

A DESCRIPTIVE STUDY EXAMINING MOTIVATION, GOAL ORIENTATIONS,
COACHING, AND TRAINING HABITS OF WOMEN ULTRARUNNERS

by

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A DESCRIPTIVE STUDY EXAMINING MOTIVATION, GOAL ORIENTATIONS,
COACHING, AND TRAINING HABITS OF FEMALE ULTRARUNNERS
ABSTRACT

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Ultrarunners are people who participate in running events that exceed the 26.2 mile marathon distance. Currently, women make up approximately 20% of this population. To date, no studies have investigated female ultrarunners. The present study sought to describe these women ($N = 344$) by evaluating motivational factors for participation, goal orientations, training habits, and coach utilization. Motivation was measured using the Motivation for Marathoners Scale (7 point Likert scale). General health orientation ($M = 4.71 \pm 1.06$) and psychological coping ($M = 4.71 \pm 1.03$) were the two categories most endorsed whereas social motives were least endorsed ($M = 3.57 \pm 1.19$). Cluster analysis of motivation revealed two significantly different clusters. Cluster 1 exhibited high motivation in all categories and Cluster 2 exhibited lower motivation in all categories. Evaluation of goal orientation was done using the Perception of Success Questionnaire (5 point Likert scale). Women were higher in task-orientation ($M = 1.38 \pm .68$) than ego-orientation ($M = 3.38 \pm 1.01$). Cluster analysis grouped the participants into high task/low ego ($n = 141$), high task/moderate ego ($n = 151$), and low task/neutral ego ($n = 14$) clusters. Evaluation of habits and coach utilization was achieved using a researcher designed questionnaire. The key findings for training habits showed that women train an average of 12.49 hours a week and spend 64% of their time training alone. Additionally, women got their training information from their own experience, blogs, websites, and the Ultra List Serve. Over two thirds of the women (80%) do not use a coach because of cost and a perceived lack of necessity. The results of this study provide additional information about characteristics of women ultrarunners, where none previously existed. Additional research is needed to elaborate on the current findings.

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CHAPTER 1

Introduction

An ultrarunner is an individual who participates in ultramarathons, which are cross-country foot races that exceed the traditional marathon distance of 26.2 miles (American Ultrarunning Association, 2008). The most common distances are 50 kilometers, 50 miles, and 100 miles. Ultramarathons can be held on or off-road and they are typically designed to cover a specific distance or achieve a maximum distance within a designated time period. These races are generally characterized by severe course conditions, such as rough terrain, elevation changes, and inclement weather.

Ultramarathons have a long history in the United States and many other countries in Europe, Asia, and Africa. Although it is estimated that 70,000 people participate in ultrarunning across the world, it is difficult to pinpoint actual numbers because the American Ultrarunning Association (AUA), the governing body for ultrarunning in America, does not require membership and it does not account for participants in other countries. The good news is that ultrarunning in the United States is relatively popular. For example, The Western States Endurance Run, whose popularity requires a lottery system to gain entry, has had over 10,000 participants since its official inception in 1978. The number of participants in other popular American ultrarunning events in 2008 ranged from 89 in the Forest Park 50K to 446 in the Leadville 100-miler. Table 1 summarizes the number of participants, by gender, in six popular western ultramarathon runs in 2007 and 2008.

Table 1

Number of Participants, by Gender, in Six Popular 2007 and 2008

Western Ultramarathons

Ultramarathons	Total		Females
	Participants	Males(#)	(# and % of total)
Way Too Cool 50K (Cool, CA)	441	318	123 (28%)
Forest Park 50K (Portland, OR)	89	56	33 (37%)
Mount Hood 50 miler (Mount Hood, OR)	114	95	19 (17%)
Where's Waldo 100K (Willamette Pass, CO)	95	67	28 (29%)
*Western States 100 miler (Auburn, CA)	270	216	54 (20%)
Leadville 100 miler (Leadville, CO)	446	362	84 (19%)

Note: These races were selected because they typically sell out entries or they are key trophy series races through the Trail Runner and American Ultrarunning Association (AUA). All data are from races run in 2008 except the Western States 100, which was run in 2007.

The present study was inspired by my own pursuits as an ultrarunner. The question I am asked most frequently when people find I am an ultrarunner is: Why do you do it? I have often found it hard to articulate the various motives I have for

participating in these kinds of events. I fell in love with ultrarunning the same way many people express how they met their soul mate, “love at first sight” (or in my case, “love at first run”). No words can completely describe how it feels to be at the top of a mountain I just ran up, surrounded by nature, happy, and serene. There is an inner strength and feeling of empowerment knowing I am capable of doing what most people cannot. Being an athlete/ultrarunner has shaped many of my life decisions (directly or indirectly), such as the education pursued, current career goals, where I live, and even the man I married. Racing plays a large role in my commitment to ultrarunning.

My first experience competing in an ultramarathon was overwhelming. My mind raced with anxiety; my biggest fear was whether I would be able to run that far and if so, would I be dead last. I knew I could “tough out” a hard race, but I had never run for 34 miles and it was going to be hard. While every body part ached during the race, it was my feet that hurt the most. I thought for sure they were going to fall off. As the finish line came within sight, I thought I was going to cry with joy because I had finished the race. Five minutes after crossing the finish line, I knew that this was the sport for me and was already planning my next race.

Today my love for racing has not changed but my confidence has grown and my hopes and goals do not revolve simply around just finishing. Racing, for me, is the icing on the cake. Training would not be as rewarding if I was not working towards a goal. My goals are centered on completing difficult courses, accomplishing farther distances, and improving my race times (which hopefully includes an age group ranking). The goals I set for racing are the backbone of my training regimen, motivating me to be a better, stronger, and more accomplished runner. When evaluating my own motivations, goals,

and lifestyle, I wondered if other women are motivated by the same experiences, set similar goals, or have similar lives.

An additional question I pondered is where do ultrarunners get their training information? It seems that training information for marathons is available in abundance from the programs offered by specific marathons, Team in Training, Runners World, and Active.Com, to name just a few sources. Resources are limited for information on ultrarunning because it is not a mainstream sport.

The culmination of these questions led me to seek previous research related to ultrarunning. To date, very little research has been dedicated to ultrarunners (Acevedo, Dzewaltowski, Gill, & Noble, 1992; Gill, Williams, Dowd, Beaudoin, & Martin, 1996). The population has remained almost anonymous to those outside the ultrarunning community. No researchers have studied motivational factors, demographic characteristics, goal orientations or even training habits of ultrarunners.

Researchers have assessed the psychological or behavioral domain in endurance athletes, but not necessarily ultrarunners. Specifically, researchers have attempted to link personality traits of endurance athletes to participation motives. The two theories most studied are *Sensation Seeking Theory* (Zuckerman, Kolin, Price, & Zoob, 1964) and *Introversion and Extroversion Theory* (Eysenck, 1990). The Sensation Seeking Theory states that some individuals have an inherent biological under-arousal which causes them to seek out extremely challenging or dangerous situations. The Introversion and Extroversion Theory purports that ultra-event participants are more likely to be extroverts (outgoing, friendly) versus introverts (shy and keep to themselves), and that extroverts

are chronically under-aroused in the cortico-reticular loop (in the brain); hence, they place themselves in arousing, competitive environments.

