late in the day as I can find. When you do start running, build slowly into the run to find your pace. Match someone else's pace. Mirror a fellow triathlete traveling at a comfortable speed. If he/she is too fast or slow, latch onto the pace of someone else. You will, at some point, come to a halt due to fatigue. Walk as far as necessary to regain some strength and return to your desired form. Then pick up your running pace again. Shake off your muscles along the way so they don't tighten up. It was my experience that about halfway into the race (about 13 miles from the starting point), I walked after each aid station and after

refueling. I would then run until I reached the next aid station. Ultimately, I was just trying to survive. Finding a running "partner" to run along side of helps because the conversation passes the time and allows your mind to take a break from what it is that your body is doing. But, do not talk too much because talking burns energy.

Fuel and refuel in small amounts early and frequently. Water must be traveling through your body in order to keep it from overheating.

Chapter 4

Triathlon Costs, Massage Therapy, and Nutritional Concerns

Triathlon Costs

Before I explain the expenses you will encounter, allow me to tell a story that confronts the question of whether or not you should spend the money in the first place. When I first started training for an Ironman, six months prior to race day I contacted Gergley and Rohter about biking with them on Tuesdays and Thursdays. My mentors rode whether they were in training or not. Their bike rides were a simple 35-mile out and back during the early morning. I had absolutely no knowledge of biking, so I thought I would tag along, picking up on biking and Ironman tips along the way.

When I arrived for my first training ride with my mentors, Gergley had much to say about my equipment. From my bike to what I was wearing, he warned me that I was in need of an upgrade. I shrugged it off. I was determined not to spend very much money on this Ironman venture. I was not going to spend the money just to look the part. I felt like I could do it with the basics that I had and if that meant suffering through some

discomforts, so be it. This race is about how big your heart is and how mentally tenacious you are, right? Wrong. It didn't take long for me to realize a triathlete needs every comfort he/she can afford. Once you commit yourself to an Ironman, your equipment and the comfort or discomfort it provides will be your life for 5 months. Every detail, from the quality of your bike to the kind of shoes, shorts, and shirts you wear, makes a difference. When it comes to equipment, total comfort is the goal because most everything else involved is associated with pain, fatigue, and exhaustion. If more expensive shoes mean more cushion and comfort, go for it. Go for the rear-view mirror for your bike (this might just save your life) and the fog-free goggles for your swim. The minor comforts and functionality you'll receive in return for your money will be well worth the expense.

Projected Costs

My research for projected costs included going into Sports Chalet at the Beverly Connection in Hollywood, California. This mega sports store has every detail of the triathlete's needs in mind. I simply walked in and asked to be outfitted to train and run in an Ironman distance race. Prices will vary from city to city, but I think you will get a sense of the expected costs for what is on the must-have list. In contrast to my original thought on spending for the Ironman, I've concluded that if you look the part, you will feel the part and perform better. Once you have a higher grade of equipment or clothing, you will feel the difference. When I reflect on my first training run with the bike I had in the garage, I would never have made it on that $85-bike. In contrast to many other triathletes, I've vowed to never wear the popular bikini underwear. What I prefer are European running/swimming shorts. Through research and trial and error, you will quickly discover what works for you.

The bike you have or will purchase will need some accessories or upgrades, which I have included here. Staying on a bike for 6-8 hours is a day's work, so comfort and accessibility to things (water, nutrition bars, etc.) are important. This is not a cheap race to suit-up for, but once you have acquired these items, they will last and transfer to other training and races well beyond your first Ironman. (And it's still less expensive than other sports like golf or boat racing.)

A few items can be used for training in more than one area. These include the following: a good sportswatch (this will prove invaluable in all the

venues), a good pair(s) of sunglasses (for both biking and running), Advil, nose strips, Body Glide®, tape, lightweight socks, disposable camera (to document your success), sunscreen, and carbo fuels. I also recommend purchasing two pairs of running shoes (when one is wet from rain, you will have an available dry pair).

Swim

$20-60	Swimsuit, Speedo, TYR suit for women (Speedo & TYR are name brands)
$10-30	Swim goggles
$3-5	Earplugs
$2	Cap
$300-400	Wetsuit (if permitted and if you are comfortable in it—not required)

Bike

There are many good bikes out there. I asked the experts at the store to set me up with a good lightweight triathlon bike, and took home a Cannondale made by Raleigh. Most of the other equipment is necessary for either training and/or for race day. The bike is by far the most expensive of the three disciplines in terms of equipment. While bike training for 100+ miles at a time, you are going to be glad you invested in quality equipment.

$1,200-2499	Standard issue Cannondale (R1000 & R2000)—you can often save money by purchasing a good used bike
$15-40	Bike pump (2)—one for road emergencies and a good one for regular use
$5-8	Extra tire tubes
$69-150	Bike shoes
$29-79	Bike shorts
$19-80	Bike tops (short sleeve, pockets)
$29-110	Helmet
$50-150	Sunglasses
$2-8	Water bottles
$19-29	Odometer
$10-17	Mirror
$50-150	Tri-bars or A-bar (special handlebars to rest your forearms)
$12-19	Bike-seat pouch (for storage)

$39-79	Camel pack
$15.99	Safety vest
$10-20	Storage belt
$49-79	Bike rack
$25-40	Gloves
$69-200	Heart rate monitor
$20	Seat pad (for comfort)
$2-8	Bike socks
$35 +	Bike maintenance (for each hub, add $16)

Optional expenses include the following:

$179	Seat post (seat suspension)
$39	Split seat (new seat softener)

Not included: Nose strips, Advil, fuel

Run

$49-119	Running shoes (2)—($69-89 for a quality shoe)
$12-26	Running shorts (2)
$6-8	Socks
$22	Running top
$3-15	Visor
$34-69	Sports watch
$20-50	Sports bra (optional)
$39-79	Windbreaker
$29-39	Running warm-up pants

In total for all 3 disciplines, you are looking at a minimum investment of $2,072.00 (without a wet suit). If you purchase top of the line equipment across the board, including a wetsuit, your expenses would total $4,643.00. This breaks down to $174-$239 for the swim, $1,772-$3,832 for the bike, and $275-$572 for the run portions. Ideally, you are already an active athlete starting out with some basic equipment. Purchase with knowledgeable advice.

Massage Therapy

Massages play a very important role in keeping your body ready, willing, and able to perform at its best. Your body takes a pounding during

training, making it easy to exhaust and fatigue your muscles from excessive use. Massages can prevent injury and increase one's optimal athletic performance. During my personal training, I found much relief at the hands of a masseuse.

There are no fewer than one hundred different massages in use. A massage is traditionally defined as the manipulation of the soft tissues of the body for therapeutic purposes, using a system of strokes that include gliding, kneading, friction pressure, tapping, and vibrating.

The most familiar type of massage is the Swedish Massage, developed by a Swede (Per Heinik Ling) in the early 1800s. Ling's system represents an eclectic synthesis of various healing approaches. He drew on knowledge gained from the emerging science of psychology and knowledge of the circulation of the blood. Swedish massage has many therapeutic benefits including physical, mental, and emotional ones. Swedish massage promotes relaxation through the release of endorphins and enkephalins. These neurochemicals are dubbed "the body's natural opiates," or painkillers due to their ability to induce relaxation and reduce pain. (Endorphins, like opiates, are habit forming; so don't be surprised if you become pleasurably addicted to massages.)

So why should you turn to massage while training for an Ironman? Massage reduces the risk of injury, thus giving you a greater chance to successfully make it through rigorous training and perform on race day. An injury is one of the few things that can eliminate your chances of making it to the starting line.

Massage accelerates the restorative processes of healing and recuperation and inhibits the aging process. Massage also improves both blood and lymph circulation. In addition to helping nutrients reach their target cells in the body, increased circulation helps the body remove toxins more efficiently. For instance, when you finish a training workout, you frequently suffer from a build-up of lactic acid, or lack of oxygen, in fatigued muscles. This results in all too familiar soreness and stiffness. Massage helps flush-out lactic acid, which accounts for massage's ability to remove aching caused by overexertion. Massage improves range of motion in the joints, as well as overall mobility. Friction strokes are extremely effective in breaking down adhesions that form around joints, particularly following sprains, fractures, or other injuries that cause scar tissue to form. Massage can help cut the healing time of minor sprains by as much as one half.

Whether you are trying to enhance your performance or are using massage to prevent injuries, it should be included in your program. There will be an added benefit of heightened vitality, well being, increased awareness, and pain relief if massage is included regularly during your Ironman training. This is especially true during the later stages of training. I also highly recommend a minimum of a 1-hour massage the week before race day. This might just be your favorite part of training.

Nutritional Concerns

It is mentioned earlier that I ate tremendous portions and quite frequently during my training. It is not my position to suggest certain foods to eat and inform you of the benefits of different types of fuel, because I am not a nutritionist. I will, however, report what worked for me between and during training periods and on race day. It should be recognized that you have the opportunity to do a much better job than I did when it comes to refueling necessary nutrients, carbohydrates, etc. But it should also be noted that it is possible to race successfully and not scientifically dissect your foods during and between training. I know a fellow triathlete who spent a great deal of money on scientific analyses of what he should eat during training. On race day, he sadly found himself crawling to the finish line of the half Ironman. He depleted his system to such an extent on his cutting edge diet that it cost him three days in the hospital. With that in mind, I will relate what worked for me, but my nutritional plan should not be considered the optimal regimen for you.

Between Training Sessions

I consumed ½-1 gallon of Gatorade each day between training sessions. This went on for 5 months. I also developed a craving for Hershey's chocolate candy bars after every workout. I ate full meals every day, enough for two or three people. After finishing long bike rides or runs, I ate enough for three people. I remember covering 50-90 miles on my bike and stopping on the way home at Dairy Queen to devour burger after burger and French fries—all the stuff you're not supposed to eat. Obviously, I recommend eating more health-conscious foods. I would eat differently if I was to train again, but at the time, that was all I could do to quench my appetite. I lost about 10 pounds from my normal weight during the course of training.

During Training Sessions

Swim

Your swim training will consist of swims lasting 1-1½ hours every time you enter the water. Do not begin when you're hungry, especially on race day. You never want your body to be depleted; when it gets to that point, any intake will not satisfy you. Ironman Bars or Gatorade should be okay. A breakfast or sandwich 1 hour or so prior to your swim, is also helpful.

Bike

Plan for bike rides lasting 6-8 hours. If it takes two hours for your body to use all of its fuel then you have to refuel while you're on the bike at least three times. I always had chicken sandwiches or ham and cheese sandwiches wrapped and placed somewhere on my handlebars. I also had nutrition bars, gum, and Gatorade. While eating on your bike is a necessity, it can be hazardous since you are apt to losing sight of other bikers and traffic. I was very conscientious about eating something every hour so my fuel level would never be depleted. During long training rides, you will discover what you like, what's easy to consume while you're on your bike, and how often you'll need to do so. Of the three disciplines, biking requires the most fuel, so do not neglect your body of the energy it needs: pack your food bag.

Run

At this point in the day, you have to sip, not gulp, your liquids. You can run the risk of bloating up. Race day will have food and liquid fuel at almost every mile aid station. You will see foods that you never would have thought to be offered at an Ironman: soup, cake, and coffee, for instance. Don't overload, but do eat what you need to get you to your comfort zone. During training, find out what works for you (it may just be Ironman Bars or other fuels intended to be ingested while on the run).

Most people do not eat large amounts during a run because it has a bloating effect. It is also difficult to digest a lot of food when your body is moving to such a degree. Be conscientious to avoid depleting your energy supply by eating many small doses.

Chapter 5

Michael O'Shaughnessy's Training Story

The Bridge

Every triathlete has a unique training story. The following personal anecdote is included to offer some insight into this complex training process and the ups and downs that are par for the course.

It was a Sunday, maybe 1 month and a week before race day. I had been training for what seemed like a lifetime. Training for any one type of race requires mental and physical endurance, but dedicating oneself to successfully preparing for an Ironman involves three times as much. The hours I spent training averaged 3½ hours per day during the week and on weekends I dedicated 6-7 hours on Saturday and 6-7 hours on Sunday. (I always took Friday off . . . mainly to go shopping for all the food I was devouring.) On this particular day I had planned for a simple 70-mile bike ride and few-mile run (not necessarily together).

This happened to be one of those ugly days when I didn't want to even get up; it had been raining since the break of dawn and looked like it wasn't about to let up. Needless to say, I did not want to train on this day. But, I remembered hearing, "Train in all conditions—you never know

what race day will present to you and you want to be prepared to face anything."

