

2022

Running Competition and Coaching: Lost Era of Science and Technology

Martin W. Sivula

Johnson & Wales University - Providence, martin.sivula@jwu.edu

Follow this and additional works at: <https://scholarsarchive.jwu.edu/technology>



Part of the [Technology and Innovation Commons](#)

Repository Citation

Sivula, Martin W., "Running Competition and Coaching: Lost Era of Science and Technology" (2022).
Technology. 9.

<https://scholarsarchive.jwu.edu/technology/9>

This Article is brought to you for free and open access by the Center for Research and Evaluation at ScholarsArchive@JWU. It has been accepted for inclusion in Technology by an authorized administrator of ScholarsArchive@JWU. For more information, please contact jcastel@jwu.edu.

Reflective Practice Series

Running Competition and Coaching: Lost Era of Science and Technology

Martin W Sivula

Johnson & Wales University

Author Note

The Appendices include a bibliography, personal reflections from the era, and a regression example of applied theoretical training.

For further inquiries, questions, and discussions, contact: MartSisu@yahoo.com

Abstract

This paper sheds light on running training and competition from the 1960s through the early 1990s. This article blends practical experience with theory and scientific methods, personal insights, and sports medicine research from a historical view. The data sources include readings, personal correspondences, empirical testing, and personal communication with many persons. Many of these ideas remained dormant and were not followed up by formal scientific research methods after their inception.

Keywords: Sports medicine, competition, coaching, running training, scientific methods, theory

Introduction

Over the last several decades, science, technology, and some old and new theories have enhanced running training, coaching, and competition. At the high levels of national or Olympic competitions, advancements in science and technology find their way into the training of these elite athletes. Science and technology have changed collegiate competition as well. Perspectives from a historical base over many decades with some scientific ideas and theories may have never found their way into formal scientific research or sports journals. Many of these ideas were found in magazine articles or word-of-mouth of the participants and tested using available data from the period.

A Little Stress

Style¹ Is sometimes known as the father of stress. Selye's work in the mid-19th century was profound because he studied stress on organisms. He said that an organism goes through three phases: alarm, resistance, and exhaustion. He also spoke about General Adaptive Syndrome GAS¹. Organisms need continual adaptation to survive, and one would often joke and say that they ran out of GAS. But for some athletes, especially those runners, this was a real thing where they were exhausted daily. Whatever training they were doing (also competitions), their body was not adapting to the overall stress. And eventually, this would lead to severe burnout, illness, injury, and maybe complete withdrawal from the sport. Selye¹ also clarified the need for adequate rest between bouts of stress on the body^{1,15}

Impact Coaches in the 1950s and 1960s

In this section, I will give you an overview of some of the critical coaches in the era who profoundly affected elite athletes and the sport. These coaches brought science and some technology into their theoretical work, which led them to empirical testing on athletes that trusted their advice and care. Many of them coached Olympic champions in distance events and sprints as well. One thing to note is that radio, film clips, and television were the primary sources of communication, so information was sometimes slow to get to the masses. Also, some of the coaches were somewhat secretive about what they did with their athletes and did not share much information when they were currently working with them. After the athlete's primary competitive career was completed or the coaches had retired, some of the data and information became readily available.

The coaches that I list here are certainly not an exhaustive list. I mention these because they either affected me personally or some of their training methods and philosophies I borrowed in my coaching. I will not give an extensive overview of their particular successes, but I will provide you with what was used by my athletes in training or me.

The first coach I will mention is Percy Cerutti^{8,9,10}, Australian coach of Herb Elliot who reportedly never lost a 1500 m race. Cerutti emphasized returning to nature and had a training facility at Portsea. Runners would run on the dunes, and in a natural gait, he based some of his methods on horses galloping, and he also emphasized what he deemed as tensile strength, not bulging muscles but solid and wiry muscles. He also quite frankly said that many runners ran like "Zombies", and that they had no creative energy and did not change their gait too much

during their training or competitions. One thing that stands out in Cerutti's work is the pelvic tilt, where he emphasizes runners to run like a number one and not like a number nine. He explained that the pelvis was like a bowl, and if you tilt it forward, you lose much of your stride length. So he recommended that you tilt it back much like a number one. You might see athletes at high speed who seem to be leaning backward and have high knee lifts using this method.

