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Endurance Running in the United States: A History of the 20th and Early 21st Century

A senior thesis submitted to

The Department of Humanities College of Theology, Arts & Sciences

In partial fulfillment of the requirements for a Bachelor of Arts degree in History

by

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Abstract

Endurance running is a unique niche of American culture, with its own components and history. It has significantly increased in participation over the last half century, which is what sparked my curiosity and interest. I investigate the history of endurance running through three chapters. In order for the reader to get acquainted with the sport and running community, I first focus on the history of three races. The first is the Boston Marathon due to its importance of being the first endurance running contest of the last century that continues to capture the minds and hearts of endurance runners. The second race I discuss is the New York Marathon, the marathon with the highest participation in the world. The New York Marathon arose during the running boom of the 1970s. Thanks to market-savvy people like Fred Lebow, this race merged passion with finances. The third race analyzed in this thesis is the Western States Endurance Run. This 100-mile race through Northern California was one of the first ultra-marathon races and continues to draw many long-distance runners from around the world. After discussing these histories, I next analyze how humans have been able to accomplish such feats of endurance by looking into the developments of nutrition, the integration of science, and the growth of medical knowledge. Finally, I describe the history of endurance running's greatest tool, the running shoe, and argue that it is through the rise of athletic shoe companies that money entered the sport. This dramatically altered the sport through promotions, sponsorships, and research as well as through a wider inclusion of runners. Endurance running continues to fascinate millions and continually expands the limits of what dedicated human beings can accomplish.

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Introduction

Dr. George Sheehan helped to kick off the Endurance Running Movement in America with these words, “No Athlete ever lived, or saint or poet for that matter, who was content with what he did yesterday: or would even bother thinking about it. Their pure concern is the present. Why should we common folk be different?”¹ This simple beginning of calling the masses to running was further inspired by Henry David Thoreau’s quote, “Methinks that the moment my legs began to move, my thoughts began to flow.”² Dr. Sheehan would have agreed, and gone farther, even to say that the ideas running through his head as well as his bodily running were inseparable; they were intertwining and overlapping to merge mind with body through movement.

Modern endurance has increased its media popularity in American culture, and the number of participants has increased annually since the “Jogging Craze” that Dr. Sheehan helped to kick off in the 1960s and 1970s. This increase in participation, though, is a fascinating trend that has not been studied in great depth.

While many people may dread running, it is nevertheless one of the greatest forms of physical exercise that the human body performs with great efficiency. This is one of the reasons that medical professionals tell many people to get out and run or perform some other type of physical activity for at least 30 minutes. They point to running due to the ease with which one can attain cardiovascular exercise as

¹ George Sheehan, *Running and Being: The Total Experience* (New York, NY: Rodale Publishing, 2013), 4.

² Henry David Thoreau and Damion Searls, *The Journal, 1837-1861* (New York: New York Review Books, 2009).

compared to cycling, yoga, walking, hiking, etc. Human bodies seem to have an affinity for the act of running.

The history of running in America is one that is caught up in a number of political, social, and economic events and developments. Modern endurance running began with the initiation of the new Olympics in 1896 and has evolved and become more inclusive. Today endurance running has reached groups that Sheehan calls the “common folk.” How did this evolution occur? How is it that the New York Marathon has become the world’s most popular marathon? Why is the Nike Swoosh such a household name and where did it get its start? These are all questions I have attempted to answer in this thesis.

This thesis focuses on the history of endurance running in the United States over the last century. While I briefly note the origins of competitive running, I focus specifically on the histories of the Boston and New York Marathons. The growth of these marathons, along with the literature that was coming out in the 1960s and 1970s about the benefits of running, helped to eventually push runners to extremes in the ultra marathon circuits. My first section analyzes the development of the long endurance distance runs.

While the recreational running shoe has been running’s greatest tool, as participation increased in distances greater than 26.2 miles, so has medical, nutritional, and biomechanical knowledge about running. I cover some of the interesting trends in these areas in my second section.

None of this could have been done without the invention of the recreational running shoe, along with the funding and research provided by athletic companies. I

will examine the financial and corporate history of endurance running in the third section of this paper.

I realize that many people will not be familiar with this subject as only .05% of the population in the United States participates in marathons or ultra-marathons annually. To promote a greater understanding of this subject, I have utilized stories and personal narratives of elite runners to highlight examples of what running was like in different periods of the century. These stories are helpful tools relating to the culture, the challenge, and the brave endeavor of competitive endurance running. More than that, these personalities have helped to inspire thousands of others to leave the couches and run. As participation increased so did the marketability of running, and companies like Nike, Adidas, ASICS, Clifbar, Brooks, UltimateDirection, *Runners World Magazine*, began to establish themselves and grow.

The history of endurance running is a fascinating subject that demonstrates the human will to push humans to new frontiers, and to intertwine our minds and our bodies. Sheehan once wrote that, "Courage is the bridge between mind and body."³ That courage for him was to get out and rack up miles for a healthy mind in a healthy body. For many people there is joy in movement, and for a growing population of runners, this joy has fueled their passion. As mentioned before, the history of endurance running in the United leads back to Boston as well as the historic event of the 1896 Olympic Games in Athens. This race featured a marathon. And that marathon germinated a movement.

³ George Sheehan, *Running and Being: The Total Experience* (New York, NY: Rodale Publishing, 2013), 10.

Chapter I

The Boston Marathon: A History

On the New England spring afternoon of April 19th, 1897, one of the first urban marathons commenced; this was the birth of the Boston Marathon. It has been the longest running annual marathon in recorded history. The Boston Marathon is managed and run by the Boston Athletic Association, which was founded in 1887. With its dedication to distance running, the Boston Marathon is one of six sought-after marathons in the world, which brings runners from as far away as Kenya and Japan to the Jewel of Massachusetts. It started in the age of amateurism, continued through two world wars, entered the era of professionalism, and has persevered through bombings. It is a hallmark of the modern American image, as it was historically held on Patriots Day until 1968 when it was moved to the third Monday of April. This historical legacy can be felt as the course winds through eight Massachusetts cities, finishing in the center of Boston directly in front of the Boston Athletic Association's (BAA) Clubhouse. The marathon is so old that the course used to follow the original marathon distance of 24.8 (39.5 km) miles until 1912, when it was changed to the modern distance of 26.2 miles. Today the 26.2-mile length is one of the most exclusive road marathon events, with cash prizes in the hundreds of thousands to the top runners. How did this little race of 15 entrants develop into one of the most sought-after marathons in the world with 38,000 entrants by 1996? When were qualifying times begun and for what reasons? And what has the transition to professionalism done to and for the sport? These are all questions which I will explore throughout this section of the American marathon

culture. The Boston Marathon history provides an important case study for the development of the marathon culture in the United States as well the inspiration for the growth of other urban marathons such as the New York Marathon.

The United States was in an interesting position in the 1890s. It was starting to emerge into the industrial world market. With industrialization came economic booms and busts like the Panic of 1893. Despite these setbacks the World's Fair was held in 1893 in Chicago. US stocks were strong, the Civil War and Reconstruction were living memories, and liberal capitalism inspired men and women to make their fortunes from light bulbs, steel, and oil. The US was industrializing rapidly and was becoming a world power. Nationalism was reaching a fever-pitch among industrialized nations. The rivalry amongst nations like Britain, France, the United States, Austria-Hungary, Germany, and Italy were looking for competitions that were not yet bellicose. As stated, the World Fair was one avenue where the nations could show off discoveries, wonders, and achievements. Competition amongst intellectuals in universities was growing across Europe as they were discovering and trying to understand the particles of existence.

Another avenue was proposed by France's Pierre de Coubertin when he suggested to revive the old and friendly rivalry of the Greek poleis: the Olympics.⁴ Coubertin's persistence in the early 1890s bore fruit in 1893 when an international committee was set up to organize the games in the historic city of Athens for 1896. The men of the International Olympic Committee thought it would be appropriate to open the Games with a tribute to the somewhat mythical run of Greek soldier,

⁴ Allen Guttman, *The Olympics: a History of the Modern Games* (Urbana: University of Illinois Press, 1992), 8.

Pheidippides. Tradition held that Pheidippides had fought in the Battle at Marathon against the Persian armies of Darius I. After Darius' defeat, Pheidippides was inaccurately said to have run to the gate of Athens, a distance of 24.8 miles (40 km), to give the good news to his countrymen, after which he fell down dead from exhaustion. This myth was the inspiration that revived an age-old tradition of distance running. Endurance Running (ER) competitions had been undercut by industrialization. Pheidippides's mythic Athenian run was utilized to popularize the first Olympic Games by calling on popular myth to galvanize support among the nations and citizens of athletic capabilities. The engineer of the event, Michel Jules Alfred Bréal, was correct, and those that participated went back to their countries awed by reliving history.

One such man was the coach the American team sent to Athens, B.A.A.'s own John Graham. The B.A.A. had begun 1887 as a social club that promoted the ideal of Juvenal, "A sound mind, in a sound body" (*mens sana in corpore sano*). Graham's coaching had allowed college athletes of New England to win many medals in the popular short distances of the 100 and 400 meters. The "bonus" event of the marathon in the Olympics was such a sight to behold that John Graham brought the idea back to Boston. One year later, on April 19th, 1897, the first American Marathon was held, starting in the Massachusetts town of Ashland and ending in front of the B.A.A. clubhouse in Metropolitan Boston. The winner, John McDermott of New York, won the race beating the winner of the Olympic race, Spiridon Louis, by three

minutes, at two hours fifty-five minutes and ten seconds (2:55:10).⁵ The race caused excitement among so many people that it was reported that all the Boston trains were packed. The spectators got out to see the start then hopped back onto the trains to witness the finish. This proved a good strategy. The crowds called for another to be held the following year. Coach Graham and the B.A.A. were willing to do just that.

Before continuing, something must be mentioned about the role that amateurism played in these early days of international and local sporting competitions. Amateurism was a European aristocratic idea, which implied that athletes should involve themselves in sports without patronage and for self-improvement.⁶ The athletes should not be paid for the training nor for the sporting events in which they were engaged. This was understood as gentlemanly when most of those men who were attending colleges or could engage in extra-curricular sporting activities were wealthy and thus had leisure to devote to such activities without the consideration of money. Most of the men who could compete in the 19th and early 20th centuries were aristocrats, or wealthy in the case of American college students. These young elites did not take the sporting event as seriously as professional competitors do today. It was this spirit that Coubertin had woven into the modern Olympics. This idea would fail when glory and the promise of money brought young men, and eventually women, who aimed to hone their bodies exclusively for a sporting event, out into the new international spotlight.

⁵ "Boston Marathon History," Boston Marathon History, accessed February 29, 2016, <http://www.baa.org/races/boston-marathon/boston-marathon-history.aspx>.

⁶ Sigmund Loland, "Coubertin's ideology of Olympism from the perspective of the history of ideas," in: *OLYMPIKA-LONDON ONTARIO* 4 (1995): 49-78.

These European traditions carried over into the United States through the college system. Early athletes of all kinds, from rugby to marathon running all had other jobs that paid the bills, or were otherwise wealthy. To join a social club like the B.A.A., the men were generally Ivy Leaguers who could afford to take time off, watch and partake in such activities as fencing, football, short- and long-distance running, unless their job, like those of messengers, promoted a physique that could be utilized in these extemporaneous races, games, and contests. This amateurism held sway far into the 20th century, to the chagrin of athletes from lower-income households. The early Boston Marathons were no different from the Olympics, but less strict in their adherence, and thus as social clubs began to change with institutions like the YMCA, so too did competitions such as the Olympics.⁷

Aside from the rise and dominance of amateurism, there arose another amusing evolution because of the aristocratic mentality. The first races of the marathon were a distance of 24.8 mile. However, if a modern person were to look to their local marathon they would notice that they are all, from Boston to London to Tokyo, a distance of 26.2 miles. So how did the long-distance community decide on the odd distance of 26.2 (42 km)?

The fourth Olympiad was held in London in 1908. By now, the marathon had become the staple of the Olympics. The King and Queen of England, Edward VII and Queen Alexandria, wanted to see the start of the race so the course was extended to 26 miles - the distance from Windsor Castle to the Olympic Stadium. When the royal family made it to the stadium after a drive, they demanded that the finish be moved

⁷Loland, "Coubertin's ideology of Olympism from the perspective of the history of ideas," In: *OLYMPIKA-LONDON ONTARIO*- 49-78.

to the front of their box so they could see who won. This added an additional 385 yards to the race. This was a bit too much for the leader, Dorenado Pietri, who had to be assisted the last few feet of the race and was disqualified because of the assistance. Instead, the runner-up, Johnny Hayes of the United States, took the gold medal with a time of 2:55:18 because of the extended distance. While this caused a great deal of controversy, the length set by King Edward became the official standard of the Olympics after 1921. The B.A.A. took this standard and made it their official distance in 1924, thus cementing that a marathon distance should be no shorter than 42.195 km (26.2 miles).⁸

The early years of the marathon were full of these kinds of controversies, which is why the Olympic committee made the proclamation that the 26.2-mile course would become standard. The issue had a lot to do with how race coordinators measured the courses. Accuracy of distances would not become precise for another 50 years.

In these early years, sporting events were dependent upon leisure time and the will of those in some position of power. This was true in Boston as well. The Progressives came into power in the United States and passed legislation that allowed United States citizens' standard of living to rise. Men and women no longer had to work 12 hours or more a day. The stock market was easier to access, because trust-busting allowed for more competition and more public sharing of assets. With more money coming into the nation and unions asserting their power, more people had leisure time. Social clubs like the B.A.A. began to see a rise in able-bodied

⁸ Martin Polley, "From Windsor Castle to White City: The 1908 Olympic Marathon Route," *The London Journal* 34, no. 2 (2009), doi:10.1179/174963209x442441.

athletes, not just from Ivy League colleges, but also from young stock brokers, inventors, businessmen, and blue-collar workers who could train in their free time.

The Boston Marathon was one of four sporting events that were held throughout the First World War, the Depression and Second World War. During the war years of 1941-1946, events such as the Rose Bowl games, Kentucky Derby, and Boston Marathon kept a sense of pride alive while providing an outlet for popular distraction. With the advent of television sets in the late 1940s and 1950s, the American public lost some interest in distance running as football and basketball dazzled spectators more than a three-hour long race.

The numbers of contestants remained low, hovering around 100 entrants until the 1960s when the field start began to double every year, sometimes tripling.⁹ However, there would not be a resurgence in spectator running until the radical runner Steve Prefontaine and the “Kings of the Road”: Bill Rodgers, Frank Shorter, and Alberto Salazar. While these athletes were still training, another movement was underway in the 1960s; the rise of runners from post-colonial countries of Africa, athletes from Asia, and women were beginning to enter the competition.