So I got up and put on my monkey suit (bike suit and gear). I rolled out of my driveway and faced the morbid-looking conditions of the day with the attitude *I will overcome and learn from this.* One mile into it, I learned my first lesson of the day. I realized I had forgotten my riding gloves (never again), but just like during the real thing, there was no going back. I glided through the first hour and was reaching my comfort zone, for the most part. I told myself, "I am an Ironman and rain, sleet, hail, nor fire will stop me."

The area in which I trained during the weekends for biking was a rural one outside of Daytona Beach. I had made it through the city area (in the rain) and headed towards Tomoka Preserve (the rural area I favored). Rounding the bend and going over the Halifax River in Daytona Beach, I thought nothing of the bridge I was about to bike over. It was a metal drawbridge. Before I new it, my bike had slipped on the wet metal draw part of the bridge and I slammed to the ground. Even though I had been wearing my helmet, I was knocked out. When I regained consciousness, the bridge keeper was standing over me, trying to wake me up. I immediately felt all of the places on my body that the bike had hit. I had just slide across a human cheese-grater. These metal bridges are deigned to grab tire traction with large metal teeth. But they don't work as intended when they're wet.

My blood was all over the place. My hands were bleeding badly. The skin on my knees, legs, and part of my face was also torn and scratched. With the hole in one of my hands one could have assumed I had stopped a knife attack. When I looked at my wounds, I thought they would stop me from reaching my big goal. I staggered to my feet and did more than express my x-rated concerns to the bridge captain about the lack of a posted warning to bikers. Then I walked as if I had been beaten in battle. My home was 20 miles away if I was to return the way I came and 40-50 miles in the other direction. I will admit now that I came close to crying as I remembered how I did not want to train that day. I was muddy, bloody, hurt, cold, and miserable . . . when it dawned on me: if this was the real Ironman, I was quitting.

I froze at that thought. I stopped walking and turned my bike around. Yelling and cursing at the bridge captain, I walked back over the bridge. On the other side of the bridge, I got back on my bike and continued my

training regimen for that day. After riding for 4 more hours I rode back into town (my right hand was so damaged I could not put the bed of my palm on the handlebar). The traffic came by me slowly, as sometimes in cities it does. People looked over at me and saw that I was covered in blood and mud. I could make out the wide eyes and gasps. I rolled in the last few miles. My mind told me, "Today I became an Ironman." Race day could throw nothing my way that would stop me. If I could cross the finish line *this* day, I could survive anything. That training day, I walked into my house and an old buddy of mine from college had stopped by. His jaw unhinged when he saw me. But my face was beaming the rest of the day, for I knew I was on my way to becoming an Ironman.

The moral of my story has some messages that are well worth repeating:

- Never ride over a wet metal bridge.
- Always go back and get your gloves.
- Train in all kinds of weather.
- Persevere in your training as long as you are not going to further damage yourself. When it gets tough, you get tougher.

Training Log

It is imperative that you record your training. You must be aware of your progress, knowing how many miles you have run, biked, and swum.

We all train when it is convenient for our schedules and we are all given the same 24-hour time period every day. Multiply that times 7 days in a week. If you take away 63 hours for sleeping and 1 hour a day for showers and down time, you're left with very little time each week to cover the miles that have to be dedicated to biking, running, and swimming. Most importantly, the time frame forces you to project what must be accomplished during the week ahead to reach your goals. As I trained, I would check in with Rohter to find out if I was covering enough miles and time. If someone were to ask me in numbers what it would take to prepare for an Ironman, I would respond with the following. One month-20 days prior to race day, you should be averaging a minimum of 180 miles per week on the bike and 40-50 miles minimum on your runs per week. Your runs should cover no less than 9 miles per outing. Your swimming, depending on your stroke experience, should be between 3-5 miles per week. If you are a competitive swimmer with experience and

you find swimming comfortable, then you can afford to follow a lighter schedule. If this is your situation, raise your intensity level in this venue when you are 10-20 days prior to race day. The theory is it takes a significant amount of time to build up one's run and bike endurance, but the swim should be a fairly easy portion in which to gain competence if you're a water person to begin with. If you are a novice swimmer and feel apprehensive towards the swim portion, dedicate a substantial amount of time to mastering the swim leg. Spending more time in the water early on in your training will increase the speed at which you will become comfortable for serious swim competition. Simply do not sacrifice too much training time from the bike and run legs.

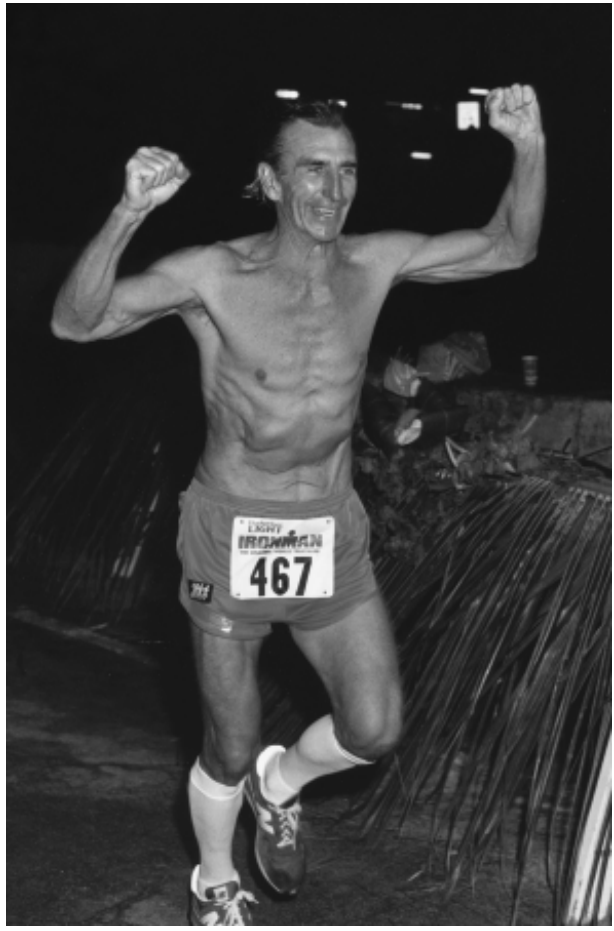
Appendix C offers a copy of the spreadsheet I used as a Training Log to record my workouts. And I've included a blank copy of this Training Log for you to maintain as you follow your own "Road to the Ironman."

Good luck and I'll see you at the finish line!

SECTION II

ABOUT THE AUTHOR

DR. FRANK ROHTER



Dr. Frank D. Rohter received his Ph.D from the University of Southern California in 1967. His professional experiences include faculty appointments at the University of California at Santa Barbara, Florida State University, and the University of Central Florida (UCF). He is a charter faculty of UCF (1968) and was the Chair of Physical Education and Director of Athletics from 1968-1972. In the Fall of 2005, Dr. Rohter was inducted into UCF's Athletics Hall of Fame.

As an exercise physiologist, he has taught undergraduate and graduate classes at UCF, started the MA and Ph.D. programs in Exercise Physiology and Wellness, and is Director of the Institute of Exercise Physiology and Wellness and a Full Professor in the College of Education.

Dr. Rohter has published in the areas of muscle blood flow, cholesterol and coronary artery disease (CAD) risk factors, exercise intervention behavior, and wellness, and has served as a consultant to Walt Disney World and select corporate entities.

His physical performance accomplishments and physiologic profile are as follows:

5th place age group (55-59 yrs.), Hawaiian Ironman Triathlon winner, February, 1982. Completed it again in October, 1982.

3rd place age group (55-59 yrs.), IIT Championships, New Zealand

4th place age group (55-59 yrs.), IIT Cancun, Mexico

Completed 11 marathons and over 350 triathlons.

Cholesterol profile = HDL—62 mg/dl; TC—165 mg/dl, TC/HDL ratio—2.1; and CAD risk—less than 10%.

Blood pressure—116/78 mm Hg; body fat—8.1%; height—6'; and weight—149 lbs.

Chronological age = 82 yrs; physiologic age = 39 yrs.

Still teaching at UCF; will retire in 2006.

Chapter 6

Introduction

Triathlon Chronology: Sprint to Hawaii

Awareness Stage

In 1978, at age 55, I proceeded to walk up to the 3rd floor of the College of Education building at the University of Central Florida (UCF). Surprisingly, I had to rest on the 2nd floor landing—I was out of breath. It was at that moment I realized my cardiovascular fitness had seriously deteriorated.

Acknowledgement Phase

Analyzing my situation, I suddenly became aware that after having participated in competitive sports most of my early life, over the last decade of my career as an exercise physiologist, I had limited my physical activity to the game of golf. So there I was, playing golf and riding a golf car. And after 10 years of this inactive lifestyle my cardiovascular system had degenerated prematurely.

Contemplation Stage

Having reached the "awareness stage" of a lifestyle change program, I then focused on the "contemplative stage." Fortunately, this was easy. If

team sports were no longer viable, I would need an alternative and because running was the rage of the time, I decided to start jogging. However, with no competitive experience as a runner, I knew I would have to start at a slow pace.

Starting Stage

Remembering the quote "a journey of 1,000 miles starts with the first step," I slipped on a pair of old tennis shoes and walked around the block. It was only 1/3 of a mile, but I felt fulfilled when I completed my walk. The next day I walked the same route with my colleague, Charles Micarelli. We walked the rest of that week; and over the weekend, I bought a pair of running shoes. With these new shoes that felt so comfortable and provided the much needed lower extremity support, I ran down to Charlie's and insisted he try them on. He was also surprised by their comfort and purchased a pair that very day.

With our new shoes, we started to jog. We jogged every day for the next week and extended our daily run to 1 mile. When we came to work on Monday, Gerry Gergley, another colleague at UCF, challenged Charlie and me to enter a 2-mile run, which was part of the Tangerine Bowl's Half Marathon, the next weekend. We trained the rest of that week, but never quite reached the 2-mile distance. Nevertheless, we entered this 2-mile run, however apprehensive we were about finishing.

On the day of the race, I was amazed to see 5,000 plus runners socializing, stretching, and warming up before the start of the race. There were elite runners, male and female runners, old and young runners, and even children runners participating with their parents. It was exciting and impressive, especially since thousands were there to do the half marathon.

As we lined up for the 2-mile race, an older woman shook my hand and said "good luck." She must have been 75 years old. I told Charlie, "Well, we won't be last." When the gun went off, the older woman shot out with the pack, leaving Charlie and me at the starting line. She was an elite runner!

Charlie and I stayed at the end of the pack and kept a very slow pace for the first mile because we were concerned about finishing. But having conserved our energy by jogging at a very slow pace, we decided to pass some of the slower runners during the 2nd mile of the race.

I was feeling pretty good as we sighted the finish line. Then something unexpected happened. One of my graduate students was on the sideline and yelled, "Go for it, Dr. Rohter." All of a sudden I felt an adrenaline surge. I lengthened my stride and began to sprint the last 40 yards of the race. As I approached the finish line, I extended my arms skyward and passed over undauntingly. I felt like I had just won an Olympic gold medal.

Although my time was slow (26 minutes), I was proud of my accomplishment. I felt good. I found a physical activity that, at my age, could fulfill my passion for exercise.

The next day Charlie and I took our daily run and prepared for an upcoming 5K. We completed that race and a few months later did a 10K. Then, one day as we were running and philosophizing, I asked my learned friend for a renaissance translation of our new lifestyle.

Vita Nuova

Charlie answered, "That's easy. In Dante's *Inferno*, when Dante meets his true love Beatrice, he proclaims 'vita nuova.' In Italian it means 'new life.'" So we adopted this translation for our new lifestyle, and for the last 30 years have continued our quests for vita nuova.

Half-Marathon

We continued training the rest of that year, and in December—12 months after we finished our first 2-mile run at the Tangerine Bowl—Gergley and I completed the Half Marathon at the same Tangerine Bowl race that started our running careers. At this point in my life I really felt fit. Physiologically, I felt 21.

Boston

Then came Gergley again with a new challenge. He mentioned that we were scheduled to go to the American Association for Health, Physical Education, Recreation, and Dance conference in April, and coincidentally, that was the week of the Boston Marathon. I remember my reply: "It took me 1 year to train for a half-marathon; how can I prepare for a full marathon in 4 months?" Well, Gergley's challenge prevailed; and we trained hard, reached the 20-mile distance in one of our training runs, and were off to Boston in April.

The Boston Marathon is the oldest marathon in the USA. It is a prestigious race for elite runners. You have to qualify to enter. So there we were, two "bandits" trying to crash the most historic event in running.

On race day, we went to the end of the lined-up runners, which was at least a ¼-mile back from the start of the race. There we saw a large banner labeled "Back of the Pack." There were all the running-crazies: Superman, Tuxedoman, Plantheadman, Buffaloheadman, Hula Lady, and several barefoot runners; others were drinking beer and offering support. Interacting with these friendly runners released my trepidation about being a bandit in this auspicious race.