Egloff and Gruhn (1996) found that endurance athletes (i.e., long distance runners and triathletes) were more extroverted than were non-athletes. Hughes, Case, Stuempfle and Evans (2003) found similar results when investigating the participants in the Iditasport Ultramarathon. In addition to being highly extroverted, Iditasport participants ranked higher in experience seeking (a component of sensation seeking) compared to a non-athletic population.

Although these studies have contributed to the body of knowledge on ultramarathoners, they are far from conclusive in understanding the connection between personality and motivation (if there is one). These theories suggest that ultrarunners lack free or conscious choice about environments in which they place themselves. It is argued that the idea of behavior solely driven by personality traits is out of date and other factors contribute to participation in ultrarunning events. Therefore, the focus of the present study will not include personality traits but rather other possible factors that could contribute to motivation. These factors will be outlined in the upcoming sections.

One of the factors that may contribute to motivation is the level of participation in which an ultramarathoner competes. In other sports, level of participation refers to the level of the sport at which the participants engages (i.e., recreational, college, semi-pro, or pro/elite). In ultrarunning, there is no outlined level of participation. The amount of competitiveness that ultrarunners bring to an event is what signifies their level of participation.

Researchers have concluded that women's motivation to exercise recreationally stems from a desire to lose weight, become fit, and/or gain social affiliation (Bond, 2005; Frederick & Ryan, 1993; Gill & Overdorf, 1994). Recreational athletes may be primarily motivated by the desire to be a part of a group, by means of social affiliation, social status, and social recognition. This brand of motivation, often identified in recreational athletes, is known as the "Social Motivation Model" (Master & Ogles, 1995; Ogles & Masters, 2003).

Conversely, women who participate in sports competitively, but not necessarily at the elite level, cite achievement, personal accomplishment, and empowerment as their motivational factors (Hodge, Allen, & Smellie, 2008; Levy, 2002). Motivation based on the desire to show competence, success, and achievement follows a theory known as "Achievement Goal Theory." What motivates an individual to participate in sports or recreational exercise can also influence the types of goals they set (Bond, 2005; Frederick & Ryan, 1993; Gill & Overdorf, 1994; Hodge et al., 2008; Levy, 2002).

Recent studies on marathon running demonstrate a convergence of the common motivational factors found in recreational exercisers and competitive participants. Although marathon running is considered a competitive sport, current studies show that women marathoners frequently cite motivational factors of social affiliation, recognition, and gaining physical fitness more often than achievement and personal accomplishment (Masters & Ogles, 1995; Ogles & Masters, 2003). Given the lack of consensus about the motivational factors related to ultrarunning, it will be helpful to examine these issues in the present study.

In addition to understanding motivational factors related to ultrarunning, it is important to examine the use of goal setting in this population. Ultrarunners, like other athletes, are governed by specific motivational components that will define the goals they set for competition and overall commitment to the sport. A discussion of motivation must include the goals set for racing. Ultrarunning differs from many sports in that completion of the event can be considered as much of a success as winning. The sheer vigor and determination it takes to endure an ultramarathon is an important consideration for those who choose this sport and whether they will successfully achieve their goals.

Past research demonstrates that just setting goals can help an athlete focus on the competition or event ahead (Balaguer, Duda, Atienza, & Mayo, 2002; Beauchamp, Bray, & Albinson, 2002). In addition, goal setting can help an athlete perform successfully (Balaguer et al., 2002; Munroe-Chandler, Hall, & Weinberg, 2004; Smith, Ntoumanis, & Duda, 2007). Finding out more about the use of goal setting in ultrarunners may enable researchers to determine which types of goals are set and, ultimately, how those goals lead to success during competition.

A fourth consideration is that no previous studies have examined training habits and lifestyle characteristics of ultrarunners. For many athletes, the thought of running five to 25 hours is beyond comprehension. In addition to the fatigue and pain experienced during competition, the time required to train for these events is tremendous and often requires up to twenty hours a week. The hours spent training can be daunting considering many of these women have to balance relationships, family, and career along with training.

Research on women's barriers to exercise has shown that women tend to place their exercise needs below those of their spouse and children, and women with children are less likely to participate in exercise altogether (Bond, 2005; Sternfeld, Ainsworth, & Quesenberry, 2002). With all the above statistics on women in combination with the demands of training, there is a need to understand the demographic characteristics of this population. Clearly, knowledge about current training, intersected with proper training techniques, including overreaching versus overtraining, proper nutrition and hydration, and training various energy systems (e.g., lactate threshold and VO₂max) will enhance performance in these ultra-distances. We can see the difference that knowledge about training has made in recent record-setting performances (e.g., Lance Armstrong, Usain Bolt, and Kristin Armstrong, just to name a few).

A fifth reason why this study is important is that previous research has not examined coaching practices in ultrarunning. Coaching, which often makes a difference in endurance performance for team sport athletes, does not appear to be commonly used by recreational athletes pursuing personal goals. Proper coaching has helped athletes improve their performances through designing training regimens for specific physiological adaptations and facilitating mental preparedness in a variety of sports (Baker, Yardley, & Cote, 2003; Myers, Vargas-Tonsing, & Feltz, 2003). It is logical that the use of coaching with ultrarunners might impact their performance; therefore, knowledge about current practices in coaching will be beneficial. Presently, there is no empirical research on the coaching practices of recreational athletes including those who participate in long-distance events such as ultrarunning, Ironman triathlon, and road cycling. Because current research has not evaluated the use of coaching in ultrarunning,

and coaching has potential value to improve performance, it is important to include exploratory information in the present study.

Finally, there are no available data on women and ultrarunning. Today, women comprise a significant part of the ultrarunning community (e.g., 19 – 37% of the six races featured in Table 1), but there is no available information about their reasons for participating, their motivation, goal-setting behaviors, training, or coaching.

Given my passion for the sport, and the lack of information about women ultrarunners, there is a need for an exploratory study that describes the female ultrarunning population. Therefore, the primary purpose of this study was to create a profile of women ultrarunners by first describing: (a) the female ultrarunning population (e.g., age, job demands, family structure, etc.), (b) training habits (e.g., hours per week of training), and (c) use of coaching in this population. Secondly, two important characteristics in women ultrarunners will be examined: motivation and goal orientation. With additional information about women ultrarunners, it is possible that more women will want to pursue this sport. It is also likely that those who currently participate can improve their performance by learning about current participants and practices in ultrarunning.

Research Questions and Hypotheses

The qualitative portion of this study was guided by the first three research questions, thus there are no corresponding hypotheses.