The second coach is New Zealand's Arthur Lydiard^{2, 10}. In the 1950s and 1960s, Lydiard significantly affected the running training community, and he had Olympic gold medalists under his tutelage. His training system was one of a phasic type: where you would have a phase 1- primarily distance training (as he said, undulating terrain) and once a week a very long run in the area of 20 miles or so. We should note here that Lydiard recommended a hundred miles per week in this first phase which was quite stressful. The second phase was brutal hill training. One would find 1/2 a mile hill and toe "pop" (meaning that you would push off the ball of your feet and toes) as you drove up the hill. It was at a slow-pace, but you were emphasizing pushing off the ball of your foot and toes. One of my associates, an Irish Olympian in the 5000m, tried to follow hill training in New Zealand and could not continue with that type of training. The last phase was speed training, where even distance runners would emphasize speed training and sprinting. According to one of his athletes, Peter Snell, the key to his success was the marathon conditioning endurance in phase 1, and Snell was an 800m and 1500m runner.

The third coach I will mention is Mihaly Igloi¹⁸ famed Hungarian running coach primarily at the middle distances. His training methods were interval training. He revolutionized the idea of interval training with his endless permutations and combinations of distances and times for the

athlete to perform and train. One of his standard workouts was ten repetitions of sprints of 400 m with short jogging recoveries. He had numerous champions and world record holders. One of his athletes stated that he didn't even know how much running he was doing in practice. Igloi would tell them how many yards they must run and how fast, and they did so, and then they did it again, and he gave them more direction. I believe one of the key points they take away is that he never really told them by time how fast they were running, and that's a good thing (at least in practice).

The fourth coach (MD) I will mention is Kenneth Cooper²⁹. In 1968 Dr. Cooper came out with a book entitled *Aerobics*. I recall reading somewhere before he published this book that maximum aerobic fitness could be achieved by running 20 minutes three times a week at a comfortable pace. Note that he sees aerobic fitness as not necessarily for any type of competition. However, his work with treadmill testing in 12 minutes and measuring the VO₂ max in human performance became something that I would be doing in the early 1980s. He also stated that he saw a direct correlation between oxygen consumption and heart rate. Also very noteworthy along the same line was that his training increased red blood cells, and the ability to give oxygen to the muscles also increased, making the blood a more efficient carrier of oxygen. This research was significant for training in the next several decades, especially in the longer distances. But the critical point is that it was still for the high-performing athlete.

Interval Training Early Days

Without going into great detail but along the same period and into the 1950s-1960s especially, interval training became very popular for runners, especially those in mid and long distances. This type of training would allow the athlete a period of high-stress running at a swift pace for a

specific period and then again for another specific period of resting. (You might note that male boxers would sometimes be scheduled for 12 rounds; each round would be one minute in duration, and then they would have three minutes to rest in their corner). Recovery or rest might've been a very slow jog, a walk, or nothing. Also along the same lines are wind sprints, where you would sprint for a certain distance and jog or walk back to the starting point and sprint again. And it's safe to say that many sporting events still use the same method.

The Running Boom - 1970s

In the 1970s, possibly because of persons like Ken Cooper and others, fitness became a primary concern for not just elite athletes but also the average person. Some newspaper articles on sports claim that some major league pitchers and NFL football linemen were running five and 10 miles daily. The pitchers claim that they had better endurance when pitching the game and the linemen did not get so easily fatigued in the football game. However, one of the downsides is the lineman in the 270-280 lb range found it difficult to keep the weight up and lost weight which could be detrimental to their performance overall.

In the United States, many towns and cities had weekly walks and road races, so competition and running on the road were readily available for all types of athletes. However, many participants just went out for a run every day, and if they entered a competition, they didn't know the first thing about training for a particular distance and/or event. When asked how he trained way back when he was competing, legendary Boston Marathon champion John Kelly said that he and his friends would run around 20 miles or so three or four times a week. So we re-thought our current training methods, especially for distance events. William Squires of the Greater Boston Track Club once said, "you should work in harmony with the body rather than trying to conquer it."

Confirming what Selye^{1,15} said about stress and the need for proper rest and adaptation over time to the stress. So now we enter into a radical contrast of training methods LSD.