The gun went off signaling the start of the race. We were so far back in the pack, it took me 15 minutes to reach the starting line. The race started at noon in Hopkington and passed through 12 other Massachusetts hamlets before finishing in downtown Boston. The route was lined with spectators offering oranges, water, and wet towels. They cheered and reached out to the runners as they passed by. What an adrenaline rush!

I ran at a 9 minute pace, until I reached the infamous "heart break hill." I had to slow down and shorten my stride in order to climb this treacherous rise that forced so many fatigued and pain-ridden runners to drop out of the race.

After reaching the top, I welcomed the sight of the 50 sorority girls from Welsley College who had formed two columns for the runners to pass through. As I ran through these lovely coeds, they kissed my cheeks and patted my butt. It felt so good; I turned around and ran through the columns again.

After that experience, I was growing weary and accumulating pain. I had to slow down to a walk as I passed through Boston's flophouse district. But even the area's humbled souls offered their intoxicating encouragement as I struggled through these last few miles.

It was growing dark now. It started to rain and the temperature dropped to 60°F. I was wet and cold, but determined to finish. Finally, 5 hours and 46 minutes after I left Hopkinton, I crossed what was the finish line. It was so late that everyone had gone home, even the clean up crew. The

only person left was my partner, Gerry Gergley, who waited for me with a Heineken beer. But the lack of a formal finish line didn't matter. My colleague was there, and I knew that I had completed my first marathon. The next day, my legs were so sore I had to walk down the hotel steps backwards.

Hawaii—The First Ironman Triathlon

On the return flight to Orlando, Gergley turned to me and said, "Okay Marathon Man, what's next?" I was so high after just completing my first marathon, I blurted out, "the Hawaiian Ironman." Gergley laughed. He said, "You're crazy. You don't have a bike, you're a weak swimmer, and we only have 9 months to train for a 2.4-mile ocean swim, a 112-mile cycle, and a 26.2-mile run." I knew he was always up to a challenge, so it didn't take much to convince him to consider this ultimate challenge in our quest for physical performance excellence. When we returned to Orlando, we purchased racing bikes and started cycle and swim training. Like running, we started slowly. Our cycle distances were only 7 miles and the swim workouts were a mere 1/8 of a mile. We progressed gradually and kept up our long-distance runs. Soon we were working out 3 times a week with each of the 3 activities and lifting weights twice a week.

On this schedule, time became a problem because we were working out 30 hours per week. Our work, home lives, and social lives were sacrificed. But we pursued our training schedule, and actually increased our training time to a 40-hour week during the month prior to the Hawaii Ironman. However, in spite of this training regimen, we were never able to complete the full Ironman distance during training. Consequently, we left for Hawaii in February of 1982 with tremendous apprehension.

The pre-Ironman venue was exciting and the three-day post-training rest period was relaxing and enjoyable. But the night before was filled with worry and the morning of the event was one of pensiveness and confusion. As I racked my bike, a triathlete from Australia asked why I carried my spare tire jammed under my bike seat, and questioned whether that spread the saddle and irritated my butt. I immediately found Gerry, and we both relocated our spare tires. We had finally figured out what was causing our sore butts for the past 9 months.

World War II Reflections

The 2.4-mile open water swim in the cold Pacific Ocean was trying. There were no swim buoys and the large swells made locating the sailboat turn-around difficult to keep in view. So on the swim out to the board, I followed Cowhead Man who did the breast stroke, which enabled him to swim on line. However, at the turn-around, I lost him. Furthermore, I had two fructose tablets in my swim cap that fell into the water as I tried to remove them from a tinfoil wrapper.

Because the water temperature was 68°F, and it took me so long to swim back, I developed hypothermia and became disoriented. After 3 hours in the water, I finally made it to shore. As I was helped out of the water, the swim event doctor observed my condition and told me I was medically disqualified.

Discouraged, I sat in the transition bay bathing in the rays of the warm sun. After a few minutes my hypothermia seemed to subside, and I asked the swim physician to check me out. He tested my condition and said that if I could find my bike, mount it, and start peddling in full control, he would let me go on.

I found my bike, put on my helmet, swung my leg over the seat, secured my cleated shoes in the pedal brackets and started to cycle unsteadily. The spectators saw my situation and started to cheer me on. My adrenal glands responded. I gained control of the bike, the doctor waived me on, and I was off for the 112-mile cycle leg. Biking was my strongest event, and soon I was spinning with confidence. As I contemplated my cycle and swim strategies, I remembered that the swim official had notified me that four triathletes in my age group were unable to complete the 2.4-mile swim. I knew that there were ten athletes in my age group (55-59 years). That left six competitors vying for the plaques awarded for the first five finishers in my age group. So I knew there was only one triathlete I had to beat to receive one of those coveted age group awards.

As I pedaled my bike, I tried to identify this unknown sixth man. I looked for the 56 miles out to the turn around, but to no avail. On the way back about 30 miles into the cycle return route, I stopped at an aid station to rehydrate. And there he was; a little Japanese man. I thought he must be the sixth man and tried to confirm my suspicions. But he didn't speak English. Convinced I was right, I stayed on his heels all the way to the run transition area.

In the cycle-run transition room, some 60 triathletes were trying to decide if they were going to attempt the marathon run leg. Most were sitting, trying to resolve their fatigue, muscle-joint pain, and mental anguish—the little Japanese man was doing the same. I told myself, *If he doesn't want it, I'm ready to try.* I had to walk up the hill at the start of the run. However, after reaching level ground, my running muscles started to receive blood flow that was being redistributed from my cycle muscles. Soon, I reached my second wind and started running slowly, but with confidence. I ran for 16 miles before leg pains set in. At the 17th mile water aid station, I stopped and there coming up behind me was the little Japanese man. I was moving rather slowly and expected my opponent to pass me. But as I entered the 18th mile water aid station, he was still behind me.

It was now about midnight—I had been performing for 16 ½ hours. It was then that I decided that the little Japanese man didn't have the will to pass me; and that if I could generate a strengthening mental set, I would prevail. To generate this needed mental-state, I reflected on December 7, 1942, the day the Japanese bombed Pearl Harbor. I visualized the little Japanese man as the enemy and revisited the bitter details of

World War II. The more I fantasized, the more adrenaline I secreted, and the more I was able to evoke periodic bouts of sprinting to my run.

I kept picturing the innocent little Japanese man as the enemy in order to release the "fight or flight" hormones that would enable me to continue the sprint intervals for the next seven miles. However, I finally broke down and had to walk.

Tanya, the wife of Mort Rosenblum (a colleague who accompanied us to Hawaii), walked with me for the last mile of the run. As we turned the corner, which was only ¼ of a mile from the finish line, she alerted me that a young couple was going to pass me. I said, "Don't worry about them, but if you see a little Japanese man coming up on me, let me know because I can still turn it on and sprint for that last ¼ mile."

I finished in 18 hours; but because it was dark and I was disoriented from my late running mental state, I was never positive that I had actually bested the little Japanese man. The next night at the Ironman banquet, they announced the age group winners. I finished fifth in my age group in the international champion event. It felt good to be the fifth most fit man, between 55-59 years, in the world.

Afterwards, the little Japanese man, whom I had psychologically abused, came over to my table, gave me a Japanese flag headband, took my picture, and put his arms around me in friendship. I was ashamed that I had vented my fantasies on this kind, gentle man. I have tried to rationalize the mental-set ergogenic strategies I used to endure my pain and finish this noble triathlon, but I have serious reservations about the ethics behind them.

Chapter 7

Triathlon Training and Performance Strategies and Experiences

Swimming

Importance of Stroke Mechanics

Because of the importance of stroke mechanics to swim performances, swim training strategies differ significantly from run and cycle training strategies. Run and cycle training focuses primarily on cardiovascular conditioning. Swim training should focus primarily on stroke mechanics. You need to work on your swim stroke mechanics throughout your swim training regimens because they are difficult to master and are important to conserving energy and avoiding the premature onset of fatigue resulting from inefficient body mechanics.

When I first started training for triathlon, an elite, master swimmer, Ms. Rosebud Seamans, told me that her swim coaches always taught her to concentrate on stroke mechanics during each lap of her training sessions. Fortunately, I took her advice and established a swim practice routine that focused on stroke and body form. This strategy was rewarding

because, over time, I developed an efficient, gliding movement that allowed me to progressively reduce my times during the triathlon swim leg and at the same time conserve energy for the cycle and the run legs.

You need to avoid "wailing away" during swim training. This swim form of training may enhance your cardiovascular endurance, but will never improve your swim efficiency. Many of my age-group competitors used this conditioning approach and sacrificed their stroke mechanics training. Their failure to improve their swim times over the years gives evidence of this training strategy's long range ineffectiveness. Therefore, you need to concentrate on your stroke mechanics during swim training sessions and be patient— perfecting your stroke requires time. But it will be worth it because, eventually, your swim-times will progressively decline as you slowly increase your swim training interval split pace.

Stroke Mechanics Analysis

After extensive research and practice, I have identified some basic swim mechanic principles that you need to consider in developing your own swim form:

Leg movement in swimming serves, primarily, to keep the legs from sinking and preventing drag. Don't waste time on developing a powerful kick. It contributes relatively little to your forward progress in comparison to your arms. Moreover, intense kicking during the swim leg of a triathlon encourages leg fatigue in the cycle and run legs. Rather you need to develop a passive, six beat, rhythmic kick that requires only enough energy to prevent your legs from sinking and creating drag.

Swim breathing is also important. Some swim authorities recommend alternate side breathing: turning your head and taking a breath on one side (2 counts), expelling the air while the face is down (8 counts), and then turning the head and breathing from the other side (2 counts). In theory, this may be most efficient. However, it is difficult to inspire enough air using this form. If you find this to be true, you need to develop the traditional one side breathing. This method seemed to work best for me.

My preference was right side breathing, which involved breathing for two counts while the face was turned right sideward, and four

counts while forcefully expelling air as the mouth was faced downward. Right side breathing mandated that I line up to the left of the swimmers at the swim start so I could anticipate right side contact interference from other swimmers, maintain my swim stroke rhythm, and stay on course. Incidentally, I reverted to breaststroke whenever I had to make a sharp angle turn around a buoy, which required an abrupt direction change in the swim route.

Your head position should be low so you avoid leg sinking and creating a drag. If you elect to breathe to the right, your left eye should remain under water as you turn to breathe. Your chin should be tucked and your mouth distorted to the back so you can catch a quick gulp of air for the two counts of your six count kick rhythm, as your head rests momentarily in the wave-crest of head wake. You need these facilitating mechanics in order to keep your head turn time to a minimum so that you can return to a face down position as soon as possible, because this position ideally situates your body and arms for their most powerful stroke mechanics.

When your face is down, you need to expire as much air from your lungs as possible. Then, when you turn your head to inspire, you can devote your entire face-up time to sucking in as much air as possible. Perfecting your breathing mechanics will reduce your swim times and prevent the premature onset of fatigue.

Arm Mechanics Analysis

Below you will find select arm mechanics that have proven effective in my swim stroke performances:

Hand Entry—Hands and arms should enter the water at 45° from the water's surface. This creates a feeling of swimming downhill and enhances arm turnover frequency, which reduces arm momentum power gaps that may develop in between your alternating arm cycle. Hand-arm entry less than 45° encourages a counterproductive downward force at the beginning of each arm stroke. This action lifts the upper body, drops the legs, and creates drag. Moreover, shallow hand-arm entries increase stroke length and time and reduce turnover frequency.

Opposite Arm-to-Breathing Side Mechanics—If you are a right side breather, keep your left arm extended throughout the entire two counts of the breathing cycle. Don't start your pull until your head returns to the facedown position. This timed action will prevent the left arm from falling under the body during its pulling action (which causes the body to rotate leftward instead of staying in a maximum arm power-producing prone body position).

The Catch—Subsequent to arm entry, you need to "catch" the water with the hands and the forearms. Don't pull too fast or you'll slip through this important phase. You'll have to practice to acquire the "feel" of this catch phenomenon.

High Elbows—Next you will have to master the skill of "high elbows" throughout your arm pulls. High elbows facilitate the 90° angle of the forearms relative to the upper arms and produce the most arm surface available to push the body forward during the arm-pull. This arm pattern is uncomfortable, but if you work on it and time your comparative lap length intervals, you will find this arm pattern most effective.

Follow through—Personally, a long follow through reduced my turnover time and produced gaps in momentum. So I decided to concentrate on the early part of the arm stroke, when the arms were on the most powerful pull position, rather than the follow through to push my body forward.

Recovery Arm—The recovery arm of the alternating arm cycle must be relaxed as long as possible to allow blood flow to enter the relaxed musculature, deliver oxygen, and wash out the metabolic fatigue products.