When the 1960s began, the Boston Marathon was changing. The change was good as it brought more competition into the field. The post-colonial world was beginning to take part in international sporting events such as the Boston Marathon. The Ethiopian, Abebe Bakila, ran the Boston Marathon in 1960. Later that year, he became the gold medalist in the Rome Olympics for the marathon, winning the race

⁹ Boston Athletic Association, "Boston Marathon," Boston Marathon, Race Summaries, accessed October 12, 2015, <http://www.baa.org/races/boston-marathon.aspx>

in bare feet. In 1964 and 1965, Japanese runners took all four top spots, and Morio Shigematsu set a course record at 2:16:33.¹⁰ From this time forward, the runners coming out of Japan and the countries of Africa began to assert their dominance in the historic running event, adding their talent and charisma to push human potential.

Up until the 1960s, women were shut out from participating in the Boston Marathon. This would change by 1972, thanks to the bandit runners Roberta "Bobbi" Gibb and Kathrine Switzer. Bandit runners are runners who are not officially signed up with the event hosts (they do not have an official bib), but run the race anyways. Boston has historically been the most welcoming to bandit runners. Gibb ran in 1966, finishing with a time of 3:21:40.¹¹ The following year, Switzer tried to hoodwink the race directors and signed up as K.V. Switzer, an anonymous name. When it was discovered that she was a woman and properly bibbed, unlike Gibb, the race director John Semple attempted to rip the bib off her. Some newspaper pictures captured the encounter. Semple tried to physically yank her out of the race, but was met by Switzer's burly boyfriend who intimidated Semple to let her run.¹² While Semple did back off, Switzer's time was disqualified. In 1996,

¹⁰ Boston Athletic Association, "Boston Marathon," Boston Marathon, Race Summaries, accessed October 12, 2015, <http://www.baa.org/races/boston-marathon.aspx>

¹¹ Boston Athletic Association, "Boston Marathon," Boston Marathon, Race Summaries

¹² Cameron Stracher, *Kings of the Road: How Frank Shorter, Bill Rodgers, and Alberto Salazar Made Running Go Boom* (Boston: Houghton Mifflin Harcourt, 2013), Kindle Edition, loc. 701

her time was retroactively added back to the records as 4:20:02.¹³ The unofficial participation of women would continue until 1972, when Nina Kuscsik became the first official women's winner with a time of 3:10:26.¹⁴ Women had officially entered the race because of sheer determination. They have proven to be apt runners as well as stars for future Bostonian racers.

Like any modern sport phenomenon, a sport creates its stars, its Mia Hamms, its Kareem Abdul-Jabars, its Muhammad Alis. In the late 1960s, a young star made distance running sexy, and people who were watching their TV sets began to take notice of the young runner from Eugene, Oregon: Steve "Pre" Prefontaine. While he confined most of his races to the track, it would be his friend and rival, Frank Shorter, who would capture the American public's attention and inspire the grass roots distance running movement. Shorter won Olympic medals in 1972 and 1976. His fame was intensified by the rivalry so that TV and newspapers began to cover the competition between Shorter and Bill- "Boston Billy"-Rogers. The author Carmon Stracher investigated the rise of these two men and their rivalry. Their TV rivalry brought attention back to Boston. This competition also helped the development of the first professional urban marathon in the United States, the New York Marathon.

In 1971, Rodgers was a conscientious objector with socialist leanings. This led to his unemployment because he was fired for trying to unionize his fellow workers. Shortly before trying to organize his fellow workers, his motorcycle was

¹³ Boston Athletic Association, "Boston Marathon," Boston Marathon, Race Summaries

¹⁴ Ibid., Race Summaries.

stolen, and this two-pack-a-day smoker started to run to work. After being fired, he lived on his girlfriend's wages. In order to figure out what to do with his life, he began running farther and farther, "losing himself in the monotony" of excessive long-distance running, which eventually caused him to ditch the tobacco.¹⁵ Stracher writes that in his retirement, Rodgers claims that these excessive running sessions helped him with what would later be diagnosed as ADHD.¹⁶ By 1973 the glory that Shorter had received when he ran at the Munich Olympics inspired him to set his sights on the Boston Marathon. He had only witnessed the carnival atmosphere surrounding the course the year before when he lived along the route. Unemployed and with nothing to lose, he signed up for the 1973 Boston Marathon but was unprepared for the surges that the elites utilized to separate themselves from the rest of the field. He would not be back until 1975.

Frank Shorter set a record for the U.S. in 1972 with a time of 2:10:25. While Rodgers did not consider himself in the same league as Shorter, this record pushed him to see how far he could train himself. Shorter trained with the precision of a mathematician, while Rodgers's key to training was raw mileage. Shorter adhered to a strict running schedule, whereas Rodgers would rack up weekly mileage as high as 200 miles, averaging 25-mile days. As the 1975 Boston Marathon day dawned, fortune smiled on Bill Rodgers. In an astounding performance, he stopped for water only four times and one other time to tie his shoe. This was unheard of at the time and earned him name recognition as well as respect and establish him as a contender. Rodgers's time broke Shorter's record by thirty-five seconds, at 2:09:55.

¹⁵ Stracher, *Kings of the Road*, Kindle Edition, loc. 708

¹⁶ *Ibid.*, 708

Thus began the dominance of the road by Rodgers, and he set a new standard of competition for Shorter. Rodgers was not made for the Olympics, but he found his home on the pavement of the cities. Rodgers would win the Boston Marathon three more times between 1978 and 1980. Shorter, on the other hand, began helping to promote a new urban marathon movement in New York. This marathon drew his attention because the eccentric race organizer, Fred Lebow, provided a cash prize of a few thousand dollars. An opportunity like that could not be passed up in the dying time of amateurism.

The New York Marathon: A History

The New York City Marathon was the brainchild of a charismatic bachelor whose love for running was pure, genuine, and borderline obsessive. According to *Competitor Magazine*, *Runners World*, *Running Times* and others, the NYC Marathon boasts the most applicants and the most finishers. In 2014, a little over 50,000 runners finished with over 100,000 applicants. The race is now sponsored by Tata Consulting Agency, a \$15-billion-dollar company that pays out prize money totaling \$705,000, with bonuses given for any records broken or elite competitive regulations overcome. This race's history does not carry the reputation and elitism of the Boston Marathon. However, it would revolutionize distance running, urban planning, as well as merge capitalism with the fringe community of distance runners. Its rise and growth revolved around one man who had a dream that running could unite all people.

Fred Lebow's Influence

While the Boston Marathon was a result of nationalism, civic pride, and individual challenges, the New York Marathon was thought up in a very different atmosphere from the 1900s Boston Marathon. New York in the 1960s was experiencing an all-time low in culture, economics, and governmental trust. After World War II, the suburban boom of the 1950s and early 1960s drew many New Yorkers into suburbs. The rise of the civil rights movement, anti-Vietnam movement, the counter culture, and the feminist and gay movements all contributed to fractured unions as well as causing strife in the streets. In 1965 the Federal government ended its long-standing immigrant quota system with the Immigration Act of 1965. This act opened the doors to immigrants from Asia, Puerto Rico, defectors from Cuba, and Eastern Europe. One Eastern European Jew who had escaped the Nazis in the 1940s and moved to the New York from Romania even earlier. Fishel Lebowitz changed his name to Fred Lebow and became a fashion district counterfeiter and salesman. By the 1960s, he had established himself as a bit of a playboy and a slick businessman, but he only had one true passion. That passion was running. In the movie *Run for Your Life*, Fred's brother notes that no matter who was over at his dinky apartment, no matter how important the day, if Lebow had not completed his run for the day he would drop everything and go out to run.¹⁷ This is not to say that Lebow was a good runner; in fact, he ran like a duck at the miserly speed of a snail. In 1970, he ran a 4:12:09 in an unspecified course in New York, not

¹⁷ *Run For Your Life*, dir. Judd Ehrlich, perf. Bill Rogers, Ted Corbitt, Grete Waitz (Brooklyn: Flatbush Pictures Production with Brooklyn Film Networks, 2008), Netflix.

a great time.¹⁸ But his passion for the sport was infectious. He brought his passion to the only running group in New York, the New York Road Runners.

The New York Road Runners (NYRR) had started in 1957 as a small club of hardcore running fanatics. Over the decade, they averaged a membership of about 100 runners, one of whom was Lebow. With “white flight” into suburbia, many of the hippies and yuppies had moved into the city’s low-income neighborhoods. They had few places to go, because the police began to crack down on squatters, communists, conscientious objectors and other “undesirables.” Bill Rodgers was one of these conscientious objectors. However, just as Lebow rose in the NYRR, Rodgers joined the Boston Athletic Association. George Hirsch, a member of NYRR since 1968 and *Runner’s World Magazine* founder, describes early New York runners as “a very distinctive, dedicated, hardcore athletic subculture.”¹⁹ Lebow channeled the angst of the subculture, and in 1970 he co-founded and planned four-lap race around Central Park, totaling 26.2 miles. With a \$1000 budget and a \$1 entry fee, the race proved difficult to run, as there were only 10 feet of flat ground around the park. Runners had to dodge pimps, muggers, cars, walkers, bicycles and other city dwellers to complete the course. Despite these hurdles and encumbrances, the race proved so popular to those who witnessed it that the race’s low cost and hip vibe drew double the contestants and bystanders in 1971. Of the 127 contestants that raced, only fifty-five men finished; one woman started the race but dropped out due

¹⁸ Runners World, "Fred Lebow," *Runner's World*, accessed November 17, 2015, <http://www.runnersworld.com/tag/fred-lebow>.

¹⁹ Peter Gambaccini, "Past Prologue," *Runner's World*, October 24, 2008, accessed November 17, 2015, <http://www.runnersworld.com/running-times-info/past-prologue>.

to illness. Lebow took over as president of the NYRR in 1972, a position he would hold for twenty-two years.

As the race and popularity of the charismatic Lebow and his NYRR club grew, Lebow dreamed up new ways to get more people involved in distance running. He established the first all-female race called the Mini-10k race. He was able to get Playboy Bunnies to run and promote the competition. While women runners may not have liked the objectification of women in Lebow's tactics, they saw the opportunity that he provided them and jumped into the all-female races he coordinated. The sexual and feminist revolutions were in full swing and those female dreamers of the revolution were now adults, some with children. Others wanted to prove that women were equal in everyday affairs to their male counterparts. Lebow also coordinated races up the Empire State Building and inter-corporate race competitions on Wall Street. These sideline races were just to establish connections with the elite runners of the New York community, and to promote the New York Marathon.

The congruence of fortune and opportunity that arose in 1976 would catapult the chaos of the early marathon days to the national stage. It would establish the New York Marathon as an American tradition. In 1975 President Gerald Ford condemned New York City to bankruptcy, and refused to bail the city out.²⁰ Between garbage strikes, teacher strikes, Watergate and city corruption scandals, many New Yorkers felt apathy for their city. The bicentennial was looked

²⁰ *Run For Your Life*, dir. Judd Ehrlich, perf. Bill Rogers, Ted Corbitt, Grete Waitz (Brooklyn: Flatbush Pictures Production with Brooklyn Film Networks, 2008), Netflix.

at with the same apathy. Lebow actually is said to have almost missed this marketing opportunity. His own staff teamed up with Mayor Lindsey to convince Lebow that the race should change course to celebrate the bicentennial national anniversary. Once Lebow was convinced, he struggled to draw up a route that would pass through all five boroughs of New York. However, Lebow tackled the issue of coordinating the shutting down of streets and bridges with his obsessive passion. Finally, the modern route was drawn up and approved by Mayor Lindsey along with all five borough mayors. They all had the impression that this bicentennial race would be a one-time event. The event proved more massive than they could have hoped.²¹

Riding off his first win at the Boston Marathon, Bill Rodgers was enticed to come to run in the bicentennial race with under-the-table monetary rewards if he won. Rodgers asked that Frank Shorter also be invited. Always on the lookout for growth and the promotion of running, Lebow convinced Shorter to run the race. Lebow then stirred up the media machine that he had connections with from his garment days. The rivalry enticed a national audience from Florida to Boston and Boston to Eugene. People could not believe that these two stars of distance running would run through Queens, Harlem, Brooklyn, and most notorious, the Bronx. Living off people's charity, Lebow was able to get sponsors to donate millions of dollars for the marathon, which the NYRR kept for coordinating and organizing the event. Over 2000 people, men and women, came to participate, but over a million people came out to watch it. Neighbors who had never talked to each other brushed shoulders,

²¹ *Run For Your Life*, dir. Judd Ehrlich, perf. Bill Rodgers, Ted Corbitt, Grete Waitz. Netflix.

made signs, and cheered on every runner. They were shocked and enamored by this subculture of runners. Despite all their perceptions of differences, the five-borough bicentennial marathon was a celebration of each borough as well as a celebration of the national spirit. Mayor Lindsey saw the importance of such a race, and Lebow reveled in it. Both men agreed to organize the event the following year.

The profits from the first year were so staggering that Lebow was able to purchase the Brown Building for \$1 million. He was also able to promise an increase in the under-the-table purse for elite runners like Rodgers and Shorter to come back. The new headquarters were a step up as Lebow had been self-financing many of the races since 1976. He believed that people should have such a good time that he rarely had a place to stay. He would buy his runners and staff food, while he often went hungry.²² This dedication could be seen and felt by his “minions” (as they affectionately recalled in interviews) and the participants. While he lived frugally, on race day he could be quite a tyrant. But his minions would stick with the “Modern Major General” through all his obsessive demands. In 1981, George Vecsey wrote a profile for the *New York Times* highlighting the “Major General’s” obsession and passion for the enjoyment and streamlining of modern running. Vecsey wrote, “He was William the Conqueror catching the south wind into England. He was Hannibal crossing the Alps with a cortege of elephants. He was George Washington crossing the Delaware in a rowboat.”²³ This passionate man with an eye for marketing,

²² *Run For Your Life*, dir. Judd Ehrlich, Netflix.

²³ George Vecsey, “A MODERN MAJOR GENERAL,” *New York Times*, October 26, 1981, 1.

participant care, and manipulation of funds took the subculture to media outlets, businesses, and the American public with staggering results.

Following the example of NYRR founder Ted Corbitt, the New York Marathon accepted all people, women or men, all shades of color, janitors to CEOs; when the gun went off they were all just runners, and it was this common denominator that would bring a young disciple of Prefontaine out from under the shadows of Rodgers and Shorter. When Rodgers won the Boston and New York Marathon, Shorter was on his way out of the sport, but Rodgers was just peaking. Unfortunately, he never came close to the world record at the time (2:08:36). That honor would be for the Cuban-born Alberto Salazar and a new generation of runners.

Alberto Salazar had immigrated with his family to the United States when he was two years old. His father did this in order to escape Castro's communist forces who had changed their principles from democracy to autocracy. The Salazars had moved to the Boston area where Alberto had trained with the Boston Athletics Club. This set the foundation for his incredible drive for speed. His father was demanding of his son, and as a Cuban immigrant there was also some angst in the Salazar house. "Salazar himself said he grew up with a rage he couldn't explain, a father who screamed at him during training runs, 'A Salazar never quits!'"²⁴ This was a twisted thing, which would haunt Alberto. Jose Salazar, Alberto's father, thought that by yelling at his son he would be able to take back his greatest failure, the revolution in

²⁴ Cameron Stracher, *Kings of the Road: How Frank Shorter, Bill Rodgers, and Alberto Salazar Made Running Go Boom* (Boston: Houghton Mifflin Harcourt, 2013), Kindle Edition, pg. #.