Research Question 1: What are the training habits of women ultrarunners? (e.g., hours per week, alone or with others etc.)

Research Question 2: Where do ultrarunners get their training information? In addition, do they use coaching? If so, how? If not, why not?

Research Question 3: What are the demographics of women ultrarunners?

Research Question 4: What are the predominant motivational factors that contribute to participation in ultrarunning? Specifically, are women motivated by weight loss and social affiliation, as reflected in the current research on recreational exercisers and marathon runners; or are they motivated by personal goal achievement and physical fitness, as shown in competitive women athletes?

Hypothesis 4: Women ultrarunners will be motivated by personal achievement and sense of accomplishment. In addition, they will cite general health outcomes (e.g., stay physically fit and have a healthy body) as motivational factors. Personal goal achievement and health outcomes will be the two factors that contribute most to motivation.

Research Question 5: What are the goal orientations of women ultrarunners and what are the resulting goals they set for racing?

Hypothesis 5: Women ultrarunners main goals will be centered on personal achievement (i.e., task-orientation), which includes finishing a race within a specific time and successful completion of a difficult course. Many will also possess competitive qualities associated with winning the race or age division placing (i.e., ego-orientation).

Delimitations

The population for the present study is women ultrarunners of all ages. This population is not large; therefore, the sample size will be small. To maximize access to this population, the selected surveys were linked to a thesis web link and sent out via e-mail on an Ultra mailing list (internet discussion group on the sport of ultrarunning). In addition, the thesis web link was posted on four major websites (outlined in the methods section).

Limitations

The population (i.e., women ultrarunners) defined for this study, competes in events that greatly differ in distance and time. For example, some women sampled may compete in 50k races, which can take five to eight hours to complete; other women may compete in longer distances (i.e., 100 miles), which can exceed 24 hours during a single competition. One limitation to this study is that the assumption is made that the athletes studied (those who run 50ks versus those who run a 100 miles) will not differ in motivation and goal orientation. Because women ultrarunners have not been studied, it is not clear whether differences will exist between women who run different distances of ultramarathons. A second limitation is that the design of the study (e.g., web-based survey) limits randomization and generalizability. Also, participant response rates can be estimated but not quantified.

Assumptions

It is assumed that all participants are female ultrarunners who will answer the questions honestly.

Definitions

Achievement goal theory is a social psychological theory that attempts to articulate the relationships between “motivational orientations regarding competence on behavioral and psychological outcomes” (Hein & Hagger, 2007, p.149).

Achievement behavior is a degree of motivation measured as an outcome variable. Achievement behavior is determined by goal orientation and perceived ability (Weinberg & Gould, 2007).

Ego orientation refers to a referent approach to goal setting that determines achievement in comparison to others (Hein & Hagger, 2007).

Extrinsic motivation refers to participation in an activity to obtain something desired that is external (e.g., financial or material award or age group ranking) (Duda & Treasure, 2006).

Goal orientation refers to the two main goal perspectives, task-orientation and ego orientation, which guide the way an individual defines success and achievement.

Intrinsic motivation stems from an internal desire to feel competence and enjoyment from doing an activity. The primary reason for participation in an activity revolves around “inherent pleasure” gained by participation (Duda & Treasure, 2006).

Motivation is defined as the direction and intensity of one’s efforts (Weinberg & Gould, 2007). Direction is the choice of the behavior made and intensity is the magnitude of effort put into the behavior. In addition, persistence, the amount of time spent on a specific activity, is also a significant contributor to an athlete’s motivation (Ryan & Deci, 2000).

Perceived ability is the belief an athlete has in his or her ability to be successful in a sports situation. Perceived ability can be based on being better than others or the individual's belief he or she can accomplish a task (Nicholls, 1984).

Social motivation model states that participation in an activity can be motivated by a desire to belong. The social motivational categories are social affiliation, social status, and social recognition (Hodge et al., 2008).

Task-orientation refers to goals set that are self-referent in nature and involve improvement or mastery of a skill (Hein & Hagger, 2007).

Ultramarathon is a running event held off road on mountainous terrain that spans a distance ranging from 50 kilometers to 100 miles (Editors of the American Heritage Dictionaries on pg. 51, 2006).

Ultrarunner is an individual who trains for and participates in ultramarathons.

CHAPTER 2

Literature Review

This chapter provides an overview of information that was considered while planning this thesis project. The sections for this chapter will summarize the following information related to endurance-based events: (a) training and coaching, (b) motivation, and (c) goal orientation. Where possible, information about women will be separated from information about men.

Due to limited research on ultrarunning, information will be extrapolated from studies on marathon running, long distance endurance events and from sports in general. The information from these studies will be used to predict possible similarities and differences in training and coaching, motivation, and goal orientation between endurance athletes and women ultrarunners.

Training Habits

Training habits of an athlete refer to the how and what of preparing for events. This may include: hours per week spent training (or distance covered), with whom athletes train, and how they get their training information. To date, there have been no studies where the primary purpose was to evaluate the training habits or coaching utilization of ultrarunners or other endurance sports (i.e., marathon runners, triathletes, cyclists, etc.). Often, researchers have asked questions regarding time spent training or distance covered training as a part of a supplemental questionnaire outside of the main

research focus, but no studies have included supplemental questions on the use of coaches. Considering the physical difficulty associated with training for these types of events and the potential benefit of having a coach, it is surprising that these questions have not been asked previously. In order to present an overview of possible training habits of ultrarunners, the research on marathon runners that has addressed time spent training and companionship while training will be reviewed.

Ogles and Masters (2003) compared the motivational differences and training practices between younger and older male marathon runners. They found that both groups trained approximately eight hours a week and 77% of the training was done alone. Takeshima and Tanaka (1995) reported that competitive middle aged male marathon runners trained an average of six and a half hours a week, which is considerably less than reported in the previous two studies. The question then becomes: is the time spent training for a marathon similar to an ultramarathon? Common sense says no: ultramarathoners will run more than marathoners.

The next question is where do athletes get their training information? If the research has not provided evidence that working with a coach is common, then how do athletes know how many hours a week to train and what they should do during that time? Self coaching may be a prominent element in individual endurance sports, especially running. There are many free resources available for beginners to advanced runners. For ultrarunning, there are two periodical training resources: Ultrarunning Magazine and Trail Runner. Both of these publications offer race schedules, training tips, and anecdotal experiences. Yet, it is not clear if these publications are used as a training reference or for leisure reading. Another key source of training feedback is the Ultra List Serve. The list

boasts over 2,100 members across the United States. The purpose of the list is for ultrarunners to have access to other people who participate in the same sport who can offer guidance on training, injury prevention and recovery, nutrition, and race strategies. As a member of the list, I have seen it utilized as a training resource on many occasions.

The training resources listed above are a few of the possible resources available to ultrarunners. The questions regarding training habits, coach utilization, and training sources in the present study are included so exploratory measures can be taken to understand how ultrarunners prepare for competition.