Long Slow Distance (LSD)^{4,6,7}

So many of us started gravitating to alternative training methods rather than pure intervals or fast distance training. You should note that an easy run for an elite male distance runner is around the six-minute per mile pace. For an average person, an easy run might be anywhere between 8 to 10 minutes per mile pace. So, what was LSD (not the drug), but Long Slow Distance? One of the researchers came up with the term "Talk Test," if you could talk to your running mate in a normal conversation, you are at a comfortable pace for a long slow distance.

Around the mid-1970s, Ernest Van Aaken, a German medical doctor, published a book entitled the "*Pure Endurance Method*." He had some key ideas that affected many of us long-term and our coaching. One of them was the 5% idea where you should do no more speed training than 5% of your total mileage for a week. He also stated that the optimal running physique would be on a ratio of 2 to 1. For example: if you weigh 120 lbs, your height should be 60" (or five feet). He also said that if you can try to get your weight 10 to 20% below the recommended weight for your height, this would increase your aerobic capacity. From a medical point of view, he was one of the first to say that getting much more oxygen into your bloodstream was a key deterrent in some types of cancer in the human organism. Of course, you can get super extreme, and even some runners became anorexic, which threatened their life, so common sense had to rule.

It was reported through various media sources in the early 1970s that some of the best distance runners in the world were running 140 miles a week. Somewhat representative of the Lydiard¹⁰ Method but very extreme where athletes would run 20 miles a day, possibly in two workouts and then a long Sunday run of 20 miles or more.

Automatic Timing²⁰

Many of us in the 1950s and 60s were timed in race distances with a analog stopwatch. You might benefit from three stopwatches on one event in a schoolboy track and field meet. The timers would observe the smoke of the starter's pistol click the watch, and then click the stopwatch when the racer passed the finish line. This method was highly problematic, and there were great debates, especially about times, records, etc. On January 1, 1977, automatic timing became mandatory for world records. The technology and the science evolved, producing fractions of 1/1000s of a second in some cases and digital photo images. And at the starting line in the sprints, each runner's starting blocks are wired to the system.

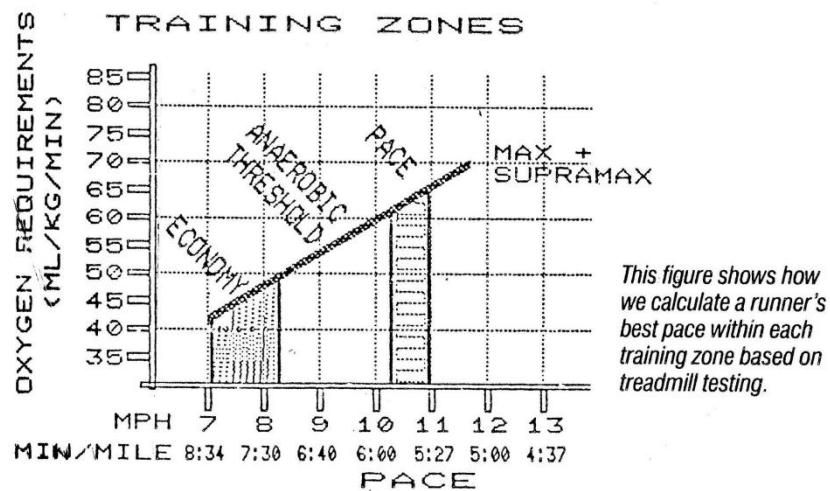
The Era of Science, Statistics, and Technology to Increase Performance

In the early 1980s, I taught computer science as an adjunct professor, mostly in high-level programming languages such as Fortran and Pascal. My college coach was an exercise physiologist Ph.D., and he recruited me in a grant to help him set up equipment to measure oxygen consumption, heart rate, and gas analysis on the human body. What started very simply with a few people quickly became very popular, and elite athletes and Olympians were being tested on the treadmill. Data were recorded and analyzed with various regression analysis procedures. Over time, there was enough data to start prediction equations on performance, especially for the elite distance runners we tested.

John Treacy was an elite runner of Providence College, Rhode Island, USA, and represented Ireland. John was a world cross-country champion and was rated in the top 10 in the 5000 and 10,000 m. In 1983 going into 1984, John wanted to medal in the Los Angeles Olympics. His coach was a physician. John came to us to be tested several times. After looking at his data, the slope of his regression line, and his ability to use the oxygen, we thought his best chance for

metal would be in the marathon. John had never run a marathon, not even approached the distance in training. His first response was, "no way." But after conversations and discussions and going over the data and advice from his coach, he decided it was the thing to do and started training for the marathon event. He had never run one. One of the byproducts of the testing was after the data was analyzed for individual athletes, you could interpret it for the coaches if they needed how we thought the athlete's training should proceed in the next several months. So John went to it and started training for the LA Marathon, and he was to represent Ireland at the Olympics in 1984. Over months, the regression equations were refined and even adjusted for wind speed, gravity, etc.