Cuba. Nevertheless, Salazar ran with this rage and this sentiment that to quit would be sinful and disappointing to his father.

When Salazar entered the University of Oregon in 1977, he was a state champion in the 5,000- and 10,000-meter runs back in New England. He watched as Bill Rodgers and Frank Shorter revolutionized running both by rocketing to stardom in the Olympics and on the pavements of two of the United States biggest cities. But unlike others who looked at them with awe, Salazar viewed them as a challenge. He set out to set world records in the 5,000 and 10,000 meter as well as the marathon distance. He did so well that he caught the attention of Fred Lebow. After the US team boycotted the Olympics in 1980, Lebow suggested to Salazar to come and run at his big marathon. This was good business for Lebow as it star-studded his roster for money from promoters. When Salazar agreed, Lebow was ecstatic and promised him more money under the table than he had paid Rodgers or Shorter.

While Salazar was known in the collegiate and track world, he was an unknown to the general public. Bill Rodgers and Shorter were “have-beens,” powerhouses of running but ultimately unexciting when they ran. When Salazar stepped to the New York Marathon line in his Oregon yellow and green jersey, he piqued the media’s attention. His dark demeanor and refusal to deal with press added to his mystique. In a cold and confident manner, Salazar predicted that he would run 2:10:00 on his debut marathon. No one took him seriously until mile 21 when he passed the water stations to gain an edge.²⁵ This psychological tactic had

²⁵ Neil Amdur, "The Toast of the Town," *New York Times* (New York, N.Y), October 26, 1980, http://www.nytimes.com/packages/html/sports/year_in_sports/10.26.html.

worked several years earlier in another race where Salazar was competing against Bill Rodgers. In that race, the Falmouth Footrace, Salazar finished second to Rodgers but he had pushed himself to near death. His temperature spiked to 103 and he was given last rites.²⁶ In 1980, he was prepared for the near exhaustion to forgo fluids at such a pivotal portion of the race. His tactic worked, and he ended up running the fastest debut marathon. He finished first with a time of 2:09:41. This time stamp broke Rodgers's course record. The competition also proved to be growing as 14,011 participants from 44 nations ran through the streets of New York City's five boroughs. This news was not the only thing to catch the country's attention though. Two women had grabbed the attention of media outlets that year, Rosie Ruiz and Greta Waitz.

Women had been accepted in the New York Marathon from the beginning. Lebow, ever the businessman and promoter, had used female runners to promote his races by accepting any woman who wanted to run, but also by exploiting beautiful women to increase participation and spectatorship. As with the Boston Marathon, the New York Marathon opened its ranks to women in the 1970s. The New York gender integration was done by egalitarian, if not chauvinistic, means. Lebow promoted his first all women's race, the New York Mini, in 1972. It was promoted by a women's shaving gel that was named *CrazyLegs*. Lebow and his associate Nina Kuscik, along with Boston's ambitious Katherine Switzer, agreed to call the first all women's event the *Crazylegs Mini-Marathon*. While it was only 6 miles long, it was a step toward full participation in the men's running world.

²⁶ Amdur, "The Toast of the Town," *New York Times* (New York, N.Y), October 26, 1980 Stracher, *Kings of the Road* Kindle Edition.

Seventy-eight women ran that first race; six of them were Playboy Bunnies Lebow had hired for promotional as well as equality reasons. If the bunnies could do it, any woman could.

By 1976 there was no question that women would be participating in the Five Boroughs run. Despite the surprise of the public, more women participated in the New York Marathon than any other marathon. The following year, Lebow knew he needed a top contender within the women's running world. His answer was the great Greta Waitz. Greta Waitz was a Norwegian-born runner who had proven herself a contender in the European track-and-field events. She had earned a place in the 1972 Summer Olympics in Munich. Lebow kept an eye on her, and when she thought her career in track-and-field was over, he persuaded her to come run the much longer distance of the 1978 New York Marathon. To everyone's surprise, she won. She broke the women's world record of 2:34:47 by running the New York Marathon in 2:32:30. This was an incredible gain for women's running, as the Olympics would not open the event to women until 1984. Waitz would develop a close friendship with Lebow as well as win the women's section of New York Marathon nine times throughout the 1980s. Her story of success, which was nurtured by Lebow, would continue to inspire women to participate and push the limits of women in distance running. With the rise of fame and monetary compensation for winning marathons, cheaters began to pop up. One rose to notoriety and changed the nature of urban marathons. Her name was Rosie Ruiz.

Rosie decided to run the New York Marathon in an effort to qualify for the auspicious Boston Marathon. In 1979, she signed up for the New York Marathon.

When she crossed the finish line 11th in the women's division with a time of 2:56:29, no one blinked an eye, except Lebow.²⁷ Unfortunately her surprising performance could not be questioned until six months later when she won the women's division of the Boston Marathon in 2:31:56! At first no one thought this strange, but slowly newsmen, statisticians, and the BAA directors began to voice silent concerns over her "win". Unlike Lebow's private concerns voiced at the previous New York Marathon, there arose more evidence to disprove Ruiz's success at the Boston Marathon finish line. Camera footage, other female running leaders as well as the eyewitness account of Harvardite John Faulkner disproved her astounding feat of endurance. Faulkner said that he saw the yellow-shirted woman burst out of the crowds after Bill Rodgers had run by Commonwealth Ave, less than a half mile from the end of the race. He and his buddies mistook her for an overzealous fan of Rodgers, not a real contender. With that eye witness account reported to *the Boston Globe*, more and more people came forward to unveil the mysterious circumstances of Ruiz's win over some of the world's most elite runners. Her appearance at the finish line also lacked sweat or fatigue, which sparked the suspicions of Katherine Switzer.²⁸ Eventually it was discovered that for both the New York and Boston Marathons, Ruiz had taken public transit to the end of the races and then jumped in

²⁷ *Run For Your Life*, dir. Judd Ehrlich, perf. Bill Rogers, Ted Corbitt, Grete Waitz (Brooklyn: Flatbush Pictures Production with Brooklyn Film Networks, 2008), Netflix.

²⁸ Steve Wulf, "BOSTON MARATHON: A LONG RUNNING SHOW," *Time*, April 15, 1996, accessed December 18, 2015, Jennifer Latson, "How One Woman Won a Marathon and Barely Broke a Sweat," *Time*, April 21, 2015, accessed December 18, 2015, <http://time.com/3822577/rosie-ruiz-history/>.<http://content.time.com/time/subscriber/article/0,33009,984407-2,00.html>.

when she thought the time was ripe. A few days after this discovery, she was stripped of her wins in both marathons and the true runners were given their due rewards.²⁹

This controversy deeply disturbed the marathon world and Lebow. He became so infuriated that someone would try to cheat in the world of distance running that he and the NYRR began to take more precautions to prevent subterfuge. They enlisted the help of city planners, police, and volunteers to keep track of runners as well as race routes. They began the use of metal barricades, videotaping, and a separate start time for the elite runners who were now publicly running for monetary prizes and endorsements. The stakes became higher as other cities began to get involved in the marathon business. Chicago began their own marathon and tried to draw the big names from New York and Boston by offering bigger and bigger prizes. Lebow and the Chicago race director were secretly friends, but publicly berated each other to increase endorsements, spectatorship, and participation. This rivalry of cities began after the Ruiz's debacle.

Lebow never lost his love for the sport nor his ability to rally and entertain those that met his rigorous requirements. He continued to promote and direct the New York Marathon until his death in 1994 due to cancer.³⁰ The year before his death, he ran his first New York Marathon with his friend, Greta Waitz. The gift he gave to the city of New York through his love of running, and his indomitable spirit

²⁹ Admur, "Who Is Rosie Ruiz?," *New York Times*, April 21, 1980, http://www.nytimes.com/packages/html/sports/year_in_sports/04.21.html.

³⁰ Michael Janofsky, "Fred Lebow Is Dead at 62; Founded New York Marathon," *The New York Times*, October 09, 1994, accessed December 18, 2015, <http://www.nytimes.com/1994/10/10/obituaries/fred-lebow-is-dead-at-62-founded-new-york-marathon.html>.

to make running fun and accessible for all people, continues to this day. Since his death, the City of New York has worked closely with the NYRR to continue to build the marathon that rejuvenated their city. It is now the biggest marathon in the world with over 100,000 applicants and 51,000 participants as of 2015.

In 2012, when Hurricane Sandy struck the coast of New York, the tempest caused the city to come together again. While the marathon was canceled, many of the participants were already in their hotels or in the city. Their witness to the destructive power helped to bring relief, shelter, and personalized stories to communities throughout the country in an effort to help those who had lost everything on Staten Island. Lebow understood that to create something big you have to love it, endorse it, and foster it. He stepped up to invigorate a city and gave the world a model for urban distance running that can still be seen in marathons from London to Los Angeles. However, the swell in participation pushed the diehards and the maniacs to go further, faster, and into more rugged landscapes. It would be in the 2000s that a new movement began to take shape: the age of the Ultra Marathon was about to take off.

The Pull of Ultra Marathons:

Western States Endurance Race

Humanity is incredible. If there is a challenge, there is someone, somewhere who wants to partake and test their mettle. However, as with any challenge it must first be dreamed up. In 1955, a man by the name of Wendell T. Robie initiated a 100-mile horse race from Tahoe City to Auburn, California. The route passed over and through the treacherous northern Sierra Nevada range. He and five companions

endeavored to prove that horses would, and could, still travel 100 miles in a day. In 1955, many people were buying cars or taking trains or buses. These new modes of transportation led to the precipitous decline in horses as a means of transportation. To Robie's surprise, spectators met them along the way to see if such a feat could be accomplished. The event took hold and became a staple sporting event of Northern California. Robie founded the Western States Trail Foundation, WSTF, and the event became known by its 1st place award, the Tevis Cup. The Tevis Cup was named after a capitalist friend of Robie, Lloyd Tevis. Anyone who finished with a steed that was "fit to continue" within 24 hours was awarded a silver belt buckle. There was no gender disqualification; however, more men than women took part. The first woman to win the horse race was Drucilla Barner. She would be involved in the WSTF in 1973 when a young man's horse went lame at mile 30; instead of quitting, he decided to run the rest of the way.

Gordy Ainsleigh was a young man in 1971 when he decided to ride in the Tevis Cup competition. He rode in both 1971 and 1972, doing decently well and developing a friendship with Robie. He cared very deeply for the horses and was happy with the management of the race. When his new horse turned up lame in the 1973 race, he was already an avid runner. His evangelical roots, however, told him that if he started a thing he must finish it because the end of the world was always near. When he crossed the finish line in 1973, Robie and a colleague asked Ainsleigh to come back the following year to see how he fared against the horses going the whole route. He said he would think about it, but thought that he would have a healthy horse by the following August.

August in the Sierra Nevada hills was, and continues to be, sweltering. Sometimes the temperature reached 111 degrees Fahrenheit. By the beginning of July 1974, Ainsleigh had not been able to find a healthy enough steed to endure such heat, nor to scale the trails. He was a longhaired, long-bearded mountain man who had won the fastest marathon for a person weighing over 200 pounds (it was called the Clydesdale Division). So with the request from Robie and Barner the previous year, he took them up on their offer to run the whole race. He had already run 70 miles of it. The only thing that worried him was the 24-hour cut-off time.

Writing in 1998 about his experience in that August footrace, he unceremoniously walked to the starting line a couple minutes before 5 A.M. The other contestants were prepping their horses when Ainsleigh said, "Well, I guess I'll head out now," to which the timers entered his name and started their clocks for him saying, "Good luck, Gordy."³¹ By mile 40 he was overheated and exhausted, but he decided to put one foot in front of the other. Just before the veterinary checkpoint at a bluff called Devil's Thumb, Ainsleigh was about to cross a wooden bridge over the American River when he noticed one of his fellow contestant's horses had gone lame while crossing the river. A few other contestants were trying to help the horse out of the water. He backtracked to help. They were able to get the horse out of the water and into the 108-degree weather. The image of the dying horse haunted his steps until the Devil's Thumb checkpoint. He decided that before he ended up like that horse, he would quit. When he shuffled into the checkpoint, two contestants who were friends of Ainsleigh were there to persuade him to continue. He calls

³¹ Inventing 100-Mile Trail Racing By Gordy Ainsleigh

these people his "Angels." They gave him salt tablets, massages, encouragement, a little food and a strengthened will. He claims that because of their generosity, empathy, and care the rest of the route was a "walk in the park." He finished in 23 hours and 42 minutes, earning a silver belt buckle. What he did not know was that this event shocked so many people that he feat would inspire two other people to run the course in 1975 and in 1976, initiating the ultra distance trail runs in America.³²

In 1975 a man by the name of Ron Kelly attempted to run the course only to fall out at mile 96. The following year, Ainsleigh's friend, Ken "Cowman" Shirk, attempted the feat. He completed the course in 24 hours and 30 minutes, not buckle worthy but a clear indication that humans could compete on such a level. Robie approached Ainsleigh and asked what he thought about making the footrace a yearly event.³³ Ainsleigh happily agreed. He would head the newly created subdivision of the WSTF, which became known as the Western States Endurance Run (WSER). In 1977, fourteen men set out on the course; only three finished. The race would continue the Buckle Ceremony, but the first place winner would earn a bronze Cougar, a tradition that continues. Following in the footsteps of Robie, Ashleigh would set up aid stations along the course that would offer help and support. The course in the early years was treacherous, because the temperatures would become horrendously high for runners. This changed in 1978 when the race

³² WSERF Staff. "Year By Year." *Western States Endurance Run*. N.p., 08 Aug. 2012. Web. 28 Feb. 2016

³³ "SalomonTrailRunning," Salomon Running to YouTube Videos, "The Original," accessed March 01, 2016, <https://www.youtube.com/user/SalomonTrailRunning/videos>.

directors decided to shift the event to June for cooler weather (between 95 and 105 degrees). The course was also set to start in Squaw Valley near Tahoe City. The course has a total ascending gradient of 15,540 feet, and descends a total of 22,970 feet throughout the 100 miles. As more and more runners came to run the course in the 1980s, the two races were separated to prevent damage to humans and horses that were competing for trail space. The routes aimed to follow the trails traveled by Native American people (Paiute, Shoshone, and Washoe) who had lived in these mountains thousands of years before. They run along the passes and trails of the gold miners and prospectors of the California Gold Rush, and even skirts Donner Pass, where that unfortunate party endured great loss. With the danger of the course in the minds of the first directorship, increased local volunteering and spectating allowed the newly formed running branch to stock and orchestrate twenty-one aid stations along with six medical checkpoints.