Differentiate Arm Mechanic—Your breathing position produces different pull mechanics depending on which side you breathe. If you are a right side breather, your left arm position will be in a stronger position during the arm pull than the right arm, because your head will be faced down expelling air and your body will be prone. This body position facilitates maximum arm pull power and should be your dominant force in propelling

the body forward. This right arm mechanic is inhibited by your breathing position requirement and, thus, becomes the non-dominate pulling left arm. So be sure you develop a feeling of power during your left arm pull and use the right non-dominant arm pull to sustain the momentum generated from the powerful left arm action.

Lat Muscles—You can reduce arm fatigue by learning to use your latissimus dorsi (lat) muscles. These muscles are situated on your back and run along the lateral sides of your body. You can feel the contraction of these long, large muscles as you execute your arm pull. Master this focused contraction and you'll enjoy the fatigue reduction you experience in your fore and upper arm muscles.

Equipment—Swim goggles are important for pool swimming because of the chlorine, and for ocean swimming because of the salt water. I have found the narrow "Compy" glasses that fit under the upper eye bone were the most leak-proof—an important consideration that will prevent the need to remove the glasses during competition to drain leaked-in water.

Swimming in a lake, however, does not necessitate swim goggles. So during lake—swimming triathlons, I never used goggles in order to reduce resistance drag, enhance peripheral vision needed to avoid contact with other swimmers, and increase forward vision in order to swim in line with the buoys and avoid wasted time resulting from swimming off course.

Finally, I always used a wet suit if permitted. They provide safety, buoy your legs, and reduce leg drag, and reduce your swim time in spite of the time wasted in transition removing the wet suit. Under my wet suit, I wore a light swim brief, which I wore during the run and cycle legs. This saved transition time.

Summary

Select stroke mechanics strategies and equipment suggestions have been presented to help you develop an efficient arm stroke and improve your swim time.

Cycling

Training Pace

Early on, you need to establish a cycle pace in miles per hour (mph). If you are training for a sprint triathlon distance, of say 15 miles, and you feel you can complete this distance—after the swim leg—at a projected pace of 15 mph, then you need to complete a 15 mile cycle training workout in one hour.

To monitor a projected cycle pace, many triathletes use a cycle speedometer. However, if your cycle speedometer system breaks down frequently, you may find a measured-interval-cycle course system more reliable. To structure this system, you need to use your car odometer and measure-off specific interval distances on your 15-mile cycle course. For example, you could measure-off five, three-mile interval distances over your 15 mile cycle training course. Then you need to identify a landmark or spray paint a mark on the roadway to identify each three-mile interval. Now you can use your wrist watch to time each three-mile interval, which should be approximately 12 minutes if you're striving to maintain a 15-mph pace.

From a personal standpoint, my cycle speedometer became such a maintenance problem and the marked interval system proved so effective, I finally disconnected my speedometer unit from my cycle wheel because the connection was so unreliable.

Interval timing provides a means of quantifying your training workouts, evaluating your training goals, and staying within your physiologic pace. Achieving your training goals is reinforcing. Moreover, evaluating your rated perceived exertion subsequent to your training session tells you if you are physiologically ready to increase your cycle pace.

Gear Selection

You need to establish your optimal cycle gear on a level training course. Your gear selection should allow you to spin between 70-100 revolutions per minute (RPM). Elite cyclists spin at about 100 RPM. However, they are highly trained and probably have a high percentage of fast-twitch muscle fibers.

I found that I was most comfortable spinning at about 70 RPM with a slightly higher resistance that I used to spin at 80 RPM. Maybe this was because I have predominately slow-twitch fibers. So you will have to experiment during your training sessions to find the optimal gear resistance and RPMs that are most physiologically comfortable.

Body Position—Cycle Components Determination

To determine your seat height, sit on your cycle with your feet on the pedals and have a friend grab the handlebars and balance the cycle. You

can then push the pedals backward until the pedal of the extended leg reaches six o'clock. Now check the knee joint angle of the extended leg. Your optimal seat height produces a knee joint angle of about 10 degrees. Next, you need to find the distance from the seat to the handlebars that is most comfortable as you rest your forearms on the handlebar pads. I have a long torso, so I had to purchase a handlebar stem and a seat post with extended horizontal segments. Consequently, I was able to adjust my seat to handlebar-pad length so I could assume a comfortable extended upper body position. Your local cycle shop can help you locate the appropriate seat posts and handlebar stem designs.

I found that I had to raise my handlebar stem higher than younger, elite athletes, because my arms fatigued from putting so much weight on the handlebar arm rests when I was in the traditional, aerodynamic down position. Therefore, I had to sacrifice aerodynamics for comfort. Although this position slowed me down a bit, it was very comfortable and enabled me to avoid the premature onset of arm fatigue and conserve energy for the run leg of the triathlon.

Seat Selection

In selecting a comfortable and functional cycle seat, you need to consider the slit-seat model. This seat features an opening for the vital nerves and blood vessels in the crotch area. This is especially important for males because of the reported trauma to the testes area by virtue of the continued pressure exerted during long distance cycle sessions.

In this regard, you need to recognize that periodic standing up on the pedals provides some temporary relief from cycle sitting pressures. As a further relief, you need to establish a seat angle (upward tilt, level, or downward tilt) that is most comfortable. This also will help reduce pressure on your vital crotch organs.

Butt Conditioning

It will take you time to condition your butt and break-in your cycle saddle to conform to your butt contour. Eventually, you will develop these parameters and your butt discomfort will subside.

Gergley and I had an interesting cycle seat adjustment experience. We trained for nine months but never reached a butt discomfort-free feeling on our cycles. It wasn't until we were racking our bikes for our first

Hawaiian, International Ironman Triathlon that we found out our problem. As I was situating my gear in the bicycle transition areas before the race, an Australian triathlete approached me and said, "Hey mate, doesn't that spare tire you have jammed under your cycle seat hurt your butt?" It was then that I realized why we had the nine months of cycle seat discomfort. I immediately told Gergley and we pulled the spare tires from under our seats; subsequently, we cycled the 112-mile bike course totally free of cycle discomfort.

Leg Mechanics

There are two major leg mechanics to master: (1) keep your toes and knees rotated inward (pronated) for mechanical efficiency and injury prevention; and (2) point your toes downward (plantar flexion) on the pushing phase of leg rotations and elevate your pointed toe upward (dorsi flexion) during the upward, pulling phase of your leg rotations. This movement will take advantage of your anterior leg muscles and complement the pushing forces derived from the muscles on the back of the leg.

Cycle Components

You will probably start with a basic frame and components. Soon, however, you will be investing in a lighter frame, special tires, and sophisticated mechanical components depending on your budget. This is because you will be looking for mechanical speed with minimal resistance. You will learn more about the components from your local bike store, trade magazines, and your cohort triathlete.

Hills and Wind

Hills and head winds increase resistance, forcing you to change gears and slow your pace so you don't go anaerobic and fatigue prematurely. Head winds increase convection (the cooling effect of wind blowing the hot air off your skin). But convection cannot overcome the body heat produced by environmental heat and humidity. So you will have to slow down even more under those conditions.

Clothing

In hot, humid climates, I wore only swim briefs and rode bare-chested. This enhanced convection cooling and reduced transition time by

eliminating the need to change clothes after the swim and also after the bike, because I also ran in the same briefs. The disadvantage of this attire is the increase in body heat by virtue of radiation from the sun and lack of protection from skin cancer. Incidentally, sunscreen reduces body heat dissipated by evaporation. Therefore, you will overheat if you try to cover the body with any lotion.

If the climate is cold, you'll need to dress accordingly. I always used long sleeve polos so that when I needed to peel-off, I could wrap the other sleeves around my waist and transport them back to the transition area.

Safety

Finally, you need to habituate the following safety strategies:

- Slow down at all turns and intersections.
- Watch for sand and gravel.
- Use handlebar-mounted rear view mirrors.
- Slow down on steep hills.
- Use good tires (check them frequently).
- Invest in a good helmet.
- Exit and enter transition area slowly and cautiously.
- Stay on your right unless you intend to pass.

Running

Introduction

Of the three legs of a triathlon, running is the most enduring. This is because it is the last of the triathlon legs, is the most weight bearing, involves the greatest amounts of muscle mass, utilizes the most energy, and is normally performed during the hottest part of the day. Consequently, you need to maximize the training of your running muscles so you can complete this most enduring leg of a triathlon.

You will find that runners who take up triathlons have a distinct advantage. They may not have the arm musculature, stroke mechanics, or the percent body fat to be an accomplished swimmer; and they probably don't have the thigh muscle strength conducive to cycling. However, when they

reach the run leg, they can be very competitive because of their run-training background.

To illustrate the significance of run training, I will describe what happened during the marathon legs of the two Hawaiian, International Ironman Triathlons in which I completed in 1982. In my first Ironman Triathlon (February '82), I ran a 6 hour marathon leg, finished the complete triathlon in 18 hours, and was awarded a 5th place age group finisher plaque. However, in my second Ironman Triathlon (October '92), I ran an 8 hour marathon leg and finished in 17 hours. I had taken 1.5 hours off my swim time and another 1.5 hours off my cycle time. But my run-time increased to 8 hours because I developed severe muscle cramps about the 11th mile into the run and had to stop many times to massage my calves so I could at least continue to walk.

The reason I didn't cramp in the first Ironman Triathlon was because I had the cool months of November, December, and January during which to complete the long runs necessary to condition my calf muscles. However, in preparing for the October '82 Ironman Triathlon, I had the hot and humid months of June, July, and August to contend with and simply couldn't manage the long distance runs I needed to properly condition my calf muscles. This experience makes clear the importance of adequate run training for the marathon leg of a triathlon.

Specificity of Run Training

Swimming and cycling are not specific enough movements to develop the vascular integrity of your powerful leg muscles. Therefore, there is virtually no cross over training value in using swimming and cycling as means to enhance your running performance. Rather you specifically need to run-train your primary lower extremity running muscles (gastrocnemius and soleus) if you expect maximum training effects from your workouts.

Moreover, you have to train at the specific run distance for the particular triathlon you are going to enter. For example, if it's a sprint distance triathlon, you have to train at a sprint distance pace. If it's an Ironman distance triathlon, you need to train at a marathon pace. But remember, if you train at a long distance pace, you will be developing your slow-twitch muscle fibers rather than your fast-twitch fibers. Consequently, later on, when you try to compete in shorter

triathlons, your run times will be slower than before you started your long distance training program.

Running Shoes

You need a quality pair of running shoes that feature stability, weight bearing cushioning, and protection from overpronation. Make sure you don't try to increase your speed by investing in lighter shoes. Sacrificing supportability for speed invites injury, especially in long distance training regimens.

Water Stops

Be sure there are select water resource stops situated on your running route. If there are not, you need to carry a water bottle to replenish your water needs and pour over your head for cooling. Remember that you dissipate 50% of your body heat via your head area.

Overuse Injuries

You need to avoid training regimens that overuse select body parts and lead to stress fractures, joint tendon strains, and muscle tissue damage—the worst thing that can happen to your workout program—because injuries disrupt scheduled training progressions. So progress realistically and schedule appropriate rest days. I limited my run training to three times a week, and sometimes I was only able to run twice or even once a week, depending on the distance I was scheduled to run.

I ran select hill routes periodically and arranged to have some hills on my regular run course, especially towards the end of the route. Going up hills, you need to lean forward, thrust your arms backward, shorten your stride and slow down—maybe even walk. This is because you expend more energy going uphill compared to running on level ground.

Going downhill, you need to lengthen your stride and avoid jamming your legs which irritates the muscles, tendons and ligaments on the front of your lower legs and causes shin splints (inflammation of the anterior, lower extremity, soft tissue).

Training Pace

I always stayed within my projected running pace. I don't believe in interval training because running intervals (alternating fast and slow pace)

are fatiguing and prohibit you from running the long distances—especially if you are training for an Ironman marathon leg. I did, however, run the last ¼ mile of my individual training runs at a near maximum pace in order to increase my anaerobic capacity and level of pain tolerance.

Stretching

You will find it easy to put off stretching before and after you run; before you run, your anxious to start and after you run, you're tired. Never the less, you really need to stretch before and after you run to avoid injury, enhance your recovery time, and maintain your joint flexibility.

Resistance Training

Convinced that resistance training, especially on my lower extremities, gave me the structural integrity to complete the marathon leg of the Ironman Triathlon and avoid injury during the months of my long distance training runs, I strongly recommend an effective resistance training program for all three phases of triathlons, especially the running phase.