In August 1984, when the marathon was held, it was a hot, humid day in LA. At the end of the race, John had finished second and was the silver medalist. He came within about 20 seconds or so of what we predicted, but I believe there are other factors and confounding variables that affected that race, such as heat and humidity. The interesting thing about the whole event was that John would have never even thought of going into a marathon race had it not been for the science, statistical analysis, and technology instrumentation, allowing us to collect and analyze data to predict performance.



THE EXCEL PHILOSOPHY

Figure 1 Display of the regression model in the human performance research

Over the next several years, we tested various athletes, and my coach was heavily involved with the whole process. David Costill⁵ was also doing some great things with science applying it to distance running. He examined such things as lactic acid and researched slow twitch and fast twitch muscle fibers, expanding his knowledge and understanding of human performance. Our goal and the goal of many scientists was to increase performance legally without the use of any performance-enhancing drugs, etc.

In the early 1990s, I worked with an athlete as his coach with the my same college Alma mater. He had recruited me to coach him. He knew of my involvement in human performance testing. He had achieved at the shorter distances 3000m or so some very respectable and world-class times. He wanted to see what he could do in the marathon. We took his data and my advice and trained for the marathon exclusively (although we had a race schedule embedded within his marathon training). He followed a three-week training cycle where he would run more than 120 miles in one week and 50 to 75 miles the next week, and a moderate week at between 80 to 100

miles the third week. The training goal was for the US Olympic marathon trials (top three positions) held at Ohio State University in 1992. To go to Barcelona Olympics, he had to be in the top three, and after a valiant effort at the half marathon mark, taking the lead in the race, he fell off the pace, finished 14th, and was the first New England finisher. He's an example of an athlete that, through 20 or 21 miles, can run at a pace, then falls off pace for the remaining race. Note: that five minutes per mile pace, which translates into a 2:11:23 marathon time if it is kept the entire distance. Some research suggests that at these distances of 20 and 21 miles in the marathon, the body has to turn over to fat burning. Controversy remains as some athletes do not slow down. So why do some fall off the pace so drastically? Is it just fatigue or other factors, or is it the lack of proper training?

Conclusion

This paper presents some key ideas and events up to the early 1990s. Now some current issues are technology advancements in running and/or racing shoes. Shoes with a high energy return are unfair to the rest of the competitors who don't wear them. Many decades ago, we considered a 5-ounce racing shoe for running the lightest you could wear in competition. However, if you run long distances on a hard surface, your feet and the rest of your body take a beating unless your gait and stride were almost perfectly efficient.

In the sprints at the world level, both male and female competitors are numerous. On the men's side, there are many sub-10-second 100m sprinters and many sub-11-second 100m women sprinters. Some of the same progress has not been seen over very long distances. However, the official world record in the men's marathon will probably be less than two hours very soon. The Woman's record is now 2:14:04 minutes, set in 2019.

The issue of fairness to all athletes in a particular competition remains, drug testing, performance enhancing drugs, and protection.

Bibliography

1. Selye H. *Stress*. Natur Och Kultur; 1958.
2. Lydiard A. *Distance Training for Young Athletes*. Meyer & Meyer; 1999.
3. Bowerman WJ, William Hardin Freeman. *High-Performance Training for Track and Field*. Leisure Press; 1991.
4. Ernst Van Aaken. *Van Aaken Method*. World Publications; 1978.
5. Costill DL. *International Conference on Sports Medicine, Muscle in Sports, 23-26. March 1981 Utrecht, the Netherlands*. G. Thieme; 1982.
6. Henderson J. *Run Gently, Run Long*. World Publ; 1974.
7. Henderson J. *The Long Run Solution*. World Publications; 1976.
8. Percy Wells Cerutti. *Success: In Sport and Life*. London, Pelham; 1967.
9. Myers L. *Training with Cerutti*. World Pub. Co; 1977.
10. Benson T, Ray I. *Run with the Best : A Coach's Guide to Training Middle and Long Distance Runners Based on the Cerutti and Lydiard Models*. Tafnews Press; 1998.
11. Yessis M. *Explosive Running : For All Runners, Sprinters through Marathoners*. Ultimate Athlete Concepts; 2011.
12. Husbands CT, Daley Thompson. *Sprinting : Training, Techniques and Improving Performance*. The Crowood Press; 2013.
13. Devries HA, Housh TJ. *Physiology of Exercise for Physical Education, Athletics, and Exercise Science*. Web Brown & Benchmark; 1994.
14. Bloomfield J, Fricker PA, Fitch KD. *Science and Medicine in Sport*. Blackwell Science; 1995.