Motivation

Motivation is characterized by feelings and thoughts that drive a specific behavior. In sport psychology, motivation is examined through the context of participation, sport choice, and level of competition. Although there are individual differences that determine each person's motivational behavior, many theories are used to explain motivational patterns that supersede individual characteristics. Two motivational theories of interest are social motivation and achievement goal theory. In discussing these two theories, it is beneficial to first define two terms frequently used in context with motivation: intrinsic and extrinsic motivation.

Intrinsic and Extrinsic Motivation

Many motivation theories possess a component of intrinsic and extrinsic motivation. Whether the athlete is intrinsically or extrinsically motivated will closely coincide with achievement goals and perceptions of control and success. *Intrinsically* motivated behavior is characterized by the pursuit of activities that are challenging, inspire competence, and are self-determining without the need for an external reward

(Deci & Ryan, 2000). An individual who is intrinsically motivated views participation in the activity as the reward. *Extrinsic motivation*, on the other hand, comes from a desire to gain an external reward. In sports, examples of external rewards are trophies, ribbons, monetary gain, age group placing, or outward appearance (physique) (Frederick & Ryan, 1993). Both facets of motivation can exist within an individual athlete but one is often more prevalent than the other.

Many studies have compared the perception of success, competitiveness, and sport happiness between athletes who are more intrinsically or extrinsically motivated. The predominant theme in sports literature is that intrinsically motivated athletes are more committed and experience greater happiness and fulfillment than those who are extrinsically motivated (Frederick & Ryan, 1993; Frederick-Recascino & Schuster-Smith, 2003). Intrinsic motivation is a key element in *task goal orientation* (which will be covered in more detail in an upcoming section). Researchers have shown that there are gender differences between those who are intrinsically motivated and those who are extrinsically motivated. For women, two main reasons for engaging in recreational exercise are weight control and an improved physique (Bond, 2005; Frederick & Ryan, 1993; Gill & Overdorf, 1994). Interestingly, these motivational factors are defined as extrinsic motives and may undermine intrinsic rewards and lead to a less successful outcome (Ryan & Deci, 2000). This may be one reason why exercise adherence wanes after six months. Research on marathon participation reflected similar findings (i.e., goals were oriented towards weight control and improved physique) but with continued participation. Masters and Ogles (1995) and Ogles and Masters (2003) surveyed over 2,000 runners and found that the two of most commonly cited reasons that women ran a

marathon were health outcomes (i.e., physical fitness and weight loss) and social affiliation. Frederick and Ryan (1993) suggest that body-related motives could reflect extrinsic motivation but could also reflect intrinsic motivation if the individual has a “strong personal value such as health maintenance” (p. 134); additionally, this value system could change over time (i.e., extrinsic to intrinsic).

There is a strong possibility that one aspect of motivation that drives women ultrarunners is that they place a high personal value on health and physical fitness, but not a desire to lose weight. Simply being thin would provide a very weak form of motivation and would not be enough to persist in the face of the adversity experienced during racing or during the grueling training leading up to competition.

The next section of this paper describes the second most cited motivational factor related to participation in marathons: social affiliation. Social affiliation will be discussed in the context of the social motivation model.

Social Motivation Model

The social motivation model suggests that “sport provides individuals opportunities to satisfy their need for social connections and belonging” (Hodge et al., 2008, p. 160). Therefore, goals not only result from perceptions of ability but perceptions of belonging as well. Social motivation orientation includes social status, social recognition, and social affiliation. Women, beginning at a young age, report social affiliation and social recognition as strong motivators for participating in many activities from academics to music to sports. Allen (2003) found female adolescents cited mainly social reasons for participating in sports. These results do not seem to differ based on age. Many researchers have found that women tend to set social goals for participation in

exercise (Bond, 2005; Gill & Overdorf, 1994; Hodge et al., 2008; Levy, 2002; Masters & Ogles, 1995). Given past research findings, there is a possibility that motivation to run an ultramarathon may be based on social orientation.

The design of a marathon lends itself to socialization during the event. When participating in a marathon, one can either find a group of runners out on the course to run with, or at the start of the race, one can join a group that will cover the distance based on a goal finish time. There are also many organizations that support participation of women in marathons, such as Team in Training and the Nike women's full and half marathon. Currently, ultramarathons are not organized in this fashion.

During an ultramarathon, competitors will at times run with other people, but there are simply fewer people in these events; therefore, there are fewer opportunities to run as a group. Another difference is that there are typically fewer ultrarunners than marathoners in any given race. For example, it is not unusual for a marathon to have 2,000 participants whereas an ultramarathon will have roughly 300 total participants for multiple distances. In addition to fewer people, the terrain provides its own challenges. Due to a significant amount of climbing and dense vegetation, a competitor could be only five minutes ahead, but would never be in view. Furthermore, because of the varying terrain, each athlete has to maximize her own strengths and weakness. Some competitors may be good downhill runners whereas others excel on the uphill climb. Maximizing one's individual strengths leaves competitors "running their own race" and not pacing with others. In 50 to 100 mile races, competitors will often have a pacer who generally runs with them in the latter portion of the race when mental and physical fatigue is at a

peak. The reality is that this support during the late stage of a race would not be viewed as a social reward for participation.

While ultramarathons are generally not run in groups, there is a strong social community of ultrarunners. Furthermore, it is not uncommon for ultrarunners to travel hundreds of miles or out of state to compete and still encounter familiar faces. There is a unique camaraderie that exists because of the demanding requirements to successfully finish an ultramarathon. However, it could be argued that there is not enough socialization, which generally takes place before and after the race, for this to play a large role in motivation. Women ultrarunners may value the social aspects and enjoy the camaraderie, but it is a *benefit* of participating rather than a *motive* to participate. Based on my own personal experience, it may be more likely that women ultrarunners are motivated by personal goal achievement

Achievement Goal Theory

A significant amount of research in motivation and sport has employed achievement goal theory. Achievement goal theory assumes that goals set by individuals are governed by the belief they have in their ability to succeed, which in turn affects subsequent behavior (Roberts, 2001). Therefore, achievement goal theory can be discussed as goal orientation, perceived ability and achievement behavior (Nicholls, 1984). Figure 1 outlines this theory demonstrating the dynamic relationship between goal orientations, perceived ability, and resulting achievement behavior.