Swimming, Cycling, and Running Combined

Introduction

It is difficult to combine the three phases of triathlon training, especially the swim to cycle phase. This is because your cycle course will probably not be conveniently located to your swim-training site. So you will have to accept a longer transition training time than you will experience in actual competition. Transition from your cycle workout is less of a problem because you'll probably be able to arrange a run route adjacent to your cycle route.

It is important that you initiate select transition experiences early in your training program because you will use different muscle groups in each respective triathlon leg. Your newly recruited muscle will need to be warmed up, your muscle blood flow will need to be distributed, and you will require time to reach your "second wind" as you start each different triathlon phase. Consequently, you need to rationalize this adjustment time and wait a while until you reach a new steady state as you change activities.

In my training, I was able to complete all three legs of an international distance triathlon but never able to complete all three legs of an Ironman distance triathlon—especially the marathon run. However, if you can reach 20 miles in your training runs, you should be able to complete the marathon leg because you can count on some rest time before you actually compete in a long distance triathlon; and that will provide you some reserve energy to complete the entire distance of an actual event.

Transition Strategies

The other authors will go into detail on a transition checklist. The only thing I have to add is that I always used a light folding stool, so I had better leverage to put my shoes on compared to that when sitting on the ground.

The other strategy is that I always established a landmark to locate my cycle because during one triathlon, I couldn't find my bike after my swim.

Summary

Applied training and competitive performance strategies for swimming, cycling, and running have been presented. Some of these strategies may differ from traditional suggested strategies but these strategies are based on personal experience and physiological principles, so I am convinced you will find that my recommendations are valid and will provide you with an optimal blue-collar training program for sprint to Ironman Triathlon events.

Chapter 8

Select Physiologic Tenets for Triathlon Training and Competitive Performances

Introduction

This section will identify eleven select physiologic tenets for triathlon training regimens and competitive event performances. These tenets are based on objective, reported evidence, as well as the practical experiences of the author, and will include the following:

Second Wind
"Capillary Kinking" Theory
Glycogen Depletion Fatigue
Thermal Fatigue
Structural Fatigue
Third Wind
Thorasic and Muscle Pumps
Physiological Performance Differences between Men and Women
Fast-Twitch Vs. Slow-Twitch Muscle Fiber
Physiological Monitoring
Physiological Effects of Training
Body Temperature and Optimal Performance

Second Wind

Every triathlete experiences a phenomenon referred to as second wind. Second wind occurs several minutes after you start a bout of exercise. It results from a specific series of physiological adjustments your body makes during the first 5-7 minutes after you start exercising. You need to know how these body adjustments develop during an exercise bout, and that the onset of second wind is the culmination of all functional changes that take place during the early stages of exercise.

Body Adjustment Reality

At the beginning of each exercise bout in your training and competitive event performances, your body experiences a feeling of stiffness, discomfort, effortful body mechanics and labored breathing.
You need to rationalize this discomforting adjustment period because you will be confronted with it every time you start a bout of exercise—whether it's during training or competition. Furthermore, it prevails whether you are an elite triathlete or a rank beginner. In fact, you never reach a stage in your exercise lifetime that you don't feel discomfort immediately after you start a bout of exercise. Consequently, it behooves you to accept the reality of this discomforting response and patiently await the onset of second wind. To help you cope with the discomforting feeling that prevails during the initial stage of an exercise bout, you need to understand the three physiological parameters that contribute to the onset of second wind, namely, muscle temperature, blood flow redistribution, and sweating.

Active Muscle Temperature Optimized

Your resting muscle temperature is 98.6° F, the same as your average body temperature. However, as you contract your muscles during exercise, heat, which is a natural by-product of the biochemical reactions that cause muscle fiber shortening, accumulates within the muscle cells and raises the internal temperature of the muscle fiber. As the muscle temperature increases, it reaches a thermal level at which the muscle fibers slide most efficiently and help suppress the feeling of discomfort.

Blood Flow Redistribution

Redistribution of blood from the gut and skin capillaries to the active muscles also occurs during the beginning of a bout of exercise. This

redistribution happens because the capillaries in the gut organs vasoconstrict (decrease in diameter) and the capillaries in active muscles vasodilate (increase in diameter). As a result of these vascular responses, muscle blood flow may increase as much as forty-fold. This blood flow increase transports more oxygen to the active muscle, which is needed to provide contraction energy; it also removes the build up of fatigue products. Consequently, blood flow redistribution also helps suppress the feeling of discomfort.

Onset of Sweating

Finally, as the blood vessels transport the heat that has been built up in the muscles to the skin, the onset of sweating occurs to facilitate body cooling via evaporation. In fact, the evaporation process cools the body so effectively, it produces a compensating constriction of the skin capillaries. This reaction redistributes even more blood flow to the active muscles which brings more oxygen, helps wash out metabolic fatigue products, and contributes even further to purge the feeling of discomfort.

Summary

In summary, when the active muscle temperature reaches an optimal thermal level, when the blood from the gut organs and the skin redistributes blood flow to active muscles (enhancing oxygen transport and the removal of fatigue products), and when the onset of sweating enhances body cooling—your stiffness, discomfort, effortful body mechanics, and labored breathing subside and you enjoy a feeling of flexibility, easefulness, gracefulness, and unforced breathing. When your body realizes these physiological adjustments, your body has reached the phenomenon commonly referred to as "second wind."

"Capillary Kinking" Theory

You need to understand the "Capillary Kinking" theory in order to realize that the onset of oxygen deficiency fatigue (a major factor that limits your performance-race pace) is attributable to the intimate relation between the microscopic capillary beds and the respective microscopic active muscle fibers they circumscribe—rather than in your lung tissue, as many triathletes mistakenly assume.

Active Muscle Microcirculation Occlusion

You may find as many as 4,000 capillaries bathing each millimeter of skeletal muscle tissue (about the size of the cross section area of a lead pencil). These microscopic capillary beds transport oxygen to your muscle fibers and carry away the metabolic fatigue products produced within the contracting muscle fibers. Unfortunately, when the muscle fibers contract (shorten) during exercise, they physically coil the very thin, pliable microscopic capillaries from their elongated setting at rest, to a severely distorted "kinked" position that actually occludes the blood flow to the muscle fibers. This blood flow occlusion prohibits both the delivery of oxygen to active muscle and the carrying away of the metabolic fatigue products, which include lactic acid. Consequently, the lactic acid accumulates and overloads the pain receptors within the muscle fibers. The pain receptors respond by transmitting a pain message to your brain. Eventually, you reach your pain threshold level and are forced to terminate your exercise.

Thus, the capillary kinking phenomenon makes clear that the site of oxygen deficiency is in the active muscle fibers, rather than in the lungs. This theory is supported by the fact that ample oxygen supplies are found in the blood circulating in the lung tissue at the time you are forced to terminate exercise, thereby eliminating the lungs as the site of oxygen deficiency fatigue. Consequently, it seems clear that your capillary-to-active muscle fiber oxygen transfer and the pain caused by the build up of lactic acid is the real reason you are forced to slow down your pace, rather than the feeling of being "out of breath."

Aerobic Limit

During rhythmic exercise, the alternate movements of your extremities contract the muscles in one limb and relax the muscles in the opposite limb. For example, during swimming, your pulling arm muscles contract while the opposite arm muscles relax; during cycling, your pushing leg muscles contract while the pushing muscles in the opposite leg relax; and during running, the muscles in your weight-bearing leg contract while the muscles in other leg relax. These alternating movements can continue as long as you stay within your aerobic (with oxygen) limit. Your aerobic limit is determined by your movement speed. As long as your pace is slow enough, you can relax the muscles in your non-contracted limb long enough to avoid extended "kinking" of the

respective capillaries. This, in turn, allows you to transport enough oxygen to prevent oxygen deficiency fatigue.

However, if you accelerate your limb-movement pace in order to reduce your performance time, you reduce the relaxation time of your non-contracting limb and prevent the respective capillaries from transporting an adequate oxygen supply. Consequently, you are forced to rely on non-oxygen, lactic acid-producing metabolic processes (anaerobic), which eventually terminates your exercise because of the build-up of pain.

Lactic Acid Variations

During light aerobic exercise (with oxygen), oxygen transport to muscle cells is adequate and lactic acid does not accumulate. However, if you increase your exercise intensity to *anaerobic* (without oxygen) levels, oxygen transport to muscle cells decreases, lactic acid production increases, the circulation is unable to transport the excess lactic acid away from the muscle cells, and lactic acid accumulates. When accumulated lactic acid reacts with pain receptors located within muscle tissue, neural impulses are transmitted to the pain centers located in the brain. When the pain becomes intolerable, you are forced to slow down or stop exercise.

The accumulative effects of lactic acid are straightforward. However, the metabolic processes that regulate the accumulation of lactic acid are more complicated. Take for example the two triathletes who were tested for exercise blood lactate levels. (Note: lactic acid is transformed to lactate as it exits the muscle cells and enters the circulation). Neither of these triathletes evidenced a significant exercise blood lactate increase. One of these participants was the late Jim Ward, who completed several Ironman Triathlons after the age of 80. The other was Dr. Jim Gills, who has completed Ironman Triathlons, Ultra Marathons, and Double Ironman distance triathlons with virtually no post-performance fatigue. Because measurable latate levels increase exponentially with exercise intensity and duration in most individuals, it would seem—in view of the extreme results of the two triathletes cited above—that the metabolic processes that govern the accumulation of lactic acid are individually specific.

Below you will find select physiological factors that regulate lactic acid metabolic processes and make clear the individual specificity of lactic variations:

Endurance training increases muscle capillary density, muscle cell mitochondria (the part of the muscle cell that processes oxygen), and the oxidative enzymes that help transport oxygen from the capillaries to the muscle cells—all of which conserve lactic acid production.

Endurance training also increases lactic acid transport to other tissues and reduces lactic acid accumulation in muscle.

Because fast-twitch (FT) muscle fibers produce more lactic acid than slow-twitch (ST) fibers, traithletes generally endowed with a high percentage of slow-twitch fibers—as much as 90%—accumulate lower levels of lactic acid than usual.

High intensity, aerobic training increases your tolerance to lactic acid accumulations and delays the onset of pain-related fatigue.

Finally, swimming, cycling, and running muscles are functionally and structurally specific, i.e. they differ in percentage of FT vs. ST muscle fibers, enzyme activity, and levels of endurance integrity—all of which affect individual muscle lactic acid dynamics.

In summary, the multifactored nature of the metabolic processes that affect lactic acid production and accumulation, and blood latate measurement manifests the individual specificity of lactic acid variations. Moreover, the specific nature of your body's different muscle groups makes clear that blood latate measurement protocols must be tailored to specific muscle activity. That is to say, blood lactate measurements during cycling represent the lactic acid dynamics of your cycling muscles and may differ from measurements taken during running or swimming because of the specific physiological differences between muscle groups.

Summary

From the above analysis, you can easily see that you need to determine your aerobic pace: the maximum movement speed that allows you to complete each leg of a triathlon without resorting to an anaerobic (without oxygen) energy source in order to avoid being forced to terminate your performance by virtue of oxygen deficiency and the corresponding accumulation of pain-producing lactic acid. Therefore, you will need to determine your aerobic pace during your training sessions. For example, during an Ironman distance triathlon, if you find that you can complete the 2.4 mile swim at a one mile per hour pace, cycle the 112 miles at a 17 miles per hour pace, and run a marathon at 4 miles per

hour pace, you can complete the swim in 2:24', the cycle in 7:00 hrs., and the run in 6:33'. This will allow you to complete an Ironman distance triathlon in 15:57', plus transitions lines. The same aerobic pace concept applies to shorter distance triathlons, except your pace may be faster as determined by the length of each triathlon leg.

Glycogen Depletion Fatigue

Your muscles can only store enough glycogen (the storage form of glucose) to provide two hours of continuous exercise. After that, your muscle glycogen is depleted, and subsequently you "bonk out" and have a difficult time finishing the triathlon. Therefore, during any triathlon that lasts longer than two hours, you need to ingest select carbohydrates to replenish your depleted muscle glycogen stores.

Rapid digestion time of ingested nutrients is an important factor in glycogen replenishment. Carbohydrates digest faster than fats or proteins. However, they still require considerable time to be broken down, transported to the muscle cells, and assimilated as stored glycogen. Liquid carbohydrate sport drinks are digested faster than solid carbohydrates. Several commercial sport drinks are readily available. For example, Ultrafuel and Hydrofuel are products from Twin Laboratories and contain polymerized glucose, which has a relatively rapid digestion rate, yet one that is not fast enough to cause hypoglycemia. Gatorade and Powerade are other popular products for your consideration.