15. Selye H. *The Stress of Life*. McGraw-Hill; 1956.
16. Wikipedia. Benji Durden. Wikipedia. Published March 14, 2022.
https://en.wikipedia.org/wiki/Benji_Durden
17. Wikipedia. Brian Maxwell. Wikipedia. Published January 16, 2022. Accessed July 3, 2022. https://en.wikipedia.org/wiki/Brian_Maxwell
18. Wikipedia Contributors. Mihály Iglói. Wikipedia. Published May 20, 2020. Accessed July 7, 2022. https://en.wikipedia.org/wiki/Mih%C3%A1ly_Igl%C3%B3i
19. Kolata G. SCIENTIST AT WORK/David Costill; A Career Spent in Study of Training And Exercise, Lap by Grueling Lap. *The New York Times*.
<https://www.nytimes.com/2001/10/30/health/scientist-work-david-costill-career-spent-study-training-exercise-lap-grueling.html>. Published October 30, 2001. Accessed July 7, 2022.
20. Fully automatic time. Wikipedia. Published April 22, 2020.
https://en.wikipedia.org/wiki/Fully_automatic_time
21. Jones A. *Nautilus Training Principles*.; 1971.
22. Wikipedia Contributors. Carbohydrate loading. Wikipedia. Published January 6, 2020. https://en.wikipedia.org/wiki/Carbohydrate_loading
23. Wikipedia Contributors. Blood doping. Wikipedia. Published July 6, 2019.
https://en.wikipedia.org/wiki/Blood_doping
24. Wikipedia Contributors. Altitude training. Wikipedia. Published March 16, 2019.
https://en.wikipedia.org/wiki/Altitude_training
25. Elger D. The Marathon Collapse Point Theory. Published 1975. Accessed July 8, 2022. <https://www.daveelger.net/2009/09/marathon-collapse-point-theory.html>

26. Mayo Clinic. Understanding the risks of performance-enhancing drugs. Mayo Clinic. Published December 31, 2017. <https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/performance-enhancing-drugs/art-20046134>

27. Triathlon. Wikipedia. Published June 18, 2022. Accessed July 8, 2022. https://en.wikipedia.org/wiki/Triathlon#Modern_beginnings

28. Wikipedia Contributors. Legal recognition of non-binary gender. Wikipedia. Published November 17, 2019. https://en.wikipedia.org/wiki/Legal_recognition_of_non-binary_gender

29. Cooper Aerobics circa 1970. www.cooperaerobics.com. Published 1970. <https://www.cooperaerobics.com/>

30. Anabolic Steroids: types, uses and risks | Steroid .com. Steroid.com. Published December 31, 2017. <https://www.steroid.com/>

31. Anaerobic Threshold: What It Is And How To Measure It? Polar Blog. Published July 18, 2017. <https://www.polar.com/blog/understand-anaerobic-threshold/>

Definition of Terms and Key Ideas (circa 1970)

Note: No exercise, diet, or training program should be started without a physical examination by competent medical professionals.

Altitude Training²⁴ - Altitude training differs from "blood doping" in that no blood is removed from the athlete. The athlete trains at an altitude decided upon by his medical professionals and coaching staff and then trains for weeks at that height and altitude. Some athletes would have altitude sickness, which was a negative effect, and will not be able to continue training at altitude. Once again, some athletes seem to benefit greatly from this type of training, and others showed no difference. Some runners born at a high altitude and trained there all their lives seem to perform at a high level compared to other runners at lower levels of altitude. However, there is a multitude of confounding variables that could affect the performance of any athlete on a given day.²⁴