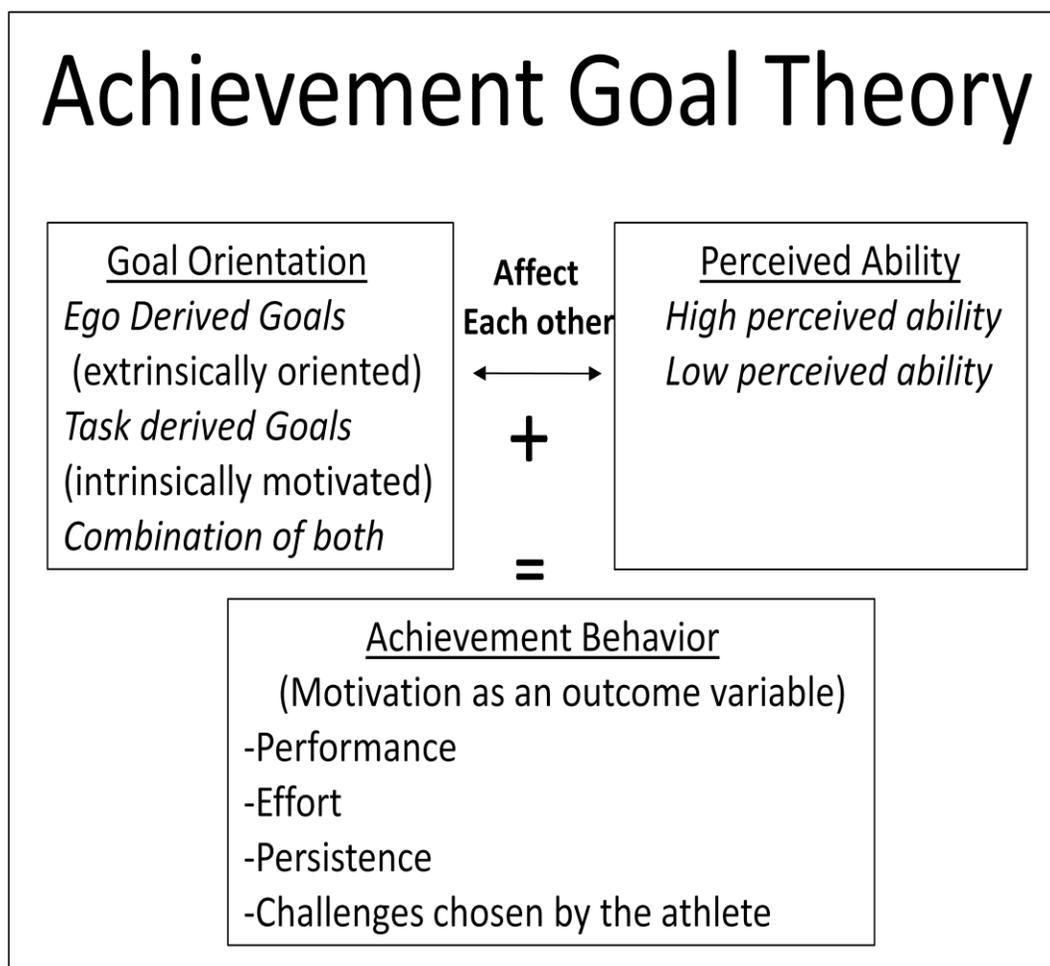


Figure 1. Achievement Goal Theory (adapted from Weinberg & Gould, 2007)

Goal Orientation

Goal orientation is the first component of achievement goal theory (see Figure 1). An athlete's perception of ability is based on a self-referent measure or comparison of self against others. The way athletes act (degree of challenging situations they choose) and the events they will seek following successes or failures are based on their goal orientation. The two types of goal orientation are task and ego. Task-orientation describes goals set that reflect mastery of skill and personal accomplishment (i.e., self-referent). Ego-orientation reflects goals of being better than others or possessing a higher

skill level than someone else (i.e., others-referent) (Grieve, Whelan, Kottke, & Meyers, 1996; Nicholls, 1984).

Athletes who adopt a task-orientation tend to have a more enjoyable and successful sporting experience - even when competition is at the elite level (Duda & Treasure, 2006; Eliot, 2005; Hodge et al., 2008). Although this is the case, it is important to note that goal orientations (i.e., task and ego) are independent dimensions; therefore, an athlete is not necessarily one orientation or the other, but can possess qualities of both (Duda & Treasure, 2006; Nicholls, 1984; Roberts, 2001).

It is reasonable to assume that women ultrarunners will be more self-referent or task-oriented. This may be true of ultrarunners for three reasons. First, completion of an ultramarathon is a difficult task for which an athlete has to diligently train. Completion of an ultramarathon is viewed as a significant achievement or task accomplishment and is often considered a battle against oneself and not others (Milanese, 2007). Second, many ultrarunners train to successfully complete longer distances as a main goal (though this has not been empirically shown, the present study should confirm the assertion). Third, in every race there can only be two types of winners (i.e., overall and age group). If an ego-orientation was predominant to measure personal success, the outcome of many races would mean failure for the athlete. When task difficulty is perceived as moderate to high, ego-oriented individuals have a lower perceived ability (Nicholls, 1984). Therefore, lower perceived ability could result in less confidence. It could be argued that one fundamental need to compete in an ultramarathon is the confidence the athlete has in herself to do it (Acevedo et al., 1992). The difficulty of ultramarathons and the confidence athletes' need in themselves to be successful lends credence to the hypothesis

that women ultrarunners will be more task-oriented. However, this assumption does not imply that women will not also compete to do well, place in their age groups or even win (i.e., ego-orientation).

Research has shown that athletes can adopt goals oriented around both task and ego dimensions. The presence of competition may attract athletes with a strong ego-orientation and/or a task-orientation. Certainly, one would expect ego-oriented athletes to seek out opportunities to demonstrate their ability, but research indicates that task-oriented athletes also seek out and enjoy competition. In fact, Franklin and Brown (1995) found that task-oriented people are attracted to competitive situations because it fosters mastery of skills and performance improvement. This specifically holds true for athletes who participate in individual sports.

Gill, Williams, Dowd, Beaudoin, and Martin (1996) found that compared to team sport athletes, runners were less win-oriented even when they were competitive and successful. Furthermore, they reported that ultrarunners (who were not the focus of the study but a few participants identified as such) were very competitive and goal oriented, but not win-oriented. In an earlier study, Acevedo et al., (1992) found that ultramarathoners were confident and competitive, ranking high in goal orientation, but low on win orientation compared to other athletes. According to Levy (2002), competitive situations may elicit personal growth and foster an “inherent pleasure in racing” (p.112). In addition, a study including amateur competitive cyclists found competitiveness had a high positive correlation with intrinsic motivation (Frederick-Recascino & Schuster-Smith, 2003).

With the preponderance of evidence from these studies, speculations can be made about the goal orientation of women ultrarunners. Women ultrarunners may display a competitive nature, which will increase race enjoyment, but they may also value skill mastery and personal achievement more than success in comparison to others.

Achievement Behavior

Achievement behavior, the second component of achievement goal theory (see Figure 1), involves examining motivation as an outcome variable (O'Neil, 2006). When defining motivation, direction, intensity, and persistence of behavior should be included. Specifically, when motivation is examined as an outcome variable, the types of events in which the athletes participate and the level of commitment with which they approach training are evaluated. Commitment and event choice are direct results of an athlete's belief in herself and her goal orientation. If athletes have a task-orientation regarding success, their achievement behavior will be characterized by a strong commitment to training (improving ability) and challenging race selection.