The course would gain local attention over the next few years as the New York and Boston Marathons were gaining fame on the East Coast. In 1978 there were 63 starters and 30 finishers. One of those finishers was the first woman to run the course, Pat Smythe, who finished in 29 hours 24 minutes (29:24). That year there was an extension for finishing but not for earning a buckle. The first woman to earn a buckle was Skip Swannack in 1979 when the race went global by allowing three foreign competitors to participate. Due to the narrowness of the trail, a lottery was established to help prevent over-crowding on the dirt trail. Swannack's achievement would open the door for more and more women in ultra distances. One

nurse from the San Francisco Bay Area would startle the world when she entered the ultra scene in 1985. Her name was Ann Trason.

Ann Trason was one of the toughest runners in the late 1980s and 1990s, especially in the Western Ultra distance circuits. Her mousey appearance hid a determination few have achieved. She has won the WTER women's division 14 times since 1989 and set a course (and world) record that lasted for 18 years (until 2012). That record was 17:37:51. She began her career in 1985 when she won the American River 50k, but her goal was much bigger. She was a nurse and college science teacher in the Bay Area when she started running to and from work.³⁴ Then she started running even before running to work and after running home. Her energy knew no bounds. When she heard about Western States, she entered that same year. She received a "Did Not Finish" (DNF) the first two years due to injury and dehydration. But in 1989 she shocked the world, winning the women's division in one of the top ten slots. The amazing part is that she kept coming back and winning throughout the 1990s and early 2000s! While there was no single comparable male counterpart to her victorious career, two males that changed the perspective of the race and the community were Tim Twietmeyer and Scott Jurek,

Twietmeyer was a local favorite all throughout the 1990s. He surpassed the 1980s trail champion, Jim King. King had won three years in a row in the 1980s, but it was Twietmeyer who would win 5 times over his 25-year career. While Trason was shocking everyone by her repetitious victories and ever-quicker course times, Twietmeyer was winning and pushing the men's records. His fame, and the race's

³⁴ Christopher McDougall, *Born to Run: A Hidden Tribe, Superathletes, and the Greatest Race the World Has Never Seen* (New York: Alfred A. Knopf, 2009).

toughness, attracted a young ex-Special Forces soldier, Jim Morton, to train for the race. In 1997, he stepped to the finish line and blew away the course record, bringing the time to beat to 15:40:41. Morton opened the door to an overall winner that was from out of state.³⁵ Due to an injury, the following year, Morton was unable to defend his title and local folklore took up the idea that only Californians could string wins year after year, the way Trason and Twietmeyer could. That folklore would be challenged and shattered by Minnesotan Scott Jurek, who was and continues to be vegan.

Arguably one of the best ultramarathon runners in the Ultra Community, Jurek has won the Western States seven times in a row, between 1999 and 2005. He remains the only male to do so. He was able to set a course record that was only surpassed in 2010. Jurek can be considered one of the first “Young Guns” of the sport because after he began winning and getting national attention, other young runners started to infiltrate the ultra-community, setting faster and faster times. In his memoir *Eat & Run*, Jurek writes about how his first victory at Western States was akin to being bullied on a school playground. He ushered in an extroverted passion that was unique to his introverted and quiet demeanor. A few days before the race, he and his pacer camped out on the trail, and Jurek shaved his head. On race day he came to the finish line, the vegan out-of-stater. Adding to his strangeness, when the gun fired, he took off from the line with a blood-curdling howl that probably unnerved a lot of the competition; or the howl was seen as a hollow attempt to scare the competition by a green runner. Nonetheless, his determination to win and his

³⁵ Scott Jurek and Steve Friedman, *Eat & Run: My Unlikely Journey to Ultramarathon Greatness* (Boston: Houghton Mifflin Harcourt, 2012).

incredibly scientific training (following the example of Morton) allowed him to maintain first place throughout the race and win. He writes, “I led the race from the start to finish...not a record...but 27 minutes faster than Twietmeyer. When I neared the end, I rolled across the finish line in honor of Dust Ball (his best friend)...and yelled, ‘Minnesota!’”³⁶ In his exhaustion, he grabbed his sleeping bag, wrapped himself in it on the finish line and greeted every runner that made it to the line. “Even though I set up (camp) out of economic necessity [he did not have the money to rent lodgings], I stayed...because of something deeper. It gave me a chance to acknowledge that every single person who completed the race had endured.”³⁷ He ushered in a new kind of running from the hard knocks of the 1970s to the 1990s. And unlike Morton, he was here to stay.

Jurek’s success culminated in 2004 when he set a course record and a 100-mile trail record with a time of 15:36:27. This was four minutes faster than Morton’s record and was a crowning achievement for Jurek. His vegan ethic displayed that the fuel one used in everyday life, i.e. food, mattered even to runners. The theory at the time was that runners who ran such long distances could eat just about anything from pizza to candy bars year-round, and during races the body would just absorb them. Jurek would demonstrate and usher in what other sports had already been testing out: the mixture of scientific nutrition to meet a specific need in sports. (This nutritional revolution will be taken up in a later section of the paper). For now, suffice it to say that Jurek bridged the gap from old school, or hard-knock running, to

³⁶ Scott Jurek and Steve Friedman, *Eat & Run: My Unlikely Journey to Ultramarathon Greatness* (Boston: Houghton Mifflin Harcourt, 2012), 100.

³⁷ Jurek and Friedman, *Eat & Run*, 100

a modern approach to training. He did this with poise and respect. His genuineness, success, and respectfulness would capture the imagination of up-and-coming runners like Jen Shelton, Anton Kurpitika, Tim Olson, and Ellie Greenwood who all point to Jurek as an inspiration. Jurek was also a central character in the very popular 2010 book by Christopher McDougall titled *Born to Run*.

After Jurek's seventh win in 2005, he retired from the WSER competition but continued as an inspiration for the race, as well as a pacer for friends and protégés. His record would stand until Geoff Roads won in 2010 with a time of 15:07:04. A few years later Timothy Olson of Ashland, Oregon, shattered Roads' record in 2012 with a time of 14:46:44. That same year, Ellie Greenwood of Great Britain finally overtook Trason's record of 17:37:51 by 50 minutes coming in at 16:47:19. The young guns were proving that Jurek was right. While not all of them followed a vegan diet, many of them turned to the conscientious eating habits that Jurek utilized.

Over the years the Western States Endurance has become the primary endurance race in North America. It grew from one man's refusal to quit a horse race to around 400 annual runners. While still a small race in comparison to the marathons in New York or Boston, the WSER draws from a group as dedicated and unique as the progenitors of the urban marathon. With the rise of the "Young Gun" runners, and the popularity of *Born to Run*, the race and sport have blossomed. The newest trend, thanks to smaller and smaller cameras, has been to make videos as well as homemade Go-Pro videos that catalog the runner's experiences. The biggest issue in standardizing these ultra-distance races is that the terrain varies so

drastically both along a 100-mile trail course as well as by region, making the newer courses harder to compare than city marathons or track competitions. Each race is unique. This is a draw to the ultra runners because unlike on a track or pavement, one cannot be considered great just by running one course. A 15-hour run in the Western States might be a 14-hour race on one course, or an 18-hour race on another. The course matters in this sport. While Western States has all terrains from mountain passes down to 100+ degree valleys, here is one race that stands above all the other in terms of elevation and sheer toughness.

Chapter 2

Medical, Nutritional, and Biomechanical Developments

Endurance Running (ER) is the generic name given to any human running event that meets or exceeds the distance of a traditional marathon--26.2 miles or 42 kilometer (km). The races which fall under this category are Trail or Urban marathons, the 50 km marathon, the 100 km marathon, and the 100-mile marathon. These running events are also put into a series, sometimes lasting for a few days or an interval of days. In the three races that have been studied, there had been great leaps in physical performance. How were people able to push toward a sub-two-hour urban marathon, or run the Western States Endurance run in a little over 14 hours? The answer comes in part from studies about the biomechanics of ER, a growing scientific inquiry into nutritional needs for athletes, how age affects these events, and an understanding of internal injuries. While understanding psychological injuries has come late to the sporting world, especially for runners, there is a growing consensus that the mind plays a major role in pushing past physiological barriers. These factors have helped establish knowledge of running on an unprecedented level and allowed for new researchers to fill in gray areas in terms of limits of mind and body when undergoing such rigorous activities. The need for medical personnel to have knowledge about these events drives the importance of studies about ultra-marathon racing, along with the glory of competing. The recent outstanding times and recovery rates can be attributed to the growth in knowledge of biomechanics, nutrition, and better understanding of injuries.

Ultra-running is shaking off its adolescent period of being represented by eccentrics running in the backwoods or badlands. New attention is being brought to these running events through books like Christopher McDougall's *Born to Run*³⁸, Scott Jurek's *Eat & Run*³⁹, Bernd Heinrich's *Why We Run*⁴⁰, and Tim Noakes's *Lore of Running*.⁴¹ These events grow in acceptance and fascination. It is important to understand how human bodies react and endure such feats. While popular autobiographical books are becoming more plentiful, the academic literature is still in its infancy. One of the exceptions is Dr. Timothy Noakes's extensive study of running, *The Lore of Running*.

Medical knowledge has grown because of the pragmatic needs that have developed along courses. Much of the physiological knowledge that was unknown to Gordy and Lebow has been a result of medical personnel figuring out methods to deal with uncommon ailments. Medics have had to adapt to medical emergencies that most people in the United States do not endure. One of those issues is a condition known as hyponatremia and rhabdomyolysis. Exercise-induced hyponatremia occurs when blood serum sodium drops below 135 millamoles per liter, resulting in swollen extremities, nausea, and breathlessness due to plasma in the pulmonary system. Rhabdomyolysis occurs when micro-tears in muscle tissue becomes so bad that muscle toxins are released into the blood. This toxin,

³⁸ Christopher McDougall, *Born to Run: A Hidden Tribe, Superathletes, and the Greatest Race the World Has Never Seen* (New York: Alfred A. Knopf, 2009).

³⁹ Scott Jurek and Steve Friedman, *Eat & Run: My Unlikely Journey to Ultramarathon Greatness* (Boston: Houghton Mifflin Harcourt, 2012).

⁴⁰ Bernd Heinrich, *Why We Run: A Natural History* (New York: Ecco, 2002).

⁴¹ Timothy Noakes, *Lore of Running* (Champaign, IL: Human Kinetics, 2003).

myoglobin, can shut down the kidneys⁴². Cuthill, Ellis, and Inglis discuss the possibility of undiagnosed hypernatremia and rhabdomyolysis. These two blood serum imbalances, water retention and blood toxicity, affect the kidneys and can cause death if left unchecked. This is due to their similarity to other common running side effects such as extremity bloating and dark urine.⁴³ Another researcher was then able to propose ideas of how to prevent such neuromuscular fatigue. Guillaume Millet's flush model stresses the need of nutrition. Millet writes that constant regulation of nutrition through frequent way stations as well as a clear understanding of oneself are ways to prevent such injuries. This is an idea that Ainsleigh, Lebow, and Heinrich all came to understand through trial and error.

In his benchmark autobiographical book *Why We Run*, biologist Bernd Heinrich recounts the importance of experimenting with nutrition before his ultramarathon win in 1981. Heinrich understood that, "in running distance, the big limitation was indeed fuel in the tank."⁴⁴ As one of the pioneers of nutrition for a specific need, Heinrich experimented with many methods, even putting canned beer every five miles to see if, at exhaustion, the body would be able to extrapolate the needed carbs. For ten miles it worked, until the alcohol locked up his gut and he had to give up his 30-mile training day. While this somewhat humorous setback was unfortunate, Heinrich's deep sense of self and dedication to discovering the perfect amount of carbs to ingest while running did eventually lead him to victory. His

⁴² J. Cuthill, C. Ellis, and A. Inglis, "Hazards of Ultra-marathon Running in the Scottish Highlands: Exercise-associated Hyponatremia," *Emergency Medical Journal*, 2009, 906, doi:10.1136/emj.2008.065524.

⁴³ Cuthill, Ellis, and Inglis, "Hazards of Ultra-marathon Running," *Emergency Medical Journal*, 906.

⁴⁴ Bernd Heinrich, *Why We Run: A Natural History* (New York: Ecco, 2002), 229.

experimentation is a case in point to preventing injury through nutrition and self-actualization. The workings of internal organs such as kidneys are key in keeping the blood clean of toxins along with appropriate saline levels, but nothing compares to the bellows and pumping stations of the body, the heart and lungs.

The heart and lungs are the powerhouses of running, providing molecules of nutrition and allowing the exchange of gasses necessary for relentless forward motion. Daley, Bramble, and Carrier demonstrated that humans have the ability to take multiple breaths per stride and are able to extract more CO₂ out of the cells, slowing down lactic acid build up.⁴⁵ Most people do not think of bipedal motion as an evolutionary advantage, and point out a number of leg and lower back issues humans succumb to in modern times. However, Bramble and Lieberman were one of the first teams to look into the mechanics of running versus walking.⁴⁶ Daley, Bramble and Carrier demonstrated that bipedalism allows for greater respiration.⁴⁷ The foot strike of the bipedal human allows for a greater ratio of breathing per stride (greater than one breath per one stride), allowing for thermoregulation and consistent oxygenation of energetic leg muscles such as the Achilles, quadriceps, and gluteus maximus.⁴⁸ Further, a standing torso elongates lungs allowing for greater air volume. This increase in air capacity coupled with sweat glands unhindered by excessive body hair like other primates allows for the heart to shed heat efficiently.

⁴⁵ Monica A. Daley, Dennis M. Bramble, and David R. Carrier, "Impact Loading and Locomotor-Respiratory Coordination Significantly Influence Breathing Dynamics in Running Humans," *PLoS ONE* 8, no. 8 (2013): 7-8, doi:10.1371/journal.pone.0070752.

⁴⁶ Dennis M. Bramble and Daniel E. Lieberman, "Endurance Running and the Evolution of Homo," *Nature* 432, no. 7015 (2004): 345, doi:10.1038/nature03052.

⁴⁷ Daley, Bramble, & Carrier, "Impact Loading...", *PLoS ONE*, 1

⁴⁸ *Ibid.*, 1-2.

This keeps human core temperature lower for longer than almost any other animal.⁴⁹

This type of research requires multiple disciplines including anthropology, biology, and physiology. Early running humans, as well as modern barefoot cultures, had mid-foot or forefoot foot strikes. These foot strikes correspond to an energy efficient stride at speed. Many modern runners who wear shoes, utilize the heel strike. This foot strike grinds joints together rather than allowing the suspension bridge coils of muscles and ligaments running up the leg to disperse the energy in a foot strike evenly amongst the coils taking stress off joints.⁵⁰ The cost of transport for humans is decreased thanks to the sets of coiling muscles running from the bottom of the foot up to the nuchal ligament, which stabilizes the neck for running.⁵¹ These sets of muscles allow humans to maintain between 2.3 m/s and 6.5 m/s for hours on end, something other running animals cannot maintain due to over heating.⁵² These findings suggest that while humans are not the fastest land animals, humans have aptitude for running great distances that other animals are not able to perform. This is because of our bipedal foot strikes, specialized musculature, thermoregulation through upright lung volume and sweat glands, and finally through gait. Ultra-running is a rediscovery of human fundamentals. But the stress on the heart is something that many ER runners need to take into consideration if they want to compete at such distances.