Blood Doping²³ - Blood doping is a very controversial topic. Various high-level track and field athletes in the 1970s were accused of blood doping, which does not include any "dope." However, it was described as training and altitude for several weeks, around 7500 to 8000 feet or more. Training at altitude forces the body to produce more red blood cells because of oxygen depletion. Once this was completed, blood would be drawn from the athlete and stored. Then the athlete would return to sea level or above before a major competition. Several days before the competition, blood would be moved from the athlete and replaced with the high red blood cell blood acquired at altitude training. Some athletes attained a 1% to 2% increase in performance, while others showed no difference. This process would be done and carried out by medical doctors or trained medical professionals.²³

Carbo Loading²² -Carbohydrate loading, sometimes known as Carbo-loading, was to eat a spaghetti dinner or high carbohydrate dinner with adequate water to store the glycogen in the muscles before a major competition probably the night before. There were mixed results on this; some athletes complained of bloating and having to go to the bathroom while in competition etc. however, some athletes benefited and decreased the time in a distance running event.

Collapse Point Theory²⁵ - Collapse point theory is quite simple in the distance running events that you will stop (not necessarily collapse) after you run a distance of more than three times your daily average. So, if you run 10 miles a day, the theory states that you will stop after around 30 miles.

Hard - Easy Training - This type of training for distance runners is where you would have a period of stress (high-intensity workouts) and then a period of rest lower intensity workouts. So an elite marathon runner might approach on a hard intensity day 20 to 30 miles in one or two workouts and then the day following white training of no more than 30 minutes 4-5 miles. This type of training is nothing new for some of the best collegiate track and field programs. It would be adjusted to whatever events and distances (even field events). You could even take this one step farther, and one elite athlete marathon runner used a three-week cycle where they would run 150 miles in one week, then follow it with a 75-mile week at a slightly faster pace, and then moderate it with a 100-mile week following. The cycle was completed three or four times before a major competition.

There has been some confusion on this training method as it's somewhat misconstrued that easy days you do next to nothing. This easy day with long-distance running might include some surges, especially before the crest of a hill, and some fartlek training, especially if you take to the forest or trails.

The basic idea is not to go hard every day as the body never has a chance to recover. And with science nowadays, you could get measures of what's present in the body daily, such as lactic acid. If nothing else, a morning resting pulse would be helpful, and if it is higher than normal beats per minute, then the body is probably not recovered.

LSD^{4, 6, 7} - Long Slow Distance (LSD) became very popular in the 1970s as a method of long-distance training where a runner would be well within themselves and go great distances in a single run of 10, 20, 30 miles at a very comfortable talk test pace while within themselves. Some critics stated that if you train slow and wish to race, all you would do would get slow times because you're practicing slow running (specificity of training). Also, because of the slow pace, the hips and knees, ankles, and all the joints, especially on hard surfaces, took on great stress.

Nautalis²¹ - The most interesting invention of the early 1970s was by Arthur Jones, and that was the Nautilus weight training machine. Progressive resistance training was starting to become more popular, especially in athletics, where it could increase speed, explosive power, and endurance and prevent injuries if properly conducted. The Nautilus machine was unique in providing muscle groups a full range of motion and resistance over that range. Some initial workouts were recommended at 7 to 12 repetitions of a particular exercise, and your muscle group would become exhausted. When you could complete 12 repetitions in a particular exercise, you move the weight 5 pounds higher. And there are other ideas and training methods used with this as well. It provided more safety than traditional dumbbells and barbells as you couldn't get stuck on weight, let's say, too much weight trying to bench press.

Steroids³⁰ -Steroids or anabolic steroids seemed to enter the athletic arena in the 1970s, and there were various performance enhancing drugs available, some of which were illegal, some of which were legal. There have been many restrictions over the decades on using any

performance-enhancing substances at many levels of the sport. And some athletes are subjected to drug testing periodically. The idea here is that using foreign substances in the body would enhance performance in a competition.

Triathalon²⁷ -The triathlon has a reference from around the early 1970s of its invention where one would swim, bike, and run various distances in one competition. The iron man triathlon held in Hawaii was one of the most grueling triathlon events. It was extremely challenging as one had to train for running and swimming, and biking long distances.