Hypoglycemia

Hypoglycemia (low blood glucose) is produced when ingested simple sugars stimulate the pancreas to secrete large amounts of insulin. Insulin reacts by transporting extreme quantities of blood glucose into muscle and other organ cells to be stored as glycogen. This reaction leaves the blood low in glucose; and when the blood flow to the brain cells is low in glucose, you experience a feeling of fatigue and your performance is affected accordingly.

Because pancreatic secretions are somewhat blunted during exercise, hypoglycemia during competition may be attenuated. Consequently, you may be able to replenish your glycogen stores with the Gatorade or

Powerade that is offered at the aid station and possibly avoid the onset of hypoglycemia. However, if you can make a polymerized glucose drink available in your bike rack bottle, by hand carrying, or by strategic storage on your training route—you may be more confident that you have optimized your glycogen replenishment and avoided the onset of hypoglycemia.

Post-Exercise Hypoglycemia

After you finish a training session or competitive performance, your muscle glycogen stores are virtually depleted, regardless of how many carbohydrates you may have ingested. Therefore, during your recovery period, you need to replenish your glycogen stores as fast as possible so you will have maximum glycogen available for your next exercise bout.

Since your pancreas does not slow down its secretion of insulin when you are not exercising, you are very susceptible to hypoglycemia-fatigue during post-exercise recovery periods. To avoid this reaction, you need to eliminate simple sugars such as colas, punch, candy bars, desserts, honey, alcohol, most breakfast cereals except (Grapenuts, Shredded Wheat, Oatmeal, and Cream-of-Wheat), certain canned foods, and packaged bakery products. (Note: read labels to identify corn syrup and other simple sugar compounds). Also, select foods that digest more slowly: e.g., fresh fruits and vegetables, beans, legumes and other proteins. You will probably need to increase your protein intake above the normal 12% because of your prolonged training regimens.

Remember, you need to be especially careful to avoid hypoglycemia if you exercise more than once a day. During two-a-day workouts, you need to replenish your glycogen stores rapidly, so you will be "fueled" for the second training bout. But be careful of "fast highs" resulting from the "quick lift" you receive from simple sugars because only an hour after a temporary high you suffer a prolonged low (hypoglycemia).

Carbo-loading

Carbo-loading starts three days before the triathlon. During this time, your diet should consist of almost totally complex carbohydrates (avoid simple sugars, fats, and limit your intake of proteins). This will increase your glycogen storage above normal capacities.

Next, you need to start ingesting select complex carbohydrates and liquid polymerized carbohydrate drinks as soon as you exit the water. Examples of complex carbohydrates include peanut butter and jelly sandwiches, select energy bars, bananas, and polymerized drinks. Gatorade and Powerade may be provided by the race sponsor; but be careful because they contain simple sugars—although they are good for water and electrolyte replacement. However, polymerized glucose drinks digest more efficiently and are the preferred drinks. Be careful you don't develop an upset stomach by overeating or overdrinking. This is easy to do in an attempt to relieve the stress your body experiences, especially during a grueling long distant triathlon.

Finally, be sure you keep your aerobic pace because you will metabolize fat as the preferred fuel rather than your preciously limited glycogen stores.

Summary

Avoid glycogen stores deplenishment by ingesting effective solid and liquid nutrients.

Thermal Fatigue

Because of the extended time demands required to complete certain triathlons, select hypothermic (cold) and hyperthermic (heat) stress environments can overpower your thermo-regulator center, located in the floor of the brain, and cause thermal fatigue or even thermal illness.

Hypothermic Fatigue
Hypothermic fatigue develops when external cold environments overpower the thermo-regulatory center and compromises the cardiovascular's functional capacity to maintain a protective level of body heat. Hypothermic fatigue leads to hypothermic shock, the symptoms of which include severe shivering, disorientation, and eventually a hypothermal comma.

During the cycle and run legs of a triathlon, you have little concern about hypothermic fatigue because you may dress in layers of protective gear that can be peeled off as needed. However, swimming long distances in water temperatures below 86°F may lead to a state of hypothermia—especially in low body fat, slow swimmers. This is possible because body

heat loss in water is about 25 times greater than in air. Moreover, heat loss by convection is increased during swimming because of the water movement passing over the skin.

In light of the rapid body heat loss in water, you need to wear a wet suit during the 2.4-mile swim leg under certain conditions. Furthermore, you may need to wear a wet-suit cap over a regular latex swim cap to reduce heat loss from your head. (Note: up to 40% of your body heat can be lost through the high vascular head region.) In addition, a wet suit provides a flotation factor that reduces leg drag, conserves oxygen utilization, and decreases swim times. Finally, a wet suit provides an important safety factor for open water swims.

Hyperthermic Fatigue

Hyperthermic fatigue develops when the body's temperature increases above a critical level, over-powering the thermo-regulatory center, compromising the cardiovascular system's heat dissipation capacity, and manifesting the fatigue symptoms that caution you to intervene as necessary to prevent the onset of hyperthermic illness.

In this regard, you need to know that exercise produces a 25-fold increase in heat production within the active musculature that can raise body temperature 1.8°F every seven minutes. Under normal ambient environments, your cardiovascular system efficiently removes this heat via the lung and skin capillary beds. However, because most triathlons are scheduled during the summer months, sunray radiation and elevated ambient temperature prevent the adequate dissipation of heat generated by the exercising muscles. Consequently, removal of the accumulated muscle heat depends primarily on the evaporation of sweat, and herein lies a major problem; for example, if the humidity is high, the sweat is unable to evaporate enough heat to adequately dissipate the build-up of body heat. Consequently, body heat rises to a critical level and you experience the early signs of hyperthermic fatigue: viz, thirst, tiredness, grogginess and visual disturbances. Subsequently, you need to slow down or even discontinue exercising, or you will advance to a state of "heat illness."

□ Heat Illness

Table 1 shows the symptoms associated with the three stages of exercise hyperthermia and make clear the importance of preventing the onset of these critical responses to exercising in hot, humid climates.

TABLE 1
Stages of Exercise Hyperthermia

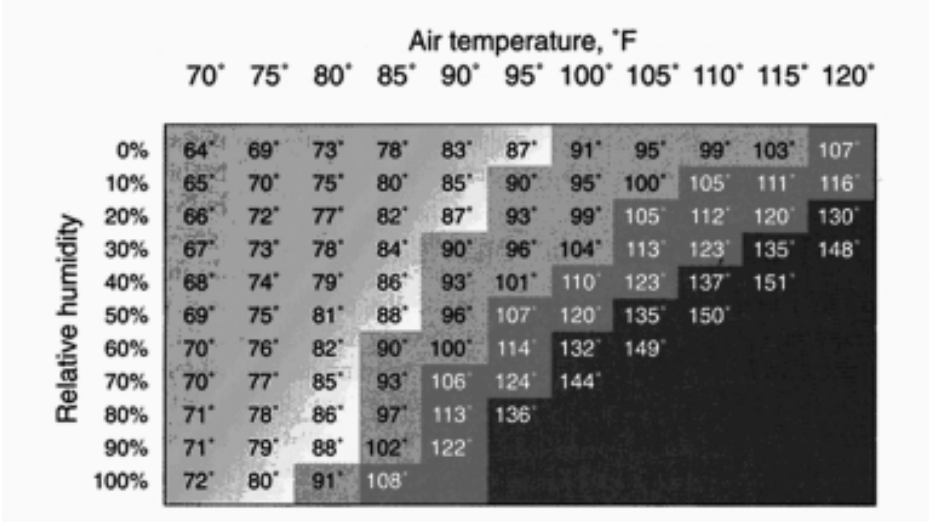
Stages	Body Temperature	Symptoms
Compensation	103° F	Dizziness, Headaches, Euphoria, Psychosis.
Crisis	103° - 106.7° F	Cerebral Congestion and Edema. Intercranial Hypertension
Failure	106.7° and above	Comma, Cerebral Ischemia, Neurologic Damage, Seizures

(Modified from McArdle, W.D., F.I. Katch, and V.L. Katch *Exercise Physiology*, Williams & Wilkins, 1996.)

The primary cause for the critical hypothermic illnesses presented in Table 1 can be traced to high humidity environments. The conclusion that high humidity is critical to the onset of hypothermic illness is supported by the fact that several athletic deaths have been reported when the air temperature was below 75° F, while the relative humidity exceeded 95%.

Because of the compounding effects of humidity and air temperature on critical body temperatures, it behooves all triathletes to seek out local weather forecast sources so that the prevailing "Heat Stress Index" (Table 2) can be plotted, and training and competitive performances can be adjusted accordingly. Sources for local weather information include the weather page of the local newspaper, which reports air temperature and humidity that you can use to plot the Heat Stress Index (HIS). Some weather pages actually report a "Real Feel Index" (RFI) that factors in ambient temperature, humidity, wind speeds, precipitation, and elevation. Accu Weather, another source for local weather information, is a commercial weather service that reports the RFI as well as UV information (simply log on to www.accuweater.com).

TABLE 2
Heat Stress Index



Heat Stress Index Determination Procedures:

Determine Relative Humidity—Air Temperature Intersect

Example:

Relative Humidity 90%
Air Temperature ..... 85°F
Intersect = Heat Stress Index ..... 102°

Ascertain Risk of Heart Injury

Heat Stress Index
90°-105°
105°-130°
130° +

Potential Heat Injury
Heat Cramps
Heat Exhaustion
Heat Stroke

(Modified from McArdle, W.D., Katch, F.I., and Katch, V.L. *Exercise Physiology*, Williams & Wilkins, 1996.)

Water Loss

Water loss by sweating may reach three quarts per hour. As water loss progresses, blood plasma volume decreases, cardiac output is reduced, and the cardiovascular system is unable to transport adequate amounts of blood to the skin and sweat glands. Consequently, heat dissipated through skin capillaries and sweat glands (via evaporation) is reduced, the thermo-regulator center is compromised, and body heat accumulates and eventually reaches a critical level of hyperthermia, as illustrated in Table 1.

Rehydration

The critical consequence of dehydration makes clear the significance of rehydration strategies. Rehydration is a continuous process. You need to start drinking water first thing in the morning, carry a water bottle with you when you leave home, and drink six to eight 8-ounce glasses of water a day. This is the amount of ingested water needed under normal circumstances.

When you are training, you need to ingest considerably more water because you lose so much through sweat evaporation. Remember that you may lose as much as two to three quarts of water during intense exercise. Therefore, you need to hydrate before you start your exercise sessions and carry a water bottle on your bike and while you run so that you can drink throughout your workout sessions. Also, you need to drink water after your run, cycle, and swim training sessions.

You may use two criteria for excess water loss. The first is post-exercise body weight. Each pound of weight loss equals 15 fluid oz. of fluid dehydration. If rehydration does not replace your post exercise weight loss, you need to limit your training sessions until your rehydration is able to maintain normal post-exercise weights. The second criterion is the color of your urine— if it is dark yellow, you need more water.

Thirst Mechanism

Because your thirst drive does not meet your water dehydration needs, you need to train yourself to adhere to an effective rehydration schedule.

Electrolyte Replacement

Triathlon training in hot environments, that produces excessive sweating, may affect salt and potassium levels. Potassium rich foods, e.g., citrus fruits and bananas, are recommended to retain normal potassium levels. Salt lost through excessive sweating may require an increased daily intake of salt, and the ingestion of electrolyte drinks (which include salt) during your exercise sessions.

Summary

Dehydration slows down performance and demands rehydration to prevent the onset and progression of hypertonic illness.

Structural Fatigue

If you can avoid oxygen deficiency fatigue, glycogen depletion fatigue, and thermal fatigue, you will then need to prevent the onset of structural fatigue.

Structural fatigue develops in tendons, ligaments, bones and muscle, especially in joint areas where all four of these body parts articulate. For example, swimming stresses the shoulder area, cycling stresses the lower back and buttock areas, and running stresses the hip, knee, ankle, and foot areas. The extreme trauma to each of these body areas, during certain triathlons, may cause performance-interfering discomfort, terminating pain, and even serious injuries.

Structural fatigue prevention strategies include the following: (1) a specific resistance training program to strengthen your joint tendons, ligaments, bones, and muscles, (2) an effective stretching program to assure maximal joint flexibility, and (3) cycle dimensions that fit your related body parts, e.g., handlebar-to-seat length, handlebar-to-seat angle, forearm rests and handlebar drop positions for comfort. Note: if you experience back or arm fatigue, you need to raise your handlebars, ride more upright, and sacrifice body aerodynamics. Also, males need to consider an open slotted saddle to relieve some of stress on the testes-prostate areas. Long-term trauma to these sensitive organs may result in serious dysfunctional problems.

Summary
In summary, avoid trauma to sensitive body structures so you can prevent the onset of structural fatigue.

Third Wind

Third wind is the so-called exercise high, euphoria, or exhilaration reported by many triathletes. The onset of third wind seems to develop during the later stages of each leg of an Ironman distance triathlon.