In conclusion, very little is known about women ultrarunners. The challenges of competing in ultramarathons are dissimilar to other sporting events. The aim of this study is to create a profile of a women ultrarunner. The components of this profile will include information about lifestyle, training habits, family, job demands, and race goals. In addition, two main theories were presented (social motivation theory and achievement goal theory) to create a foundation of motivational factors that will be examined. From these theories and available research, it is suggested that women ultrarunners may possess a unique combination of motivational patterns that enable them to successfully compete in ultramarathons. Their goals selected for competition should reflect these

motivational factors. Their training habits and coaching preferences have not been examined previously and this study proposes to examine some of those questions.

The next section of this thesis includes information about the participants, methods, and procedures that were used to answer the research questions and contribute to the body of knowledge about women and their participation in ultramarathons.

CHAPTER 3

Methods

Participants

Participants ($N = 344$) in this study were adult women ultrarunners 18 years and older ($M = 40$, $SD = 9$). They were recruited by sending solicitation emails to the Ultra List Serve (www.ULTRA@LISTSERV.DARTMOUTH.EDU) which has over 2,100 subscribers. Additionally, participants were solicited through five popular ultrarunning and trail running websites:

- Extreme Ultrarunning (<http://www.extremeultrarunning.com/>)
- Run More Talk Less (<http://runmoretalkless.blogspot.com/>),
- Pacific Coast Trail Runs (<http://www.pctrailruns.com/>)
- Santa Barbara Athletic Association (<http://www.sbrunning.org/>)
- A Trail Runners Blog composed by Scott Dunlap, the 2004 champion of the Trail Runner trophy series (<http://runtrails.blogspot.com/>).

Research Design

Participants were asked to click on the thesis website (www.bkrousedemographics.com/RZL/ultrarunning.html) and fill out three questionnaires (discussed in the next section) using Survey Monkey. Survey Monkey is an online survey website that allows researchers to develop surveys and create an email or website link so the survey can reach a mass audience via the internet. Data were collected and stored by Survey Monkey. Participants who started completing the

questionnaires gave consent to participate by virtue of clicking onto the website and starting the research process. It is estimated that the completion of the surveys took approximately 15 minutes per person.

Instruments

Demographic, Training and Coaching Information

Participants began by completing a simple researcher-developed questionnaire designed to learn about the sample studied and to obtain demographic information. This questionnaire asked participants about age, family, career, training schedule, goals, training resources, and access to a coach (see Appendix A). All questions were multiple choice, fill in the blank, and open-ended. Examples of questions are outlined in the data analysis section. Content validity was ascertained by having a committee of experts read and critique the questionnaire by using existing literature to formulate the questions. Reliability of this questionnaire was not assessed.

Motivation

Factors that contribute to motivation were measured using the Motivation on Marathon Running Scale (MOMS) (Masters, Ogles, & Jolton, 1993). This questionnaire has been shown to be valid and reliable for marathon runners with sufficient internal consistency (Cronbach's alpha range .80 to .93), test re-test reliability, (interclass Rs range .71 to .90), and factorial validity of the scales (Masters et al., 1993). In addition to its extensive use with marathon runners, it is currently the only questionnaire that has measured running motivation in ultramarathoners (Stoll, Wuerth, & Ogles, 2000).

The MOMS questionnaire consists of 56 questions. Participants were asked to "rate each of the following items according to the scale below in terms of how important

it is as a reason for why you run.” The rating system used a Likert scale ranging from 1 to 7 with a score of 1 indicating the item is "not a reason" for running and a score of 7 indicating that the item is a "very important reason" for running.

This questionnaire divides motivation into four categories, each with sub categories to allow for a close evaluation of motivational factors. These four categories include: *physical health motives*- general health orientation and weight concern; *social motives*- affiliation and recognition; *achievement motives*- competition and personal goal achievement; and *psychological motives*- psychological coping, self-esteem, and life meaning. A copy of the questionnaire appears in Appendix B. A high mean score in any category represents a strong motivation to run (i.e., a high score in the achievement motives category means competition and personal goal achievement are significant motivators for the individual to run).

To evaluate the internal consistency of the of the MOMS questionnaire, Cronbach’s alpha was calculated for all categories. All categories were found to have good internal consistency with alpha values mirroring past findings (Masters et al., 1993). Alpha values were as follows: weight concern ($r = .85$), health orientation ($r = .84$), social recognition ($r = .90$), social affiliation ($r = .85$), competition($r = .84$), personal goal achievement ($r = .78$), self-esteem ($r = .82$), life coping ($r = .89$), and life meaning ($r = .85$).

Goal orientations

To measure goal orientations, the Perception of Success Questionnaire (PSQ) was used (Roberts, Treasure, & Balague, 1998, see Appendix C). Content validity for this questionnaire was established through repeated evaluation by an expert panel consisting

of motivation researchers and sport psychologists who were accomplished in achievement goal theory. Cronbach's alphas for the task and ego scales were .89 and .90 with test re-test reliability reported at $r = .97$ and $.98$ (Roberts et al., 1998).

To determine goal orientations, participants were asked: "When racing in an event, I feel most successful when," followed by a series of 12 questions designed to distinguish between a task or ego orientation. Each question was measured on a 5-point Likert scale where 1 signified that the participant "strongly agreed" with the statement, three represented a neutral feeling, and 5 indicated that the participant "strongly disagreed." For scoring, the questions were separated into a task or ego category. Each category contained six questions. A low mean score in either category represented a strong orientation with a score of three being neutral. To evaluate the internal consistency of the (PSQ), Cronbach's alpha was calculated for the categories of task ($r = .93$) and ego ($r = .89$). These findings are consistent with past tests of internal consistency and are deemed acceptable (Roberts et al., 1998).

In addition to assessing goal orientation, it was helpful to ascertain the types of goals set for racing. Three additional questions were included on the demographic questionnaire to learn about the kinds of goals women ultrarunners set for competition.

These questions were:

- Do you train for races with a specific goal in mind?
- Give an example of two common goals for racing that you set (e.g., age group placing, run a specific distance within a certain time).
- What percentage of the time do you reach your goals?

Data Analysis

To answer research question one (determining training habits), the following fill in the blank questions were asked: How many hours a week do you train?; Do you train alone with others or both?; and Estimate the percentage of time you train alone and with others?; The participant responses were reported using descriptive statistics.

To obtain sources of training information (first part of research question two), two multiple choice questions were asked: Where do you get your training information?; and What is the primary source used?; Percentages and common themes are reported.

To identify coach usage (second part of research question two), multiple choice, yes/no, and fill in the blank questions were asked articulating, whether participants use a coach, why or why not, and the primary reason to use a coach. Percentages and common themes are reported.

To determine the demographic composition of the participants (research question three), they were asked questions identifying age, relationship status, work status, parenting status, and state of residence. Answers are reported using descriptive statistics for each question (i.e., means, percentages and common themes).