Appendix A

Personal Experiences

Most of my competitive athletic career was in the 1960s and 1970s. So much of the coaching I received was representative of those periods. I competed in football, indoor and outdoor track, ice hockey, and summer league baseball during my school days. At about 12 or 13 years old, I gravitated more toward running and jumping sporting events. I was on the football and track and field varsity teams in high school. During those years, I never had a specific focus except for the short sprints from 50 to 220 yards. (Note that in those days, the distances were measured for us in yards, not meters, as in the current measurement system for most track and field events.) The training for those particular distances was straight intervals or sprint training with walking between sprints. An afternoon at a high school track practice would have seen maybe 8 to 10 - 440s with the rest at a moderate pace. Also, maybe 15 to 20 sprints from starting blocks to work on form arm motion and knee lift. You might run three or four 330-yard sprints on another day with a 110-yard walk back to the start. Or, if it was more of an endurance day, we might have done three or four 660-yard runs with a 220-yard jog. Running training was usually done before any field events, especially if you did more than one event in running, jumping, and/or the weight/field events.

I was caught up in the running boom of the 1970s. I rarely ran more than 2 to 3 miles in any practice, and it was usually some type of repetitions and/or interval training. However, for whatever reason, I started running 5 to 10 miles a day, and it became a necessity, maybe too much. After reading current literature on marathon training, I decided to test myself. The goal was to run a marathon to try to qualify for the 1978 Boston Marathon. I successfully ran a sub-three-hour marathon which was the qualifying standard back then. After reading several books

about marathon training, I was following a 70 to 90-mile week of training, averaging about 10 miles a day with a long run on the weekend. If you shorter races of 10K and 20K as speed work for the marathon. At the Boston Marathon in 1978, an old injury cropped up at mile 21; my left hamstring, which I had ripped in high school sprinting, cramped up, and I did manage to finish the marathon hobbling, jogging, and walking. My finishing time was 2:44:02, which was somewhat disappointing. But the most important thing is that it humbled me greatly and was a mind opener.

Post marathon, I found myself somewhat discouraged, and I knew my body was not agreeing with my training methods. I was frequently sick or real and lost his zest for daily workouts. Also, I had some very bad lower abdominal pains, which were diagnosed as a hernia. In February of 1979, I had a hernia operation, and in those days, they kept me in the hospital for several days. With some free time on my hand, I came across a runner Brian Maxwell who published I believe in Track and Field News about his training regime. It seemed to open my eyes to what I was doing when my body and somewhat self-destructing. He stated that he would approach the stress of the marathon over time in a single workout and then run the next day very easily for maybe five or 6 miles. So he was employing a very hard, easy approach to his training. Brian was a 2:14 marathoner. I assumed that he knew what he was talking about. So I adapted his training regimen to my training, and when I recovered from the hernia surgery, I began training hard and easy. In the summer of 1979, right through the fall, I ran all my best times for "long distances." In the late fall, I decided to try to re-qualify for the next Boston marathon. The qualifying time then was a sub 2:50 minute time. But I followed Brian's advice and didn't go overboard with maximizing distances. I did approach 20 to 25 miles on a long day. But I would jog 5 to 6 miles the next day very easily. I also incorporated repetitions once a week on a stressful day of no

more than 4 to 5 miles on the track; usually, a half mile repeats with 1/4 mile jog recovery or 10 to 12 440s with a 220 jog.