As you build-up fatigue in the latter stages of each triathlon leg, endorphins that function as mood-altering neurohormones and neurotransmitters are produced in the brain. These endorphins are released during exercise and may reach blood serum levels 5 times those of resting values, and attain even higher levels in the brain.

Endorphin secretions have been linked to an increase in pain tolerance during the enduring stages of each triathlon leg. Theoretically, you can encourage the release of these opioid-like endorphins by achieving certain mind-sets through various methods, e.g., repeating a mantra (an infinite, irrelevant word such as "homma" or some other indefinite set of syllables).

Summary
In summary, you need to be aware of the fatigue-relieving powers of the third wind phenomenon and use your "will" to stimulate the release of select endorphins that can help motivate you to finish your Ironman distance triathlon.

Muscle and Thoracic Pumps

Introduction

When you exercise your lower extremities during running or cycling, the blood pumped from your heart, the downward force of gravity, and the reactive capillary dilation combine to transport large volumes of blood to the active muscles in the legs. However, after the blood

passes through the capillaries and enters the veins (the vessels that transport the blood from the legs back to the heart for recirculation), blood pressure is reduced to extremely lower values. This low pressure, by itself, is unable to force the blood, against gravity, up the veins and back to the heart.

Fortunately, the contracting muscles of the legs (muscle pump) and the interthorasic pressure changes produced by the contraction and relaxation of the diaphragm (thoracic pump) are physiologically able to transport the venous blood back to the heart.

□ Muscle Pump

Your muscle pump functions automatically during exercise by virtue of the contraction and relaxation of the leg muscles. So during rhythmic exercises, your muscle pump is always in effect. However, after you stop exercising, you need to sustain your muscle pump by walking or cycling or swimming slowly—or even by performing all three of these activities. Now you know the physiological explanation for this recovery strategy better known as "cool down."

Thoracic Pump

You need to habituate the practice of diaphragmatic breathing to enhance your thoracic pump (the interthorasic pressure changes that pump the blood through the thoracic area and back to the heart and then on to your active muscles). Moreover, diaphragmatic breathing will also help prevent the notorious "stitch in the side" that sometimes develops during high intensity exercise.

Incidentally, you should include diaphragmatic breathing in your recovery routine. Combining the muscles and thoracic pump during recovery will enhance your venous return, increase your cardiac output and blood flow to the recovering muscle, and speed up the wash-out of the accumulated fatigue products in the muscle cells.

Summary

A combination of your muscle pump and diaphragmatic breathing will enhance venous return, increase muscle blood flow, accelerate fatigue product wash-out, and improve performance and recovery.

Physiological Performance Differences between Men and Women

Analyzing the physiological differences between men and women is important to understanding your gender-limited triathlon performance factors. In this regard, you will learn that the objective literature manifests some specific physiological differences between men and women. However, these reported differences are based on the mean data collected from general populations. Therefore, it is understood that under certain conditions, the projected differences may not be valid, e.g. when comparing extreme sedentary, unfit males to physiologically endowed, elite female athletes.

Below you will find the general, reported physiological differences between men and women that should enable you to rationalize your gender-limited triathlon performances.

Body Fat %

In general, the average woman possesses a larger percent of body fat than men do. The average reported total body fat for women is 27% compared to 15% for men. The difference is attributed to child bearing and other hormonal-related female functions.

By virtue of the fact that women have more body fat distributed in the hips, thighs and calves than men do, it can be generalized that women are more buoyant in the water than men because their legs float higher during swimming. Because women have less leg drag and more body fat buoyancy, they swim more efficiently and with less expended energy. Contrarily, in general, men have leaner legs and denser bones than women do. Therefore their legs tend to sink during swimming and increase their expended energy. With a greater percent of body fat, women are better insulated from the cold water than men and have a longer supply of stored energy during long distance, cold water swims.

Finally, because women have a greater percentage of fat located in the hip area, they have more saddle seat protection during cycling.

□ Strength

Men, in general, have more muscle mass than women; and because strength is directly related to muscle mass, men have more strength than

women do. Moreover, even when men and women have been matched for fat-free body mass, men still evidence greater strength during select body movement measurements.

The strength differences between men and women are particularly evident in the upper body. Men are approximately 30% stronger than women in upper body strength. Whereas they are only 5% stronger in lower body strength. The reason for the greater strength reported in men is probably attributed to the male hormone testosterone, which is secreted from the cells of the testes. Women do secrete testosterone; however, their concentration of this hormone is generally less than that found in males.

Cardiac Output

Cardiac output is the product of the heart rate times the stroke volume. It is the amount of blood pumped out of the heart during each repetitive heartbeat.

Women have an approximately 8% larger cardiac output compared to that of men. However, this difference is compensatory in nature and probably results from the
8% lower concentration of blood hemoglobin (oxygen carrying molecule) reported in women.

Heat Tolerance

Men's tolerance to heat is about equal to that of women given the same level of fitness. Moreover, men acclimate to heat about the same as women, and although a man's sweat glands per unit skin area is less than a woman's, women sweat less because they don't start to sweat until they reach higher skin and core temperatures compared to men.

Summary

In general, discounting comparing the sedentary male to the elite trained woman, men are less buoyant, have greater anaerobic, aerobic, and hemoglobin-oxygen carrying capacities, and absolute strength. They also have less compensating, cardiac output and an equal level of heat tolerance and acclimatization.

Fast-Twitch Vs. Slow-Twitch Muscle Fibers

You are born with a specific percentage of fast-twitch and slow-twitch muscle fibers. And these percentages virtually never change, regardless of training regimens. If you have inherited a high percentage of fast-twitch muscle fibers, you have rapid contraction times, high glycolytic (glycogen supply) capacity, and an advantage in sprint type activities. If you have inherited a high percentage of slow-twitch muscle fibers, you have slow contraction times, high capillary densities (oxygen transport) and an advantage in long distant activities. Objective muscle biopsy studies have reported that elite sprinters may evidence more than 90% fast-twitch fibers and that elite marathon runners exhibit more than 90% slow-twitch fibers; and that over the years, these percentages cannot be changed in spite of training strategies intended to reverse these percentages.

So if you are not a fast performer, take heart, you may be better suited for a longer Ironman distance triathlon because of a good supply and enhanced transport of oxygen to the active muscles. But remember, you need to sacrifice performance speed because slow-twitch fibers are not conducive to fast movement activities.

Summary
Rationalize your muscle fiber genetics and realize you may be better suited for certain distance triathlons rather than others.

Physiologic Monitoring

The heart rate has been a popular approach to monitoring exerted energy during exercise. However, the heart rate is regulated by the involuntary nervous system, which is affected by blood pressure, blood pH, mind-set, body temperature, endocrine secretions, age, and cardiovascular fitness levels. These physiological parameters affect the validity of heart rate measurements. Consequently, you need to be careful if you use your heart rate to predict levels of muscle exertion.

Recently, a new approach called Rated Perceived Exertion (RPE) has evolved as a favorable alternative to heart rate monitoring. The RPE simply classifies your feeling of exertion. If you run at a pace within your physiological limit, your exertion classification is “comfortable.” If,

however, you exceed your physiologic limit, your exertion level is classified as "laborious." With a little practice, you will be able to monitor your exertion levels during various environmental conditions with extreme accuracy.

The RPE scale correlates highly with heart rate changes, so it is statistically valid. Moreover, it is more reliable than the heart rate because it is not sensitive to the numerous physiological parameters that regulate the heart rate.

Summary

Your RPE is an effective approach to monitoring your performance intensity.

Physiological Effects of Exercise

Table 3 shows the effects of triathlon training:

TABLE 3
Effects of Triathlon Training

Capillary Density	↑	Total Cholesterol	↓
Oxygen Transport	↑	Total Cholesterol/High Density Lipoprotein Ratio	↓
Glycogen Storage	↑		
Muscle Strength	↑	Coronary Heart Disease Risk Factors	↓
Fat Metabolism	↑		
Resting Metabolism	↑	Body Fat	↓
Pain Tolerance	↑	Hypertension	↓
Heat Tolerance	↑	Cancer Risk	↓
Self-image	↑	Diabetes Risk	↓
Longevity	↑	Morbidity	↓

Summary

Table 3 summarizes the physiological effects of Ironman distance triathlon training and should encourage you to adhere to a permanent long distance exercise lifestyle.

Relevant, select physiological tenets have been presented. They are based on objective evidence and personal experience and represent highly

recommended strategies that will help you fulfill your personal triathlon goals.

Body Temperatures and Optimal Performance

Resting body temperatures range from 98.4° to 100°F. Increasing resting body temperatures by 1° to 2°F—via pre-triathlon warm–up—reflects the thermal increases in all body compartments, including skeletal muscle as well as the cardiovascular system, and produces the following physiological changes.

Skeletal Muscle Function

Increasing muscle temperatures:

- Lowers intercellular muscle viscous resistance—which enhances microfibral sliding and enhances functional efficiency—and prevents injuries
- Increases microfibral cross-bridges' cycle rate, which facilitates the concentric shortening observed when you contract a specific muscle
- Increases the neural mechanisms that facilitate muscle fiber recruitment, accelerates muscle contraction and relation time, elevates muscle power output; and improves neuromuscular coordination

Cardiovascular System Function

Increasing cardiovascular temperatures:

- Dilates muscle capillaries, multiplies muscle blood flow, amplifies oxygen and glucose transport to muscle cells, and carries away metabolic fatigue products, eg. lactic acid, CO2, and heat
- Amplifies maximum oxygen uptake by virtue of the fact that hemoglobin (the blood proteins that transport oxygen to muscle) gives up more oxygen and transfers oxygen to the muscle faster; it also intensifies myoglobin (a muscle cell protein that stores oxygen temporally) and releases more oxygen faster for the synthesis of ATP (the high energy compound that produces muscle contractions)
- Increases coronary blood flow, enhances heart muscle contraction efficiency, augments cardiac out-put and protects the heart from ischemia (lack of blood flow) injuries

Metabolic Factors
Increasing body temperatures:

Raises oxidative and glycolitic enzyme activity and increases the transport of oxygen from the capillaries to the muscle cells

Attenuates the production of lactic acid (a fatigue by-product) and prolongs endurance

Enhances ATP ase: an enzyme that augments muscle contractions

Warm-up Considerations

In order for your active muscles and capillaries to function most efficiently, you need to raise muscle and cardiovascular temperatures precisely 1° to 2°F. However, your warm-up activities must be task specific. For example, in order to raise running muscles to optimal performance temperatures, you need to warm-up by running. The same specificity is true for cycling and swimming warm-ups. Therefore, you need to include all three activities during your pre-triathlon warm-up. Moreover, you need to consider the following several theoretical factors when you develop your warm-up protocol:

- Warming-up running muscles to their optimal thermal set-points does not necessarily produce the same set-point temperatures in cycle and swim muscles.
- Specific muscle warm-up temperature lasts 30-45 minutes.
- When blood flow is specifically shunted to active muscle, inactive muscle temperatures may not reach their optimal set-points.
- Swim warm-ups have a special problem. Because water thermal conductivity is 26 times greater than that of air, the body loses heat 4 to 5 times faster in water than in air at the same temperature. Consequently, it requires more time for cold water warm-ups to reach an optimal thermal set-point. Under these conditions you need to consider using a wet suit. Note: arm stroke mechanics are not restricted with the newer wet-suit models. Even the full wet suits do not significantly restrict arm movements. Moreover, wet-suits provide the thermal insulation needed to conserve body heat during long, cold swims; and because they enhance buoyancy and increase swim speeds, they more than compensate for any transition time lost by wet-suit removal.

Warm-up Strategies

Warm-up intensities must be aerobic (submaximal and of low intensity) so you can avoid the premature onset of lactic acid.

Warm-up routines should be time-limited, especially before long triathlons, so you can conserve muscle glycogen stores.

You can use the onset of sweating as a sign that you have reached the set-point temperature that produces optimal, cellular functions.

Summary

Select physiological tenets, based on objective research studies as well as the author's personal experiences have been presented to manifest the optimal triathlon training and competitive performance strategies needed to consummate your "Sprint to Hawaii."

Chapter 9

Triathlon Ethics

Aristotelian Ethics

To consummate a fulfilling triathlon training and performance experience, you need to understand and develop an appreciation for Aristotelian Ethics. Aristotle, an ennobled Greek philosopher, devoted most of his adult life (342-322 BC) to the development of the Lyceum—an ancient Greek institute that studied a broad range of philosophical principles.

The translations of Aristotle include *Ethica Nicomcenchea*, a treatise presenting a taxonomy of the rightness and wrongness of human behavior. His logical analysis of ethical virtues, excesses, and deficiencies have transcended the sands of time and serve as a noble character habituation model for triathletes as they pursue their quest for the "sprint to Hawaii."