To test hypothesis four (i.e., motivational factors), a comparison of means was done and a Two-Step cluster analysis was run (with the Bonferroni adjustment applied) to determine any natural grouping within the four categories and sub categories. The Two-Step cluster analysis procedure is an exploratory tool designed to reveal natural groupings (or clusters) that are significantly different from each other within a data set that would otherwise not be apparent. Two-Step cluster analysis can be beneficial if there is a large data set and the number of clusters is not predetermined (which is necessary for *K*-means)

and does not require a matrix of distances between clusters, necessary for a hierarchical analysis (Norusis, 2008). In addition, any category or subcategory scale with a mean score of four or more was considered a primary motive for running (Ogles & Masters, 2003).

To test hypothesis five (i.e., predominant goal orientation) a comparison of means was done between the ego-oriented goal category and task-oriented category from the PSQ. Additionally, a Two Step cluster analysis was done (with the Bonferroni adjustment applied) to determine any natural groupings between the ego orientation and task-orientation. For reporting the answers to the questions: “do you train for races with a specific goal in mind?”, and “what percentage of the time do you reach your goals?,” percentages are given. For the follow-up qualitative question: asking participants about two common goals set for racing, common themes are reported.

CHAPTER 4

Results

Training and Coach Use

To evaluate training consistencies and variations between female ultrarunners, four main variables were analyzed: (a) hours spent training, (b) training partners (if any), (c) where they get their training information, and (d) if they utilize a coach. Women trained an average of 12.49 ($SD = 5.20$) hours a week. If participants reported a range of hours (i.e., 7-10) the mean value of the range was used in the analysis. There was a wide range of training hours reported, from as few as three hours a week to as many as 37.5. Two training values (55 and 50 hours) were removed from the analysis because they appeared to be outliers (i.e., participants may have confused mileage covered in a week instead of time).

In terms of training partners, 16.1% ($n = 55$) trained solely by themselves, 3.8% ($n = 13$) trained only with others, and 80.1% ($n = 274$) trained alone and with others. For those who trained alone and with others, the average percentage of time spent training alone was 64.0% with percentages of time ranging from 2% of the time to 99% ($SD = 26.14$); the average time training with others was 35.3% with percentages of time ranging from 1% to 98% ($SD = 25.92$).

The third question aimed to determine sources of training information used by women ultrarunners. Participants were asked two multiple choice questions in which they

checked all the sources from which they receive information. Table 2 outlines the percent of participants who indicated the sources of training information.

Table 2

Sources of Training Information for Women Ultrarunners

Sources of Training Information	Percent of Each Source Used (n=335)	Percent Used as a Primary Source (n=314)
Personal knowledge and experience	86.9	68.5
Running magazine	54.9	3.2
Running website	53.1	12.1
Running club	27.8	5.7
Coach	25.4	10.5
I have a degree in exercise science	4.5	0.0

Participants were given an option to indicate other sources of training information in a short answer section if it was not included in the above list. Many women indicated that they sought training information from friends (e.g., other ultrarunners who use the ultra list serve mentioned previously), books, and ultrarunning blogs.

The final question regarding training behaviors related to coach utilization. The results showed that most women (79.6%) did not use a coach for training while only 20.4% did use a coach. When asked to explain why they chose not to use a coach, three themes were evident. First, the most predominant theme was cost. Many women indicated that coaching was unaffordable for them. Some women said they would use a

coach if they could afford to do so. The second most common theme was that women did not think they needed a coach. With all the training resources available, they felt having a coach was not a necessity. The least common theme was that women felt that a coach would only be useful if they were training to win the race- not just participate. Therefore, they felt coaching might take the fun out of training.

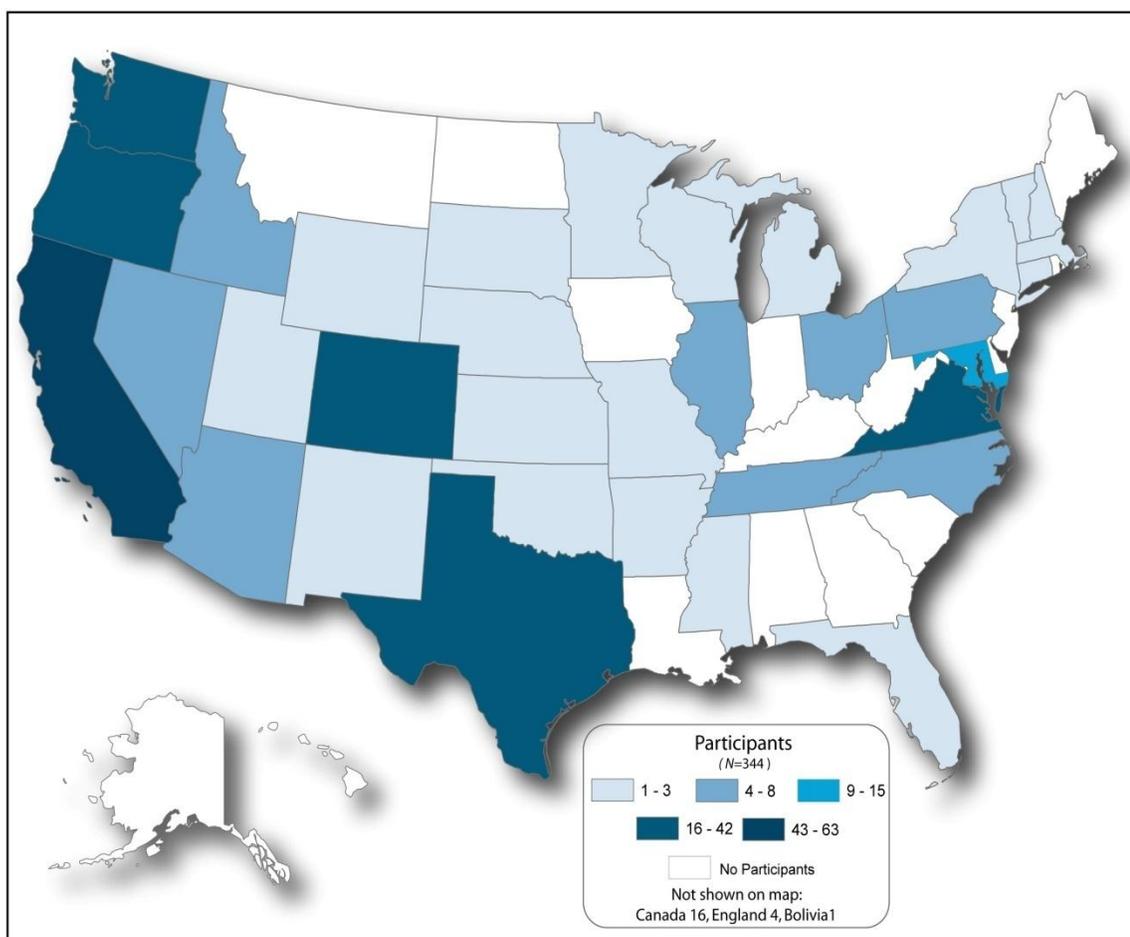
The women who did work with a coach were asked to identify all the reasons they worked with a coach in a multiple choice question. They were then asked to identify the primary reason they work with a coach. Table 3 outlines the multiple choice answers and the percentage of participants who selected each reason, including their primary reason.