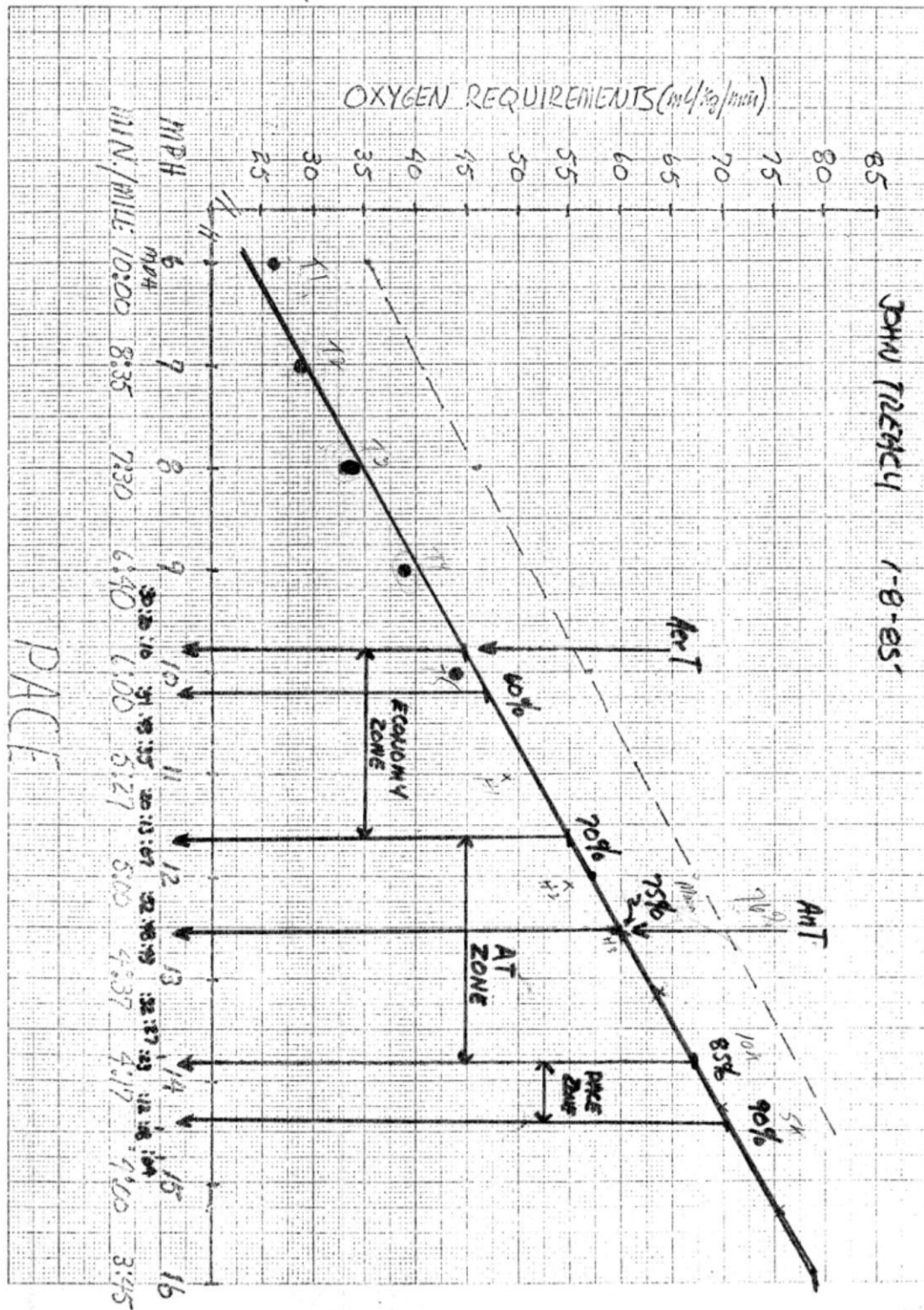
Another contributor to my training was a marathon runner Benji Durden.¹⁶ Benji was a 2:09:57 marathon runner. He recorded 25 sub 2:20 marathons in less than a decade. I recall reading an article where he said that one of the keys to his training was acclimatizing the body to heat when training and competing. It worked for him to some degree as his times showed advanced training methods.

My progressive routine was three stressful days, usually a long run of 20+ miles, some track repetitions, and maybe another hard day of two workouts, maybe 10 miles in the morning and 15 miles or more in the afternoon. One of the things that Brian did in his training regime was to split the workouts but to approach the stress of the marathon as you begin to peak for race competition. All other days were slow pace work of 5 miles or so... 30 to 35 minutes. After following this regime for most of the summer and into the fall, I was adept at pacing, so I decided to run just a shade under 2:50 minutes if possible to qualify for Boston. I was successful, and I ran a 2:49 marathon. However, that was the end of my marathoning career as life events changed my focus.

Appendix B

Silver Medalist Men's Marathon 1984 Early Post Training Profile

What follows is John Treacy's post-Marathon training regression analysis profile. What John and other athletes would do would use the regression line as a guide for future training, whether it be steady state, anaerobic threshold training, or repetitions. Other analysts and medical professionals designated the naming of the zones, which was somewhat unique to the research. Athletes would have a goal pace for a distance and a competitive effort. As training progressed, the athletes were retested, and they (and their coaches) could examine their regression profile and see if they were progressing toward their goal pace.



46 1521

10 X 10 TO THE CENTIMETER 10 X 10 CM
REAR FEEL & TENSILE CO. MATERIAL