Ethics confront the moral principles of virtuous conduct—independent of religious beliefs—rather than a body of sumptuary commandments or have established to govern personal behavior.

The behavioral ethics presented here will include the following concepts: vain-glory, peer vs. self-competition, and courage.

Vain-Glory

Years ago, there was a World War II classic movie starring Sir Alec Guiness and the powerful English actor, Jack Hawkins. Guiness played the part of a priest who was the spirited leader of a small French Town invaded by Germany. Hawkins plays the part of the German interrogator whose role is to probe the priest's past, penetrate his spiritual frailty, and diabolically break him down into revealing the moral despair he feared most, thus brainwashing him into convincing the town's people not to resist the German intruders.

The movie is a psychological drama that takes place in a small interrogation room. It matches the psychodramatic wills of two powerful minds, each trying to break the will of the other. After a series of long, brilliant, ego-ideal exchanges, Guiness seemingly breaks down and admits that his mother had been a prostitute. Hawkins proclaims victory. However, the plot suddenly changes. It isn't that Guiness is ashamed to reveal that his mother was a prostitute. It is that he is afraid that the motive behind his courage to resist Hawkins's inquisition is for the glory he would receive from his parishioners subsequent to his release. For that he is vain and guilty of a cardinal vice, according to Aristotle's taxonomy of ethics. Rather, he hopes that he resists the invader's grilling because it is the virtuous thing to do; and if none of his followers recognize his courageous resistance, it will be all right and he will feel fulfilled because he has acted as an honorable man.

The triathlete faces the same vain-glory dilemma. If you bathe in the glory of vanity, have overt concerns about awards, media recognition, self-notoriety, or excessive praise—you are vain. Your values are shallow and if any expected adulation is not forthcoming, you will have an utterly unfulfilling experience.

However, if you are modest and perform to fulfill your intrinsic needs, rather than to receive the extrinsic awards and recognition, you will never be disappointed because your internal needs will be fulfilled.

Peer Vs. Self-Competition

Would you rather win first place in your age group, competing in a virtually competitive-free situation and perform poorly, or take 5th place in your age group while competing against a select group of highly talented triathletes and accomplish a "personal best" finishing time?

If you choose the former, your focus is on peer-competition and will not be able to be honestly proud of your performance. However, if you choose the latter, your focus is on self-competition and if you perform at your highest level of excellence, you will feel proud of your performance, even if you finish last.

Do you enjoy beating your competitors?
Do you try to overtake someone near the finish line?
Are you upset if someone passes you?

If you answer *yes* to these questions, you need to reevaluate the real purpose of competition. The purpose of competition is not to beat or dominate another human being. The purpose of competing in a triathlon is not to defeat or humiliate a fellow triathlete. The purpose of entering a triathlon is to perform at your highest level of excellence, regardless of your finishing place.

You need to remember there are no first place winners without those coming in second, third, etc.; and in any race someone has to finish last. Out of those who believe in peer-competition, the only triathletes who enjoy fulfilling experiences will be the first place age-group finishers because all others will be unable to realize their goals. However, out of those who believe in self-competition, each triathlete has the opportunity, regardless of his or her rank order of finishing, to complete a super excellent performance.

In summary, if you focus on self-competition rather than peer-competition, you will find yourself doing the following: respecting your fellow triathlete, patting them on the butt if they pass you on the run, telling them they are looking good if you are fortunate enough to pass someone on the bike, and stroking considerately during the swim. Being self-competitive, you will savor your triathlon experience as you respectfully strive to do your very best.

Courage

Aristotle presents courage as a mean between foolhardiness (excess) and quialingness (deficiency). Transcending this model to triathletes makes clear that excess such as pushing the body beyond its physiological limits during critical heat index environments and dangerously cold air

or water temperatures is *foolhardy*. Other examples include the following: cavalier cycling, swimming alone, running through injuries, and assuming rehydrating is cowering. Below you will find select triathlons performance deficiencies: insecurity for extending attainable distance training goals, undue fear of reaching for physiologically safe intensity overload levels, reluctance to experiment with different swim strokes or training models, and not daring to seek new performance event challenges. These deficiencies are extremes of the courage continuum. Extremes do not lead to virtue and are poor behavioral choices.

In summary, you need to avoid the extremes of the courage continuum: foolhardiness and quailingness, for these are non-virtuous and give way to unfulfillment. Rather, you need to seek the mean of the continuum, namely, courage, which rewards you with the virtue of fulfillment.

Summary

The cardinal vice, vain-glory, the virtues of self-competition, and the extremes of courage have been presented to direct you toward fulfilling triathlon behavioral choices.

Chapter 10

Appendix

Michael O'Shaughnessy's Training Logs

TRAINING LOG

My Road to the Ironman

	Date	Bike	Run	Swim	Situps	Weights	Other
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						

	Date	Bike	Run	Swim	Situps	Weights	Other
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						
	Total						
	Goals						

TRAINING LOG

Michael O'Shaughnessy's Road to the Ironman

	Date	Bike	Run	Swim	Weights
93	7/22	0	7	0	Chest
92	7/23	0	11	2.5	0
91	7/24	35	11	0	0
90	7/25	0	0	0	0
	Total	**112**	**35**	**5**	**1**
89	7/26	27	5.2	1	
88	7/27	65	0	0	0
87	7/28	0	0	0	Chest
86	7/29	45	15	0	0
85	7/30	0	0	2.5	0
84					
83	7/31	0	6	0	Sh/back
82	8/1	25	0	1.3hr Surf	
	Total	**162**	**26.2**	**4.5**	**2**
81	8/2	100	0	1 hr Surf	0
80	8/3	0	0	1.30 Surf	0
79	8/4	0	15	0	Chest
78	8/5	38	0	0	0
77	8/6	0	11	1 mile	0
76					
75	8/7	0	7	2.5	0
74	8/8	0	0	.30 Surf	0
	Total	**138**	**33**	**6.5**	**1**
73	8/9	20	7	1.5 Surf	Arms
72	8/10	30	5	1 hr Surf	0
71	8/11	0	0	0	Chest
70	8/12	50	11	0	0
69	8/13	0	0	2	0
68	8/14	47	11	0	0
67	8/15	0	0	0	Back
	Total	**147**	**34**	**2**	**2**
66	8/16	56	0	2	0
65	8/17	28	7.5	2	0
64	8/18	0	5	1	0
63	8/19	0	0	0	0
62	8/20	0	11	0	0
61	8/21	60	0	3	0
60	8/22	0	0	0	0
	Total	**144**	**23.5**	**8**	**0**
59	8/23	56	12.5	0.75	0
58	8/24	0	10	5.3	0
57	8/25	0	0	0	Chest
56	8/26	0	11	2	0
55	8/27	0	11	1.5	Sho
54	8/28	36	0	0	0
53	8/29	22	0	S 30	0
	Total	**114**	**44.5**	**5**	**2**
52	8/30	0	21	0	Arms
51	8/31	56	0	0	0
50	9/1	0	6	1	0
49	9/2	0	7	2.5	0
48	9/3	52	9.5	0	0
47	9/4	51	0	2.5	0
46	9/5	10	0	0	0
	Total	**159**	**43.5**	**6**	
45	9/6	56	10	2	0
44	9/7	0	4	1	0
43	9/8	0	11	2.5	0
42	9/9	5	0	1	0
41	9/10	50	0	LA	0

Goals for Sept 22-11 Oct **Weekly**

180 Bike/w - 46 Run - 6.57 Swim

	Date	Bike	Run	Swim	Weights	Situps
40	9/11	0	12	0	0	
41	9/12	0	0	0.5	Full	
	Total	**171**	**37**	**7**	**0**	
42	9/13	0	0	0.5	0	
41	9/14	0	14	0	0	
40	9/15	0	10.5	0	Chest	
39	9/16	0	0	2.5	0	
38	9/17	0	0	0	0	
37	9/18	32	0	0	Full	
36	9/19	Rest	7	Rest	Rest	
	Total	**32**	**31.5**	**3**	**2**	
	Goals	**180**	**45**	**6**	**1**	
35	9/20	Rest	Rest	Rest	Rest	
34	(6.29) 9/21	56	13.2	1.5	0	
33	9/22	0	7	0	Full	
32	9/23	40	0	0	0	
31	9/24	60	11	0	0	
30	9/25	24	5.17	0	0	
29	9/26	0	0	3	0	
	Total	**180**	**43.2**	**4.5**	**0**	
	Goals	**180**	**45**	**5**	**1**	
28	9/27	64	0	0	0	
27	9/28	40	14	0.5	0	
26	9/29	0	11	0	1	
25	9/30	30	13	0	1	
24	10/1	0	10	0	1	
23	10/2	46	0	0	1	
22	10/3	0	0	2	0	
	Total	**180**	**48**	**2.5**	**4**	
	Goals	**200**	**48**	**5**	**2**	
21	10/4	113	0	0	0	
20	10/5	0	12	0.5	0	
19	10/6	0	15	0	chest	
18	10/7	30	11	0	0	
17	10/8	0	11	2	0	
16	10/9	50	0	0	1	
15	10/10	0	0	0	1	500
	Total	**193**	**49**	**2.5**	**2**	
	Goals					
14	10/11	0	11	0	0	0
13	10/12	0	0	2.5	Arms	1000
12	10/13	0	9	1	Chest	500
11	10/14	30	3	0	0	500
10	10/15	0	6	2.2	0	0
9	10/16	0	14	1	0	0
8	10/17	30	4	2.5	0	0
	Total	**60**	**47**	**9.2**	**2**	0
	Goals					
7	10/18	0	0	2 surf	0	2500
6	10/19	48	0	0	Arms	1000
5	10/20	0	0	0	Chest	500
4	10/21	Rest	Rest	2	Rest	
3	10/22	Rest	Rest	Rest	Rest	
2	10/23	Rest	Rest	Rest	Rest	
1	10/24	Rest	Rest	Rest	Rest	
	Total					
	10/25	110	26	2.5		

Goal 6 weeks out: 2 - 100 mile bike rides

Goal 8 weeks out: 2 - 22 mile runs

Week of Race : Rest - stretch - 2 light work outs on bike to finalize condition of bike

	Date	Bike	Run	Swim	Weights
152	5/24	6	5	Surf	
151	5/25	35		Surf	
150	5/26	23			
149	5/27		4.5		Chest
148	5/28		5	1/2 mile	
147	5/29		4	1 1/2 miles	
146	5/30				Wts 1hr
	Total	**64**	**18.5**	**2**	
145	5/31	35	4.5	Surf	
144	6/1	10	3	1/4 mile	
143	6/2				Chest
142	6/3		4.5	2 miles	
141	6/4		4		
140	6/5				
139	6/6				
	Total	**45**	**16**	**2 1/4**	
138	6/7	35	5	Surf	
137	6/8	30		Surf	
136	6/9				Weights
135	6/10		6	1 mile	
134	6/11			1 mile	Weights
133	6/12		4.5		
132	6/13	10			Weights
	Total	**75**	**15.5**	**2**	
131	6/14	10			Weights
130	6/15	10			
129	6/16	50	4		Weights
128	6/17			1 1/2 miles	
127	6/18		5		
126	6/19			1 1/4 miles	
125	6/20				
	Total	**70**	**9**	**2 3/4**	
124	6/21	36		1 1/2 miles	
123	6/22	38		1 mile	

	Date	Bike	Run	Swim	Weights	Situps
122	6/23					
121	6/24	36	7.5	2	Weights	
120	6/25					
119	6/26					
118	6/27	30				
	Total	**140**	**7.5**	**2**		
117	6/28	60				
116	6/29		10			
115	6/30				1 1/4 miles	
114	7/1					
113	7/2					
112	7/3					
111	7/4					
	Total	**60**	**10**		**1.25**	
110	7/5				1 mile	
109	7/6				1 mile	Lift
108	7/7		5		1 mile	Lift
107	7/8	unrecorded				
106	7/9	unrecorded				
105	7/10	unrecorded				
104	7/11	unrecorded				
	Total		**5**		**3**	
103	7/12	unrecorded				
102	7/13	unrecorded				
101	7/14	unrecorded				
100	7/15	unrecorded				
99	7/16	unrecorded				
98	7/17	unrecorded				
97	7/18	unrecorded				
	Total					
96	7/19	unrecorded				
95	7/20	unrecorded				
94	7/21	unrecorded				

This page is for version tracking purposes only. This is not part of the book and will be deleted when the book goes into Author Copy Stage.

Designed by:	James Mensidor
Corrections Done by:	Antonio Nocos Jr.
QA Done by:	Anselma Ocon-Cortes
Date:	02-Jun-06