⁴⁹ Dennis M. Bramble and Daniel E. Lieberman, "Endurance Running and the Evolution of Homo," *Nature* 432, no. 7015 (2004): 345, doi:10.1038/nature03052.

⁵⁰ Bramble & Lieberman, "Endurance Running", *Nature*, 345.

⁵¹ *Ibid.*, 350.

⁵² Bramble & Lieberman, "Endurance Running", *Nature*, 345. Heinrich, *Why We Run*, 119-132

The heart is central to any athletic endeavor, especially endurance running. Therefore, studies have been conducted to look into heart issues, the effect of stress on the heart, as well as ways to strengthen heart tissue for prolonged high intensity usage. Two studies looked into a common heart issue among athletes from all sporting realms. George et al. as well as Wilson et al. demonstrated the cardiac benefits of running in their studies of left ventricular cardiomyopathy (LVC). The findings of these studies point to a potential method of addressing the issue.⁵³ By training with an ER regimen, the heart was shown to compensate and adapt in ways that sprinting was unable to help.⁵⁴ This shows that distance running is not only healthy for humans in general, but even for athletes with left ventricle cardiomyopathy.

Arterial stiffness is another possible issue within the running world, especially as age increases. The stress of the ER heart is more than the average person's. Radtke et al. discuss how despite the stress on the heart, arterial stiffness is relatively low in the running community, and thus not as big of a problem as once suspected.⁵⁵ By understanding these ailments and endurance running's helpfulness for overcoming them, Radtke et al. showed that endurance running with sprinting

⁵³ Mathew G. Wilson et al., "Hypertrophic Cardiomyopathy and Ultra-endurance Running - Two Incompatible Entities?," *Journal of Cardiovascular Magnetic Resonance J Cardiovasc Magn Reson* 13, no. 1 (2011): 1, doi:10.1186/1532-429x-13-77.

⁵⁴ K. George et al., "Left Ventricular Wall Segment Motion after Ultra-endurance Exercise in Humans Assessed by Myocardial Speckle Tracking," *European Journal of Echocardiography* 10, no. 2 (2008): 241, doi:10.1093/ejechocard/jen207.

⁵⁵ Thomas Radtke et al., "Ultra-endurance Sports Have No Negative Impact on Indices of Arterial Stiffness," *European Journal of Applied Physiology Eur J Appl Physiol* 114, no. 1 (2013): 49, doi:10.1007/s00421-013-2753-1.

helps to keep the heart healthy. Another area of research is in the prevention of foot and leg injuries.

By understanding the body better, trainers and athletes have been able to make better choices in shoes and exercise regimens. Bramble and Lieberman proposed a theory of evolution based on biomechanical data demonstrating humanity's aptitude for endurance running through bipedal strides.⁵⁶ Their proposed Running Man Evolutionary Theory was taken a step further by Lieberman et al.'s study on foot strikes. The amount of energy retained through the human foot structure is precisely honed for running in forward, easy gaits such as those used in endurance running.⁵⁷ Shoes and foot strikes, along with further knowledge about the biomechanics of the body, may be able to prevent modern running ailments such as muscle tears as a result of age-related injuries. This theory and research has offered alternatives to the once popular idea that the more cushion on a shoe the more protection it provides the foot. Hienrich, Rodgers, and Shorter all ran in flats that barely offered any cushion with some of the fastest time and minimal injuries. Young Gun runners like Jurek, Rhodes, Kirpitcka, Shelton and others all admit that running on trails requires more cushion but that training in minimal shoes helps to strengthen muscles that prevent injuries. For the basis of research most trainers, R&D labs and athletes turned to one source as a foundation for these studies: Dr. Timothy Noakes's *Lore of Running*.

⁵⁶ Bramble & Lieberman, "Endurance Running," *Nature*, 350-351

⁵⁷ Daniel E. Lieberman et al., "Foot Strike Patterns and Collision Forces in Habitually Barefoot versus Shod Runners," *Nature* 463, no. 7280 (2010):531, doi:10.1038/nature08723.

Noakes has been a professor at the University of Capetown as the Discovery Health Professor of Exercise and Sports Medicine since 1980. For the first five years of his professorship, he conducted numerous case studies with runners from every level of distance running, from the 10 kilometer to the ultra-distances. The book is now in its 4th edition since 1985 and continues to grow in length, depth, and popularity. His research into musculoskeletal structures of runners and the importance of nutrition are both informative. The book is the perfect place for any runner to get most of the information on training, nutrition, as well as styles of running. His work is one of the only studies that have looked into the psychology of running. He states how important the mental factor is in running distance. He writes, "Despite all I have written about preparing the body for running, I suspect that the preparation of the mind is the more important factor in determining running success."⁵⁸ He goes on to give a number of top runners' mental approaches from Roger Bannister, to Shorter, as well as some of the world's best ultra runners. He compiles their mental training methods and looks for trends. One of the outstanding theories that he proposes is seeking "optimum arousal level," which is to attain a controlled state of awareness between indifference to the event taking place and overwhelming anxiety or euphoria.⁵⁹ This is to be achieved by training the "central governor" to acceptance in states of anxiety as well as states of detachment. It is not a structure within the brain; rather the theory is actually more tied up with the immaterial consciousness that resides in human brains. This is a kind of mind that operates the brain in the background, similar to sub-consciousness but more

⁵⁸ Timothy Noakes, *Lore of Running* (Champaign, IL: Human Kinetics, 2003), 514.

⁵⁹ Noakes, *Lore of Running*, 535-540

self-aware. This conjecture seems to have some credence in practical terms. In Jurek's account of how he trained as a young runner for the 2006 WSER, Jurek notes, "the Central governor theory is controversial but it squares with my experience of the sport...I have always run better than I should have given my physical gifts, and my marathon time. I have always said that the ultra is a mental game."⁶⁰ In 2006, the runner Morrison was training for his first Western States race. After nearly reaching the end, he collapsed 300 feet from the Western States finish line, while currently running in first place. Jurek helped Brian Morrison to the finish line only to have Morrison be disqualified for being helped. This made Jurek question why he had never collapsed even though he had succumbed to the same hyponatremia in other races. Jurek's hypothesis went like this, "I don't believe it was necessarily an accident that Brian (Morrison) stopped so dramatically right when he did. I think it's possible that Brian's central governor, under tremendous physiological stress, caught sight of the finish line, believed the race was over and pulled the plug...when the captain jumps ship, you can't help but sink."⁶¹ Jurek had never had his captain jump ship or his central governor pull the plug despite great physiological distress over his career. This squares with Noakes's ideas that the psychological preparation for a sport has three elements, a stimulus, a belief system, and a response. Runners who complete races have a good balance of these three, while runners who do not finish have an imbalance and should attempt to control the imbalance through mental training alongside physical training. Noakes's incredible contribution to endurance running has become a starting point for further research. While his

⁶⁰ Jurek, *Eat & Run*, 161

⁶¹ *Ibid.*, 161

musculoskeletal, nutritional, and training case studies are extensive, his psychological research resides in one chapter. Noakes notes, "I believe that the mind remains the most important frontier for exercise science and medicine in this new millennium."⁶² This understanding of mental fortitude and mental tricks the mind can play on the body has helped to increase age and gender participation amongst the running community.

Noakes, Jurek, and Hienrich all stress the importance of nutrition. Nutritional science has become a multimillion-dollar industry for fat burning, getting healthy, and understanding health issues within the United States as well as worldwide. Proper nutrition allows for prevention of major injuries or the speedy recovery of unavoidable injuries. There are even trends within the marathon and ultra world to focus on a particular type of diet by elite runners. In the ultra circuit there is the vegan Scott Jurek, the fruitarian Michael Arnestien, and paleo-runner Timothy Olson who won and set the Western States course record in 2012. Each claims that their diet is the best for a runner, but Noakes notes that nutrition depends upon the specific body, and that once one understands one's biochemistry, incorporating the proper diet is advantageous to running. The most important thing, according to Noakes and Heinrch, both of whom are doctors, is to get a proper amount of protein, carbs, calcium, potassium, and sodium. If a good blood balance is maintained, then distances unthought-of become more attainable at faster rates. As nutrition knowledge has increased for those who have access to these studies and books, so has the ability to stay in shape been extended.

⁶² Noakes, *Lore of Running*, 561.

Knechtle, Rüst, Rosemann and Lepers demonstrated that the median age for running ultras is around 39 for both genders, which is older than other running events and most other sports except golf, horseshoes, and bocci ball.⁶³ A few years earlier Hoffmann and Weglin concluded that between 1986 and 2007 the average age for the top finishers of the Western States Endurance Run had increased for both genders from early 30s to the later 30s and early 40s.⁶⁴ This increase in age could be attributed to repetitive annual entries.⁶⁵ As participants continue to come back each year another year older, the pool of participants also increases in knowledge of the courses.⁶⁶ The recurring participants thus adapt training to rigors of past attempts. While age in these ER races has increased with time, Knechtle et al. pointed out that there seems to be a significant drop off in participation after age 64.⁶⁷ While not many in this group can compete with the young guns for first place since the rise of Jurek, the top 20 brackets for both urban marathons and ultra distances are packed with middle-aged men and women. Gordy Ainsleigh's running in 2010 and greater pools of 60+ categories in urban marathons add credence to

⁶³ Beat Knechtle et al., "Age-related Changes in 100-km Ultra-marathon Running Performance," *Age* 34, no. 4 (2011): 1043, doi:10.1007/s11357-011-9290-9.

⁶⁴ Martin D. Hoffman and Jacob A. Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise* 41, no. 12 (2009): 6, doi:10.1249/mss.0b013e3181a8d553.

⁶⁵ Dalia Gallmann et al., "Elite Triathletes in 'Ironman Hawaii' Get Older but Faster," *Age* 36, no. 1 (2013): 407, doi:10.1007/s11357-013-9534-y.

⁶⁶ Martin D. Hoffman and Jacob A. Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise* 41, no. 12 (2009): 7, doi:10.1249/mss.0b013e3181a8d553.

⁶⁷ Knechtle et al., "Age-related Changes in 100-km Ultra-marathon Running Performance," *Age* 1033

these older-aged participants.⁶⁸ Not only are more people able to run thanks to nutrition, gear, and advertisement, but more women than ever are starting to participate.

Eincheberger et al. looked at participation records between 1998 and 2011 and found that women's participation had increased by 6% overall (from 10% to 16%), while maintaining consistent finishing times within the ultra community. Male participation has remained steady within Ultras as Hoffman et al. shared that male participation increased earlier than women (before 1998).⁶⁹ While women are historically less muscular than males, the increasing numbers of women joining the ranks has led to research into training programs that have put this physiological assumption to the test. It is common in the major marathons of the world, including New York and Boston, that a foot race between the elite men and women compete for the pot of money. There are a few variations, including elite women starting first. However, if the men catch up and pass the elite women, then greater money is given to the men finishers; or if any women pass elite men who start first, a portion of the top prize money gets taken off the men's prizes to be given to the elite women. This competition does not exist in the American Ultra distance competitions as of yet.

Historically women and men have differed in sporting participation.

Hoffman and Weglin demonstrate how the participation in ultra marathons gradually increased between 1974 and 1990s for men, while for women the

⁶⁸ WSERF Staff, "Year By Year," Western States Endurance Run, August 08, 2012, History, accessed February 28, 2016, <http://www.wser.org/history-year-by-year/>.

⁶⁹ Martin D. Hoffman and Jacob A. Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise* 41, no. 12 (2009): 2197-2198, doi:10.1249/mss.0b013e3181a8d553.

increase has been growing since 1986 to the present.⁷⁰ Exact numbers depend on the race and the year, but for races like WSER, women have increased 16% between 1991 and 2006, a trend that continues to rise.⁷¹ Knechtle et al. agreed with this and noted that as men aged their times declined greatly by approximately 372 minutes to approximately 410 minutes slower, while women's times decrease by around 460 minutes as they age.⁷² The difference in peak time may be attributed to available muscle mass as men tend to have more muscle and can attain higher speeds for shorter periods of life, while women seem to be able to perform better in endurance over a lifetime.⁷³ Some have suggested that it may be due to the evolutionary component of childbirth that allows women to endure prolonged pain consistently better than men. Beat Knechtle et al. noted that a correlation between child bearing and pain tolerance should be investigated more.⁷⁴ That same year, in another study, Knechtle pointed out that around 80% of ultra-marathon participants were male, but with the growth of women participants that ratio may equalize.⁷⁵ Gender plays a role in determining times and performance; however, as participation increases and equalizes, there is still room for surprises.

⁷⁰ Hoffman & Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise*, 1.

⁷¹ Ibid., 3-4.

⁷² Knechtle et al., "Age and Sex Interactions in Mountain Ultramarathon Running – the Swiss Alpine Marathon," *OAJSM Open Access Journal of Sports Medicine*, 2012, 77-78, doi:10.2147/oajsm.s33836.

⁷³ Knechtle et al., "Age and Sex Interactions in Mountain Ultramarathon Running – the Swiss Alpine Marathon," *OAJSM Open Access Journal of Sports Medicine*, 2012, 77-78.

⁷⁴ Ibid., 78

⁷⁵ Knechtle, "Ultramarathon Runners: Nature or Nurture?," *International Journal of Sports Physiology and Performance*, 310.

A further topic of participation discusses age amongst ultra marathon participants. Knechtle et al. looked at records covering 13 years, finding that age participation occurs in a curvilinear manner as the peak performance age range is reached.⁷⁶ A curvilinear manner refers to a bell shaped curve where the center, or top of the bell, seems to drift right on an x-y axis as more information and as ageing participation pushes the median age further up. While the fastest times are reached in both urban marathons and ultra marathons in the early to late 20s, ultra distant elites happen to be older. Peak participation in urban marathons is between 21-30 years, while in ultras its 25-40. Hoffman and Wegelin agree and notice that the age of participation increased annually, after the initial surge in participation in 1977, by a rate of 0.22 per year.⁷⁷ Most of the studies point to participants (73%) completing the races between ages 40-59.⁷⁸ There is significant drop off on either side of this range. Hoffman and Wegelin report a man of 81 completing the Western States competition and finishing in under 19 hours; they also suggest further investigation into the elderly participation drop off after 60.⁷⁹ Participants in the older range, between 50-60 years, may seem counterintuitive, but suggest that ER competitions require maturity in running to understand how to tackle the mental and physical fatigue.

⁷⁶ Knechtle et al., "Age-related Changes in 100-km Ultra-marathon Running Performance," *Age* 1037

⁷⁷ Hoffman & Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise*, 3.

⁷⁸ Hoffman and Wegelin, "The Western States 100-Mile Endurance Run," *Medicine & Science in Sports & Exercise* 41, no. 12 (2009), Knechtle et al., "Age-related Changes in 100-km Ultra-marathon Running Performance," *Age* 34, no. 4 (2011), Guttman, *The Olympics, a History of the Modern Games*.

⁷⁹ Knechtle et al., "Age-related Changes in 100-km Ultra-marathon Running Performance," *Age* 1044.

The need for research and development has been paramount for the sporting world as competition has become more globalized. When the Olympics started in 1896, there were a handful of nations competing. Now, in the 21st century, there are over 200 countries that compete for the glory to wear Olympic gold. On top of that is the unique situation of professional athletes, who have to compete on an international level to maintain endorsements, career salaries, as well as money for communities (as is the case with many East African runners). Within the ultra community there is still an element of the old Olympic ideal of amateurism, but the marathon world has been taken over by the drive to win, a trend that is occurring more and more within the ultra-community. Thanks to endorsements, more runners are getting involved in running events, and more people are running, but with that come a loss of honor within the winning circle. Pragmatically speaking, more people running is better than fewer, but the inspiring aspect of the elite becomes diluted as competition rises. With the weight of science and training mounting in developed countries, hubris has at times stepped in to disadvantage the advantaged, while allowing those with stronger central governors into first place. Hubris has been studied in the subtlest of ways, but it creeps into any sector where money is involved. That is not to say that capital is bad, only to point out that money is a double-edged sword. It promotes competition and can overwhelm the athlete with confidence. Athletes are pushed by competition to be better; however, if they make more money, their only drive toward greatness can seem hollow. Money and financial security are important for any career including Endurance Running. As

running has grown so has advertising opportunities. These opportunities have bolstered and pushed participation as well as the human limits of running.

Chapter 3

The Sponsorship of Endurance Running and the Growth of Athletic Companies

The endurance running industry is a billion-dollar market. Running has become “trendy”, recreational, and largely understood to improve health. What started as an esoteric die-hard tribe has grown exponentially over the last century. When the Boston Marathon started, they had a field of 15 contestants. By 2015 it attracted a little over 30,000 participants, and this trend was similar for the New York Marathon. Thanks to Lebow, the New York Marathon’s participation has jumped from 100 contestants in 1972 to around 50,000 participants in 2015. This makes the New York Marathon the most popular marathon in the country. The ultra-circuits are starting to reflect these trends as the number of ultras has increased over the last 20 years. Due to over-crowding of races like the Western States Endurance Run raffles, qualifying times and heats have been instituted to alleviate the crowded trails and streets. I change the designation from contestants to participants because increased participation has made endurance running less about winning and more about feeling accomplished by being a part of a community rather than pure competition. Most people who engage in urban marathons do not attempt or even dream of winning these races. During the early years, all these events were undertaken by a die-hard, almost esoteric, fringe movement. These individuals’ passions ignited curiosity from many sectors, and over time, these individualistic competitors began to meld science with the only tools that are necessary for running, the running shoe. The shoe was, for lack of a better phrase, a step toward glory for the runner, and step in the door for shoe manufacturers. That

door opened up markets for athletic clothes, water bottles, exercise powders, themed runs, charity runs, exercise science, and all the other ways that running creates revenue today. The recreational running shoes of the 1960s and 1970s opened up the roads to jogging, and the experiments in long slow distances opened up the studies of exercise and heart health, as well as the aerobic movement, marathon movement, and finally the ultra-distance movement. The history of financial and corporate involvement in endurance running is directly laced up with the development of the recreational running shoe.

The Running Shoe: A History

A majority of people today wear foot protection of some sort, whether it be the hemp sandals of Buddhist monks, the huaraches of the Tarahumara, or the post-industrialized world's multitude conceptions of shoes. Shoes have a unique and fascinating history. It is important to understand the shoe because it is the endurance runner's greatest tool, as the scalpel is to a surgeon, or the computer is to modern college students.

In some form or other, shoes have been found throughout archeological digs. Bill Katovsky and Peter Larson provide an in-depth look into the evolution of running shoes in their book *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*. As humans left the tropical savannas of Africa, weather and new terrain taught our migrating ancestors the value of covering their feet. One of the oldest forms of shoes were the ones worn by the 5, 328 year old "Iceman" or Otzi.⁸⁰ Czech shoe expert, Petr Hlavacek, recreated the shoes using ancient methods of

⁸⁰ Peter Larson and Bill Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running* (New York: Skyhorse Pub., 2012), loc. 1775.

bearskin and straw insulation. He found them surprisingly durable, efficient, and apart from initial breaking in of the shoes, blisters were non-existent. While he tries to sell runners, hikers, and mountaineers on their virtues, the bear-skinned shoes have not caught on, probably due to their smell and archaic look.

The Greeks, Romans and other Mediterranean peoples utilized sandals that were usually made of leather bottoms and either shortened nails to fasten straps, or the straps were counter-sunk with knots below the flexible under sole. This was very effective for the Roman soldiers who had to travel 20-30 Roman miles a day with full pack and armor. In Japan and China, shoes were either woven hemp or leather with two straps going between the big and pointer toes. Japan also developed a unique split toe sock that was worn with a wooden sandal called the Tibi-Geta. The native peoples of America had many variations of the moccasin, depending upon their terrain. After the Roman period, shoes were mainly constructed from wooden soles, or thickened leather with soft leather uppers. These were rarely used for running, unlike the Iroquois and Hopi moccasin, the Greek sandal, or the Japanese Geta. Shoes in Europe became a fashion statement or were made solely for protection rather than recreation, and thus recreational footwear had to wait until the 1800s for its next evolution.

Once industrialization took off in the 1800s, a method of making rubber stronger and joining it with cloth was discovered. Vulcanization is the method by which inventor Charles Goodyear discovered the chemical process by which the physical properties of natural and now synthetic rubbers are hardened and made more flexible. The process is done by adding sulfur to hot rubber, giving rubber

strength and resistance to swelling and abrasion. The process was first used for tennis and cricket competitions. They were highly specialized and only those with a specific interest in those activities sought out the new shoes. When United States Rubber initiated Keds in 1917, they were marketed as “sneakers” because those that wore such material moved around in near silence, like a sneak.⁸¹

This shoe-making process proved tricky for quite some time, but when the rise of amateurism became vogue with the first modern Olympiad, demand for vulcanized rubber athletic shoes began to rise. Factorization streamlined the vulcanization process and the Keds Corporation competed with the shoe company Converse until two brothers in Germany began tinkering with their father’s shoes in the 1930s. Adolf “Adi” and his brother Rudolph Dassler theorized and experimented with athletic shoe manufacturing. At the 1936 Berlin Olympiad, Adi was able to get Jesse Owens to wear his shoes with the three stripes on the side to give arch support while maintaining light canvas uppers. After Owen’s success, the brothers had a falling out over political affiliations with the rise of Nazi Germany. In 1948 Adi took his conception from his meager profits over the last decade, bought himself a factory and named it Adidas (Adi Dassler). Roudolf went on to create Puma. These shoes dominated the running world. Serious runners had to send in for them, though, so their distribution amongst the American populous was low. Around this same time, a Japanese bootlegger saw post-empire Japan as an opportunity to switch careers. He began a small company called Onitsuka which would evolve to become Asics.

⁸¹ Larson & Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*, loc. 1985.

Despite the technology of vulcanized rubber teaming up with the factory system, these shoe companies had a hard time getting more people into the running world. The shoes prior to the 1970s fell apart easily, sometimes after one race. That changed in the 1960s. Recreational running was virtually non-existent amongst the general population throughout the 1950s. Doctors and coaches began to see that the sedentary life of the suburbs and cities was having adverse effects on cholesterol, heart tissue, livers, and overall athletic performance. President Kennedy wrote an article for *Sports Illustrated* titled, "The Soft American," in which he outlined four points for a physical fitness program that would be instituted during his presidency.⁸² Meanwhile an inventive coach from the University of Oregon, Bill Bowerman, left for New Zealand to discover the benefits of the New Zealand Coach Arthur Lydiard. Lydiard's program of long slow distance, or jogging, entranced Bowerman when a man in his 70s proved to be in better shape than the 51-year-old Bowerman. He brought the idea of jogging back to the States and began tinkering with a urethane substance on his wife's waffle iron for an outsole. This new outsole proved effectively grippy and durable on almost any surface. Also in 1960, a small orthopedic shoe company by the name of New Balance Arch Support came out with an innovative shoe called the "Trackster".⁸³ The innovative idea was that the shoe came in multiple widths and had a rippled outsole, with the same goal as

⁸² "The Federal Government Takes on Physical Fitness," - John F. Kennedy Presidential Library & Museum, accessed March 08, 2016, <http://www.jfklibrary.org/JFK/JFK-in-History/Physical-Fitness.aspx?p=2>.

⁸³ Larson & Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*, loc. 2203. "New Balance Athletic Shoe, Inc. History," History of New Balance Athletic Shoe, Inc. – FundingUniverse, accessed March 06, 2016, <http://www.fundinguniverse.com/company-histories/new-balance-athletic-shoe-inc-history/>.

Bowerman's "Waffle Shoes:" better grip without metal spikes.⁸⁴ However, New Balance sold exclusively to the Boston area. Bowerman had grander plans thanks to a Stanford Business student who Bowerman had coached as an undergraduate in Oregon.

Philip Knight was a decent middle-distance runner in college, but he had more of a knack for business. He and Bowerman would talk about how the modern running shoes (New Balance and Adidas) were shoes "covered with junk. Leather trim, tongue, laces. All unnecessary."⁸⁵ The over stabilization techniques of New Balance Tracksters allowed the foot to atrophy in all the cushioning. Bowerman aimed to shave those unnecessary components, bringing the weight of a shoe to about 6 ½ ounces. This decreased weight would save the runner from the fatigue of carrying weight. He realized that running shoes had to protect runners' joints, feet, and muscles, something that Lydiard's philosophy of jogging left unsaid but that Bowerman understood. Knight proposed an answer to this quest: Japanese shoes. His master's thesis was titled, "Can Japanese Sports Shoes Do to German Sports Shoes What Japanese Cameras Did to German Cameras?"⁸⁶ In 1962 the two men shook hands to begin a shoe company. Knight went to Japan, to the growing Onitsuka Tiger headquarters in Kobe, and proposed that his company, Blue Ribbon Sports, Inc., would like to sell the Onitsuka Tiger line "Limber Up" to the west coast

⁸⁴ "Bill Bowerman, His Wife's Waffle Iron, Nike's Early Days and Birth of the Modern Running Shoe," Natural Running Center

⁸⁵ Larson & Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*, loc. 1716.

⁸⁶ "Bill Bowerman, His Wife's Waffle Iron, Nike's Early Days and Birth of the Modern Running Shoe," Natural Running Center, accessed March 06, 2016, <http://naturalrunningcenter.com/2012/05/20/bill-bowerman-wifes-waffle-iron-nike-birth-modern-running-shoe/>.

of the United States. Onitsuka agreed and gave Knight 300 pairs to sell. Blue Ribbon Sports (BRS) had \$1000 dollars as a start-up (\$500 from Knight and \$500 from Bowerman).

Bowerman began selling them in Oregon to high school students, collegiate track and cross country teams, and to jogging teams he began organizing. They also started selling to people who were starting to read about the health benefits of running as Coach Lydiard's book, *Run to the Top*, and his philosophy "Train, don't strain," were spread by Bowerman amongst ordinary runners. Many non-runners were also reading the medical advice of cardiologist Dr. George Sheehan's articles in the new magazine *Runner's World*.⁸⁷ Knight was able to purchase a shop in Santa Monica, California, after a few years. By 1968 Bowerman's model, the Waffle Shoe, was sold alongside the Limber Ups, and the joint effort shoe called the Cortez. The joint effort shoes were called the Cortez because Knight and Bowerman hoped it would sell better at the Mexico Olympics of 1968. Their company was growing steadily as the main sales teams were passionate runners themselves as well as aggressively market savvy. This market savvy had a huge payout, allowing the soon-to-be Nike Inc. to become the dominant athletic shoe manufacturer in the world.

Ever the business man, Knight understood the power of marketing. By 1971, as Frank Shorter and Prefontaine were about to embark on their historic Olympic careers, Knight decided to start splitting with Onitsuka. He paid a young graphic design student \$35 for an idea for a logo inspired by the Greek goddess of victory, Nike. Carolyn Davis came up with the Nike Swoosh by taking one of the wings of

⁸⁷ Larson & Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*, loc. 2269.

Nike and turning it on its side. This streamlined and simple logo could be attached to the side of the shoes in a pragmatic way (as support for the Achilles tendon), and also be as recognizable as the Tiger stripes of Onitsuka Tigers or the three bars of Adidas. By 1972, BRS split with Onitsuka, but would not change their name to Nike until 1978. They had a net gross of \$1.96 million, which allowed them to expand. With Shorter's victory and Prefontaine's surprising loss at the 1972 Olympics, running captured the hearts and minds of millions of people. Shoe production for BRS, New Balance, and Onitsuka grew as they produced shoes for this rise in recreational road running. Recreational runners benefited, thanks to the tinkering with urethane, nylon, and foams for road protection. BRS came out with the "Bostons" in 1973, and John Anderson went on to win the Boston Marathon in those shoes, promoting the company and the shoes. Shorter and Rodgers both wore Onitsuka Tiger's "Marathons" on and off throughout their careers. It is hard to say that one runner ran in one shoe in these early days of endurance running, because companies did not endorse or promote athletes as advertisements for their products. Ainsleigh does not even remember what kind of shoes he wore for his first Western States competition. However, Knight understood that if he wanted his company to grow he would have to seek out outstanding sports winners. While Bowerman focused on getting people running, Knight went to work on marketing.

1976-1978 were huge years for the growth of running. In 1976, the New York Marathon captured the hearts and minds of every patriot who watched it on TV and gave hope to a stagnant city. In 1977 Jim Fixx came out with his book *The Complete Book of Running*, which told the story of how he had been a 214-pound

chain smoker in 1967 and had taken up jogging to counter-act the health issues he had begun to experience. The book was a hit, remaining on the New York Best Sellers list for 11 weeks. In 1978 the cardiologist and running guru, Dr. George Sheehan, also came out with a book titled *Running & Being*. This told a similar tale to Fixx's, but Sheehan had many more followers and had a way with words that continues to resonate with people. The newest edition came out in 2013. Also in 1978 BRS became Nike, Inc. and Onitsuka Tiger became Asics. Onitsuka chose Asics as the new name because it is an acronym for a Latin phrase used by Juvenal and borrowed from the Greek philosopher Thales. Juvenal's rendition is *Anima Sana In Corpore Sano*, a sound mind in a sound body. This gave the companies a refreshed face for the growing popularity of running. While Nike had started for runners, the community of runners was still tiny. The key question was how to get more people involved in running now that shoes were able to match production levels. Sustainability also proved to be a question on every shoe manufacturer's mind. Bowerman, Sheehan, Fixx, and others were convinced that the long slow distance (LSD) of Lydiard was the key, comfortable well fitted and light shoes the lock. However, the will to run, or turn the key, had to come from the individual: Lebow was the man to focus and personalize running.

Lebow had some idea on how to get more people involved in the running world. He had been organizing fun runs long before he was approached to initiate the New York Marathon. Whether it was the Crazylegs 10k or the Empire State Relay, or the Costumed Halloween Turkey Trot, Lebow made sure that runners felt included in a sport that was largely viewed negatively. The negative association was

due to years of conditioning that running was a punishment for other sports, and the misconception that the explosive and exhausting training for sprints was the only method of running. Lebow's love for running and his salesman drive helped people to make running a community activity rather than just a competition. The elitism of running was fading away, in large part because of the efforts of the authors of the 1960s and early 1970s. However, it was the 5-borough bicentennial marathon, the first New York Marathon, that brought people out of the illusion that running could not be fun. Lebow understood that elite runners would always be there, and they were integral to the inspiration to get out on the pavement, but Lebow was convinced that running was for everyone. It is important to remember that Lebow ran like a duck with relentless forward motion. When non-runners saw this charismatic organizer running, the anxiety of running eased. Lebow understood that every race that he organized was a unique experience for everyone that participated, and he aimed to make that experience as enjoyable as possible. Red Smith, a columnist for the *New York Times*, called him the "High Priest of Running" and in a way he was bringing his beatific vision to the masses.

Unlike the Boston Marathon, Lebow worked with the city leaders, coaxing monetary support for his races, paying big athletes to come and compete in his marathon. New York Mayor Edward Koch remembers how, "[Lebow] came to my office to plead for some money to pay great foreign athletes to compete in the race... I didn't think the city should do that, so I turned him down. But he went out and raised the money to pay the expenses for foreign runners to come to New York and

compete.”⁸⁸ As Lebow was organizing smaller races before the 1976 debut, the Boston Marathon opened up their course to wheelchairs in 1974, allowing a new opportunity for involvement. This also helped to promote people who had fully functioning legs to get up and participate. After all, if Bob Hall of Toledo, Ohio can push his own chair for 26.2 miles in 2:54:00 then there are few excuses for people with fully function leg to not participate.

With each year after 1960 the numbers grew in the Boston and New York Marathons. So did entrance fees, especially after qualifying times were implemented in Boston’s 1970 race. The previous year had seen the participatory field grow to over 1,000 people. This increase of people made it necessary for police to get involved to protect the runners from traffic by closing down streets and redirecting traffic. By the time Lebow agreed to the New York Marathon, the logistics of closing down major traffic bridges, streets, and intersections in America’s biggest city required money; money that New York City’s mayors hoped would be added to the city’s treasury. The NYRR had required a modest entrance fee of \$1, the cost of the bib, in the early 1970s. There was no prize money for either the Boston or New York Marathons in the first years. In fact, when Bill Rodgers won his first Boston Marathon the only prize was a warm bowl of soup when he won the 1975 Boston Marathon.

But as Lebow soon found out, if he wanted to coax top runners like Rodgers, Waitz, Shorter, and Salazar, he would have to offer cash. One of the ways that

⁸⁸ Pressman, Gabe. "The Man Who Made the Marathon." NBC New York. November 2, 2011. Accessed March 09, 2016. <http://www.nbcnewyork.com/news/local/The-Man-Who-Made-the-Marathon-133115538.html>.

became possible was the Ruiz scandal in 1980. Without barricades and proper registration methods the fear arose that cheaters could hoodwink race directors. Barricades cost money along with the teams to set them up and take them down. Because of this, entrance fees rose, and Lebow could set the price at a market price that runners were willing to pay. Profits could be made and the city's coffers could regenerate after President Ford's abandonment of New York. The introduction of qualifying times at Boston in 1970 had also given the race a sense of prestige as runners had to prove that they could run a marathon distance in a certain amount of time. By requiring qualifying race times, other cities like Los Angeles, Rome, Chicago, and Philadelphia began organizing marathon events. The participants swelled at these events as each runner dreamed of Boston or New York as their ultimate goal. This value brought with it the ability of the BAA and the NYRR to increase prices to competitive levels. This allowed Lebow to increase participation by persuading Grete Waitz to run in the marathon, the ability to purchase new headquarters for \$1 million dollars in 1980, to pay off runners like Rodgers, Shorter, and Salazar, and to give money back to New York for development of Central Park and other public projects. The civic pride that each of the marathon's produced both boosted morale and revenues for the city and race directors. The events became so lucrative with such popularity corporate bodies began to see these marathon events as advertising platforms for products.

The theory went that if an athlete was seen winning in a company's sports paraphernalia, that paraphernalia gave them an edge. This paraphernalia would then be sought by the general population. The shoe into the running market was

literally through shoes. The company that has marketed the best is known throughout the world as Nike. Their Swoosh logo has dominated the athletic paraphernalia since the 1980s. Since their split with Onitsuka, they had doubled in revenue every two years. In 1976 they grossed \$14 million, and in 1978 they were at \$26 million. They went public in 1980, and by 1986 the company was reporting \$1 billion in revenue. In 1984, the company diversified its product line to include one of the most recognized shoes in the world, the Air Jordan. While not running shoes the growth of this product line took Nike to new heights of the sporting industry, topping \$5 billion by 1997, and increasing revenue by 7%-9% almost every fiscal year.

While they continue to make good running shoes for high performing athletes, running, especially distance running, has become a peripheral for them. Why is that? Part of this is because endurance running makes up such a small community within the United States. According to *Running USA's* annual report, endurance runners make up .05% of the general population in the United States.⁸⁹ This means that shoe companies like Nike, New Balance, Asics, and others cannot afford to exclusively sell to endurance runners. Each company diversified in the 1980s and 1990s to widen income. Companies like Nike, continued to invest in high performance athletes so as to keep the fire of recreational health alight. This was important after the jogging decline in 1982. In 1975, an estimated 25,000 people

⁸⁹ Running USA, "2015 Annual Marathon Report," RunningUSA.org, May 15, 2015, <http://www.runningusa.org/index.cfm?fuseaction=news.details&ArticleId=332>.

participated in marathons, while in 2014 550,637 people reported participating.⁹⁰ Part of this is due to the sponsoring of events by Nike, New Balance, Asics etc. In 1984, almost all athletes in the Los Angeles Olympics wore Nike paraphernalia including jerseys, socks, shoes, etc. This was important because by having the majority of athletes wear the athletic companies' logos paired with event sponsorship increased company recognition. The Los Angeles Marathon is put on by Asics and on their registration day most of the shoes on display are Asics. People began associating athletic excellence with these companies that they recognized from watching athletes on TV or participating in more events that the companies sponsored. Other corporations decided they wanted to get involved with this new marketing avenue.

In 1986, one of the first non-athletic corporations, John Hancock Financial Services, officially began sponsoring and financing the Boston Marathon, a position that it holds to this day. That same year was the first year that official prize money was dished out. The prize purse included \$60,000, and a Mercedes-Benz was awarded for finishing first in a course record time of 2:07:51. On the male side it went to Robert de Castella of Australia. On the women's side, Ingrid Kristiansen of Norway captured her first of two Boston Marathon titles in a time of 2:24:55. She received \$39,000 and a Mercedes-Benz. Today cash prizes have a total amount of \$830,500 to award the top woman or man, and anyone who sets a course or world

⁹⁰ Running USA, "2015 Annual Marathon Report," RunningUSA.org, May 15, 2015, <http://www.runningusa.org/index.cfm?fuseaction=news.details&ArticleId=332>.

record.⁹¹ The revenue accrued by the Boston Marathon brings in \$142 million to the Boston area. That does not include any sports endorsement contracts that they might have enjoyed. Similarly, the New York Marathon became officially the ING New York Marathon, although over the last year TCS has had the honor of being linked to the New York Marathon. The cash prize purse has grown from under-the-table promises to the public distribution of \$900,000 for men and women who take the top spots. Money is added if records are broken.⁹² By becoming the lead sponsor of an event such as the Boston or New York Marathon a company can introduce itself to people it would never have been able to reach person to person, just like the advertising that runners give to the shoe and apparel companies they choose to wear when they win.

Larson and Katovsky note that,

As the running boom of the seventies swelled the ranks of joggers and recreational runners into the millions, athletic footwear companies like Nike experienced phenomenal growth, as did ASICS, New Balance, and adidas. They answered increased consumer demand with built-up shoes offering the latest in comfort, cushioning, and support. It turned into an R& D arms race for feet. New technologies, materials, and design features were constantly being refined and developed.⁹³

⁹¹ Peter Vigneron, "Wins in Boston Can Add up in a Hurry," ESPN, accessed March 11, 2016, http://espn.go.com/sports/endurance/story/_/id/9156850/endurance-sports-how-much-does-winning-major-marathon-pay. "About Boston Marathon-Race Facts," Boston Athletic Association, Prize Purse, <http://www.bostonmarathonmediaguide.com/sample-page/race-facts/>.

⁹² Charles Bethea, "Running for Money - The New Yorker," The New Yorker, April 24, 2015, accessed March 11, 2016, <http://www.newyorker.com/news/sporting-scene/running-for-money>. "Prize Money," NYRR, accessed March 11, 2016, <http://www.nyrr.org/prizemoney>.

⁹³ Larson & Katovsky, *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*, loc. 2360.

A survey taken by *Runner's World* in 1970 found that 70% of runners owned Onitsuka Tigers and 43% owned Adidas (the stats go above 100% due to the fact that the 800 runners surveyed owned multiple shoes).⁹⁴ At that time, there were only around 15 models of distance running shoes on the market. By 1980 when the same survey was repeated, it found that the number of models had increased to 178 as Nike, Saucony, New Balance, and Brooks either diversified the models or entered the running shoe competition. This survey reflects how much participation was increasing. As more people wanted to get into these races, the companies could diversify and do research and development. One of the innovations that came out in 1974 was the discovery of EVA by Brooks Shoe Company. EVA is the acronym of a foam-like polymer named ethylene vinyl acetate. While this material was discovered by Brooks Shoe Company, it has been utilized in most running shoes as a necessary ingredient for shoes to be lighter, to become better shock absorbers, and reduced foot sweat by becoming more breathable.

Brooks had been started in 1914 as a water shoe company in Philadelphia, PA. They expanded into cleated shoes in the 1920s and 1930s. By 1970 they were able to anticipate the running craze. They invested in R&D in hopes of utilizing different polymers to be lighter, more shock absorbent for the common runner, as well as easily marketable. While they were the first shoe company to utilize EVA they were not the only shoe company to put it to use once the lightweight material became known. Nike and New Balance both utilized EVA throughout the 1980s, 1990s, and 2000s. The R&D budgets for these companies over the last century are

⁹⁴ Ibid., 2360.

hard to find, however there is a clear correlation between increased prices of running shoes and the amount of money that is funneled into each shoe. Nike's Tailwind (1979) became the first running shoes to be sold for \$50 due to the introduction of Freon filled air pockets in shoes that were supposed to cushion and give the runner the impression of running on clouds. The increase in prices followed the increase in participation, and the increase in participation increased the viability of advertising for the companies. The more spectators saw a particular shoe, the greater the demand for the shoe. If a company could get a runner to win in their shoes, then a bump in sales would occur. This was known since the 1973 Boston Marathon when Onitsuka Starting with Ainsleigh, ultra shoes were generally cushioned, but it depended upon the terrain. Heinrich ran in what appears to be Adidas running flats in his ultra in Chicago in 1981. Ann Trason ran in a number of shoes including Nike, New Balance, and Saucony during the high cushioned years of the 1990s. Trason's wins brought her acclaim but no sponsorships. Sponsorships did not enter the American ultra-circuits until Scott Jurek entered the Western States for his second win. Just like Rodgers, Jurek was a young Tigers enjoyed a boost in sales every time the runner who won wore their shoes. This trend has also occurred in the ultra distance community.

Starting with Ainsleigh, ultra shoes were generally cushioned, but it depended upon the terrain. When Heinrich ran in what appear to be Adidas running flats in his ultra in Chicago in 1981. Ann Trason ran in a number of shoes including Nike, New Balance, and Saucony during the high cushioned years of the 1990s.

Trason's wins brought her acclaim but no sponsorships. A sponsorships did not enter the American ultra-circuits until Scott Jurek entered the Western States for his second win. Just like Rodgers, Jurek was a young runner with mountains of debt subsisting on charity and his wife's money. After his wins, he was able to start up a physical therapist clinic in the Seattle, where people came from all over the Pacific Northwest to be helped and healed by the winner of the Western States. Brooks approached him to help design a trail running shoe line for ultras and they offered him a sponsorship. His acclaim had earned him name recognition, which earned him money and security. His story, like Rodger's or Shorter's, mirrors the influence of money in sports.

Heart, or excellence, drives interest, interest drives opportunity for growth, and growth brings competition. In 1986 that's exactly what happened when the Boston Marathon began offering a prize purse. International runners, while still present throughout the history of American endurance running, had been on an equal footing with American runners. As the influence of Nike and Adidas grew in the 1970s and 1980s, so did their advertising empire. As advertising increased, more opportunity and reason was given for excellent runners to come out of their native environs. For the marathon distance, Kenyans, Ethiopians and other East African runners threw in their talent for the acquisition of honor and money. Today the highest paid marathon runner is Haile Gebrselassie, at around 500,000 dollars a race. He broke and set the world record for a sanctioned marathon in a time of 2:03:59. The prize money that these runners can accrue is something Rodgers or

Shorter never dreamed of back in the 1970s and demonstrates how much the running, especially marathon distance, has grown.

While ultra-distances have yet to offer cash prizes in the United States, the pressure to do so is mounting, as runners vie for sponsorships and steady streams of income to aid in training. Unlike the urban marathons, ultra distances require better supplied runners, a nuanced medical expertise, as well as long days of training. Jurek was logging around 200 miles a week in his prime; that is 28.57 miles a day for weeks and months on end. This all costs money. Most of the money for these projects comes in the form of advertising sponsorship. Just like in urban marathons, companies provide money for services so that people will associate services on the race with the company such as Clifbar, RUNA, Underarmor, New Balance, and many others. While ultra is still a small community, companies have been born out of the ultra-distance community. Jurek and Kurpitcka each have their own lightweight backpack lines with a company called UltimateDirection, while Jurek and Ainsleigh have shoes named after them on the Brooks line. The experiences of these runners are catalogued in a growing novelization of ultra distance experiences. These memoirs, like Jurek's *Eat & Run* and Hienrich's *Why We Run*, allow runners to accrue some money after they have retired. These books, like the television of the 1970s and 1980s, help to include more people as sedentary post-moderns wish to live vicariously. These books are inspirational, and as such get many people to buy a pair of shoes, lace up and hit the trail or the pavement. Thanks to the unique intersection of excellence, and capital, endurance running continues to grow, and Americans continue to grow healthier as they participate. Ultra distances

seem to be in the place where the urban marathon was in 1978, growing steadily. It will be interesting to see how it progresses and how much the intersection of excellence and money will help it grow as R&D develops and human limits are continually pushed further than anyone thought possible.

Epilogue

In his chapter on “Healing,” George Sheehan writes, “But even at the end there is strategy. It is not enough to have the speed. Not enough to give your all. That sprint, that giving must be done at the right time. At the precise moment that allows no adequate response. It must be checkmate.”⁹⁵ It is not enough to have heart to get a generation of people to begin running or to see the value in healthy life styles. It must be a commitment, a total experience. The endurance running movement started with a few die-hard individuals with heart; it has blossomed into an industry and a movement. That movement is rekindled every time there is an economic slump, or by inspirational figures like Shorter, Rodgers, Jurek, Lebow, Sheehan, or Waitz. The Endurance Running world is growing, even today.

More people are participating in marathons or ultras than ever before. They are flocking to a growing diversification of endurance running events. Marketing experts are very aware of this and have started themed runs on a grander scale than Lebow ever envisioned. Nowadays there are color runs, which have people running varying distances where powdered pigments are thrown at the participants. On the other end of the spectrum are the Tough Mudder circuits that push teams to get through obstacles over endurance distances. There has also been a rise in charity runs, and runs to raise money to cure cancer, for Alzheimer’s research, for Lupus awareness are increasingly common. These came out of the endurance running and healthy lifestyles promoted in the 1960s and 1970s. The ultra- marathon circuits are seeing increasing participation as well as faster and faster times. With the

⁹⁵ George Sheehan, *Running and Being: The Total Experience* (New York, NY: Rodale Publishing, 2013), 154.

introduction of prize money purses those times might drop further, and with the mounting monetary pay-out in marathons, we might see the first sub-2-hour marathon in history over the next 10 years. This will be due to the breakthroughs in connection with R&D research in nutrition, biomechanics, and medical practices. In addition to these breakthroughs, the financial resources of business like Nike, the Running Center, New Balance and others has pioneered the technology of 3-D Gait technology. Three-dimensional gait analysis is a method of utilizing modern motion sensors to track the efficiency and method that runners utilize. The analysis takes high-speed camera shots of runners as they run over a force-sensitive floor with tight computer monitors attached at joints and muscle connections. With this technology more runners are learning about how to modify their natural and somewhat haphazard running styles to promote efficient strides over long distances. Along with 3-D gait analysis many distance runners are starting to track their runs with phone applications like NikeRunning or Fitbit. These fitness trackers help to log heart rate, distance, calories burned, and many other useful points which will improve their running.

One final note about how technology is changing the running world is through mediums like YouTube and the rise of high definition mini-cameras such as GoPro. With cameras like GoPro or even cell phone cameras, events like Western States are becoming easier to see and inspire. Saloman, a new shoe company, has an entire channel on YouTube dedicated to ultra-marathon competitions. They promote themselves while employing directors to capture experiences along the ultra distances that would be hard for spectators to understand or experience. The

ability to capture these runs and then send them out over the internet has allowed more people to get involved, to understand that those that are running these incredible distances are just like them, normal people with goals and the willingness to train.

Like a monk in a monastery, a runner who partakes in the training and race of endurance running experiences the unique satisfaction of completing a hard-earned goal while undergoing it within a community. It is like a monastery, Dr. Sheehan once wrote, "Running is...- a retreat, a place to commune with God and yourself, a place for psychological and spiritual renewal." This retreat is a place where, "thousands run to hear the leaves and listen to the rain, and look to the day when it (running) is suddenly as easy as a bird in flight."⁹⁶ As training and health consciousness continues to grow in this country, that day may be closer than we imagine. And as participation increases, so does our human capacity. Where does the limit lie? Is the 2-hour marathon truly a wall, and can humans traverse 100 trail miles in less than 12 hours? With the research, the heart, and the proper backing for training, humans will continue to push these limits.

⁹⁶ George Sheehan, *George Sheehan on Running to Win: How to Achieve the Physical, Mental, and Spiritual Victories of Running* (Emmaus, PA: Rodale Press, 1992), Kindle Edition.

Bibliography

- "About Boston Marathon- Race Facts." Boston Athletic Association.
<http://www.bostonmarathonmediaguide.com/sample-page/race-facts/>.
- Admire, Neil. "Who Is Rosie Ruiz?" *New York Times* (New York, N.Y), April 21, 1980.
http://www.nytimes.com/packages/html/sports/year_in_sports/04.21.html.
- Admur, Neil. "Toast of the Town." *New York Times* (New York, N.Y), October 26, 1980.
http://www.nytimes.com/packages/html/sports/year_in_sports/10.26.html.
- "BBC Sport Academy | Athletics | Features | The History of Running Shoes." BBC News. August 10, 2004. Accessed March 06, 2016.
http://news.bbc.co.uk/sportacademy/hi/sa/athletics/features/newsid_3935000/3935703.stm.
- Bethea, Charles. "Running for Money - The New Yorker." *The New Yorker*. April 24, 2015. Accessed March 11, 2016. <http://www.newyorker.com/news/sporting-scene/running-for-money>.
- "Bill Bowerman, His Wife's Waffle Iron, Nike's Early Days and Birth of the Modern Running Shoe." Natural Running Center. Accessed March 06, 2016.
<http://naturalrunningcenter.com/2012/05/20/bill-bowerman-wifes-waffle-iron-nike-birth-modern-running-shoe/>.
- Boston Athletic Association. "Boston Marathon." Boston Marathon. Accessed October 12, 2015. <http://www.baa.org/races/boston-marathon.aspx>.
- "Boston Marathon History." Boston Marathon History. Accessed February 29, 2016.
<http://www.baa.org/races/boston-marathon/boston-marathon-history.aspx>.
- Bramble, Dennis M., and Daniel E. Lieberman. "Endurance Running and the Evolution of Homo." *Nature* 432, no. 7015 (2004): 345-52. doi:10.1038/nature03052.
- City of New York. "The History of the New York City Marathon." New York City Marathon : NYC Parks. Accessed November 18, 2015.
<http://www.nycgovparks.org/about/history/nyc-marathon>.
- Cuthill, J., C. Ellis, and A. Inglis. "Hazards of Ultra-marathon Running in the Scottish Highlands: Exercise-associated Hyponatraemia." *Emergency Medical Journal*, 2009, 906-07. doi:10.1136/emj.2008.065524.
- Daley, Monica A., Dennis M. Bramble, and David R. Carrier. "Impact Loading and Locomotor-Respiratory Coordination Significantly Influence Breathing Dynamics

in Running Humans." *PLoS ONE* 8, no. 8 (2013).
doi:10.1371/journal.pone.0070752.

"The Federal Government Takes on Physical Fitness." - John F. Kennedy Presidential Library & Museum. Accessed March 08, 2016. <http://www.jfklibrary.org/JFK/JFK-in-History/Physical-Fitness.aspx?p=2>.

Gallmann, Dalia, Beat Knechtle, Christoph Alexander Rüst, Thomas Rosemann, and Romuald Lepers. "Elite Triathletes in 'Ironman Hawaii' Get Older but Faster." *Age* 36, no. 1 (2013): 407-16. doi:10.1007/s11357-013-9534-y.

Gambaccini, Peter. "Past Prologue." *Runner's World*. October 24, 2008. Accessed November 17, 2015. <http://www.runnersworld.com/running-times-info/past-prologue>.

George, K., R. Shave, D. Oxborough, T. Cable, E. Dawson, N. Artis, D. Gaze, T. Hew-Butler, K. Sharwood, and T. Noakes. "Left Ventricular Wall Segment Motion after Ultra-endurance Exercise in Humans Assessed by Myocardial Speckle Tracking." *European Journal of Echocardiography* 10, no. 2 (2008): 238-43. doi:10.1093/ejehocard/jen207.

Guttman, Allen. *The Olympics, a History of the Modern Games*. Urbana: University of Illinois Press, 1992.

Heinrich, Bernd. *Why We Run: A Natural History*. New York: Ecco, 2002.

Hoffman, Martin D., and Jacob A. Wegelin. "The Western States 100-Mile Endurance Run." *Medicine & Science in Sports & Exercise* 41, no. 12 (2009): 2191-198. doi:10.1249/mss.0b013e3181a8d553.

Janofsky, Michael. "Fred Lebow Is Dead at 62; Founded New York Marathon." *The New York Times*. October 09, 1994. Accessed December 18, 2015. <http://www.nytimes.com/1994/10/10/obituaries/fred-lebow-is-dead-at-62-founded-new-york-marathon.html>.

Jurek, Scott, and Steve Friedman. *Eat & Run: My Unlikely Journey to Ultramarathon Greatness*. Boston: Houghton Mifflin Harcourt, 2012.

Knechtle, Beat, Christoph Alexander Rüst, Thomas Rosemann, and Romuald Lepers. "Age-related Changes in 100-km Ultra-marathon Running Performance." *Age* 34, no. 4 (2011): 1033-045. doi:10.1007/s11357-011-9290-9.

Knechtle, Beat, Eichenberger, Rüst, Thomas Rosemann, and Romuald Lepers. "Age and Sex Interactions in Mountain Ultramarathon Running – the Swiss Alpine

- Marathon." *OAJSM Open Access Journal of Sports Medicine*, 2012, 73. doi:10.2147/oajsm.s33836.
- Knechtle, Beat. "Ultramarathon Runners: Nature or Nurture?" *International Journal of Sports Physiology and Performance*, no. 7 (2012): 310-12. Accessed March 15, 2015. http://www.ayfcoaching.com/AcuCustom/Sitename/Documents/DocumentItem/03Knechtle_310-312-ej.pdf.
- Larson, Peter, and Bill Katovsky. *Tread Lightly: Form, Footwear, and the Quest for Injury-free Running*. New York: Skyhorse Pub., 2012.
- Latson, Jennifer. "How One Woman Won a Marathon and Barely Broke a Sweat." *Time*. April 21, 2015. Accessed December 18, 2015. <http://time.com/3822577/rosie-ruiz-history/>.
- Lieberman, Daniel E., Madhusudhan Venkadesan, William A. Werbel, Adam I. Daoud, Susan D'Andrea, Irene S. Davis, Robert Ojiambo Mang'Eni, and Yannis Pitsiladis. "Foot Strike Patterns and Collision Forces in Habitually Barefoot versus Shod Runners." *Nature* 463, no. 7280 (2010): 531-35. doi:10.1038/nature08723.
- McDougall, Christopher. *Born to Run: A Hidden Tribe, Superathletes, and the Greatest Race the World Has Never Seen*. New York: Alfred A. Knopf, 2009.
- "New Balance Athletic Shoe, Inc. History." History of New Balance Athletic Shoe, Inc. – FundingUniverse. Accessed March 06, 2016. <http://www.fundinguniverse.com/company-histories/new-balance-athletic-shoe-inc-history/>.
- Noakes, Timothy. *Lore of Running*. Champaign, IL: Human Kinetics, 2003.
- Polley, Martin. "From Windsor Castle to White City: The 1908 Olympic Marathon Route." *The London Journal* 34, no. 2 (2009): 163-78. doi:10.1179/174963209x442441.
- Pressman, Gabe. "The Man Who Made the Marathon." NBC New York. November 2, 2011. Accessed March 09, 2016. <http://www.nbcnewyork.com/news/local/The-Man-Who-Made-the-Marathon-133115538.html>.
- "Prize Money." NYRR. Accessed March 11, 2016. <http://www.nyrr.org/prizemoney>.
- Radtke, Thomas, Arno Schmidt-Trucksäss, Nicolas Brugger, Daniela Schäfer, Hugo Saner, and Matthias Wilhelm. "Ultra-endurance Sports Have No Negative Impact on

Indices of Arterial Stiffness." *European Journal of Applied Physiology Eur J Appl Physiol* 114, no. 1 (2013): 49-57. doi:10.1007/s00421-013-2753-1.

Robbins, Liz. *A Race like No Other: 26.2 Miles through the Streets of New York*. New York: Harper, 2008. Kindle Edition.

Rubin, Ron. *Anything for a T-shirt: Fred Lebow and New York City Marathon, the World's Greatest Footrace*. Syracuse, NY: Syracuse University Press, 2004. Kindle Edition.

Run For Your Life. Directed by Judd Ehrlich. Performed by Bill Rogers, Ted Corbitt, Grete Waitz. Brooklyn: Flatbush Pictures Production with Brooklyn Film Networks, 2008. Netflix.

Runners World. "Fred Lebow." *Runner's World*. Accessed November 17, 2015.
<http://www.runnersworld.com/tag/fred-lebow>.

Running USA. "2014 Annual Marathon Report." RunningUSA.org. March 23, 2014.
<http://www.runningusa.org/index.cfm?fuseaction=news.details&ArticleId=332>.

"Running USA's Annual Marathon Report | Running USA." Running USA's Annual Marathon Report | Running USA. March 23, 2013. Accessed March 04, 2016.
<http://www.runningusa.org/index.cfm?fuseaction=news.details&ArticleId=332&returnTo=annual-reports>.

"SalomonTrailRunning." Salomon Running to YouTube Videos. Accessed March 01, 2016.
<https://www.youtube.com/user/SalomonTrailRunning/videos>.

Sears, Edward S. *Running through the Ages*. Jefferson, NC: McFarland, 2001.

Sheehan, George. *Running and Being: The Total Experience*. New York, NY: Rodale Publishing, 2013.

Sheehan, George. *George Sheehan on Running to Win: How to Achieve the Physical, Mental, and Spiritual Victories of Running*. Emmaus, PA: Rodale Press, 1992. Kindle Edition.

Stracher, Cameron. *Kings of the Road: How Frank Shorter, Bill Rodgers, and Alberto Salazar Made Running Go Boom*. Boston: Houghton Mifflin Harcourt, 2013. Kindle Edition.

Thucydides, Martin Hammond, and P. J. Rhodes. *The Peloponnesian War*. Oxford: Oxford University Press, 2009. Kindle Edition.

Thoreau, Henry David, and Damion Searls. *The Journal, 1837-1861*. New York: New York Review Books, 2009.

Vecsey, George. "A Modern Major General." *New York Times* (New York City), October 26, 1981. Proquest.

Vigneron, Peter. "Wins in Boston Can Add up in a Hurry." ESPN. Accessed March 11, 2016. http://espn.go.com/sports/endurance/story/_/id/9156850/endurance-sports-how-much-does-winning-major-marathon-pay.

Werd, Matthew B., and Steven Subotnic. "History of the Running Shoe--Part 1." *Current Topic Is Sports Podiatry*, April/May 2014, 169-71.

Wilson, Mathew G., Navin Chandra, Michael Papadakis, Rory O'hanlon, Sanjay K. Prasad, and Sanjay Sharma. "Hypertrophic Cardiomyopathy and Ultra-endurance Running - Two Incompatible Entities?" *Journal of Cardiovascular Magnetic Resonance J Cardiovasc Magn Reson* 13, no. 1 (2011): 77. doi:10.1186/1532-429x-13-77.

WSERF Staff. "Year By Year." Western States Endurance Run. August 08, 2012. Accessed February 28, 2016. <http://www.wser.org/history-year-by-year/>.

Wulf, Steve. "BOSTON MARATHON: A LONG RUNNING SHOW." *Time*. April 15, 1996. Accessed December 18, 2015. <http://content.time.com/time/subscriber/article/0,33009,984407-2,00.html>.