Table 3

Women Ultrarunners' Reasons for Using a Coach

Reasons for Coach Utilization	Percent of Each Reason a Coach is Used (n=82)	Percent of Primary Reason a Coach is Used (n=74)
Training knowledge	87.8	64.9
Accountability	51.2	27.0
Motivation	47.6	10.8
Nutritional guidance	26.8	4.1

Though the reasons for using a coach appear to be multi-dimensional, the results indicate that the main reasons women train with a coach is for training knowledge (64.9%) and accountability (27.0%).



Participant Demographics

Figure 2 Number of Female Ultrarunning Participants by State and Country

As shown in Figure 2, most states had participants for this study and a surprising number were from other countries including Canada, England, and Bolivia. Additional demographic characteristics are presented in Table 4. Preferred race distance did not vary greatly between the participants with 32.6% focusing on 50ks, 39.5% participating in 50 mile distance, and 27.9% racing primarily 100 mile distances. Participants who focused on 50 and 100 mile distances reported participating in shorter events as well. Many of the

participants who focused on the 50k reported a desire to complete greater distances in the future.

Over three quarters (78.9 %) of respondents reported being married or in a long-term relationship. When asked if their significant other participated in ultrarunning, only 29.5% said yes. However, 37 participants whose spouse or significant other was not an ultrarunner, did participate in other endurance sports (i.e., marathon running, mountain biking, road cycling, and triathlon).

Interestingly, 40% of the women reported having children and only 54 women had children under the age of six ($M = 3.15$ years old, $SD = 1.55$). There were 118 women who reported having children between the ages of six and eighteen ($M = 11.13$ years old, $SD = 3.27$) and 93 women had children who were over the age of eighteen ($M = 26.46$ years old, $SD = 6.42$).

Astonishingly, 75.7 % of women classified their work status as full-time averaging 41.02 hours a week ($SD = 11.07$). For women who reported a range of hours worked (i.e., 35-45 hours a week), the mean was used to determine their hours worked. Women who were full-time students ($n = 2$) and stay at home mothers ($n = 5$) were included in the full-time employment category. Almost one fifth of the sample (16.1%) worked part-time, with the remaining 8.2% not employed. Most women indicated that their jobs were not flexible and they designed their training schedule around work to achieve the necessary training hours.

Table 4

*Demographic Characteristics of Women**Ultrarunners*

Demographics	Percent in Category
Main Race Distance (<i>n</i> =340)	
50K	32.6
50 Mile	39.5
100 Mile	27.9
Currently Married or Long Term relationship (<i>n</i> = 342)	
Yes	78.9
No	21.3
Have Children (<i>n</i> = 343)	
Yes	40.2
No	60.1
Work Status (<i>n</i> = 342)	
Full time	75.7
Part time	16.1
Do not work	8.2

Motivation

The first aspect of evaluating motivation for participating in ultramarathons was determining the categories that were endorsed the most. To achieve this, the means and standard deviations were calculated for each category and subcategories, shown in Table 5. The two most endorsed categories of motivation were *physical health motives* ($M =$

4.80, $SD = 1.02$) and *psychological motives* ($M = 4.74$, $SD = 1.00$). The least endorsed category was *social motives* ($M = 3.57$, $SD = 1.19$).

Evaluating the subcategories revealed that *personal achievement* ($M = 5.19$, $SD = 0.97$) and *health orientation* ($M = 5.14$, $SD = 1.09$) were the two categories most endorsed. The two least endorsed subcategories were *recognition* ($M = 2.94$, $SD = 1.43$) and *competition* ($M = 2.88$, $SD = 1.40$).

Table 5

*Motivation for Marathon Running Scale**Results in Women Ultrarunners*

Categories	<i>n</i>	<i>M</i>	<i>SD</i>
Physical health Motives		4.80	1.02
Weight Concern	324	4.31	1.42
Health Orientation	318	5.14	1.09
Achievement Motives		4.25	0.99
Competition	316	2.88	1.40
Personal Achievement	316	5.19	0.97
Social Motives		3.57	1.19
Recognition	312	2.94	1.43
Affiliation	319	4.19	1.37
Psychological Motives		4.74	1.00
Self-Esteem	316	4.86	1.03
Life Coping	317	4.69	1.23
Life Meaning	312	4.58	1.37

Note: Higher score means stronger motivational reason; overall standard deviation for each category was smaller than subcategories due to less categorical variance resulting from subcategories being slightly negatively correlated within major categories.

Cluster Analysis

Table 6 presents the results of the Two-Step cluster analysis. The cluster analysis revealed two significantly distinct groups. On a motivational continuum characterized by “not important reasons to run” (i.e., 1) and “very important reasons to run” (i.e., 7), Cluster 1 was significantly lower ($p < .05$) on the continuum in all categories than Cluster 2 (i.e., low motivation verses high motivation). Interestingly, there was no specific clustering of sub categories but level of motivation (important reason to run) clustered in all categories.

Table 6

Cluster Distribution of Motivation Variables In

Women Ultrarunners

	Cluster 1 Low Motivation ($n= 151$)		Cluster 2 High Motivation ($n= 136$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Weight Concern	3.56	1.54	4.95	0.79
Health Orientation	4.77	1.21	5.39	0.83
Competition	2.19	1.56	4.91	1.04
Personal Achievement	3.52	1.22	5.50	0.71
Recognition	1.85	0.92	3.86	1.11
Affiliation	3.51	1.35	4.83	0.95

Self-Esteem	4.30	1.06	5.38	0.67
Life Coping	4.20	1.35	5.06	0.91
Life Meaning	3.97	1.44	5.20	0.90

Note: 57 cases were excluded due to incomplete questionnaires

In addition, cross tabulations, chi square tests and regression analysis were done to determine if the two clusters had relationships or predictive qualities with any other categorical data. This included age (categorized by decade) and goal orientation clusters. No statistically significant relationships were found.

Goal Orientation and Goal Setting

The first aspect of evaluating goal orientations was to determine the means and standard deviations for both task ($M = 1.38$, $SD = .68$) and ego ($M = 3.38$, $SD = 1.01$) orientation goal categories. It appears as if this sample is more task-oriented than ego-oriented. A Two-Step cluster analysis, outlined in Table 7, was done to quantify participants into natural groups determined by their goal orientation.

Table 7

Cluster Distribution of Goal Orientations of

Women Ultrarunners

	Cluster 1 High Task Low Ego ($n = 141$)		Cluster 2 High Task Moderate Ego ($n = 151$)		Cluster 3 Low Task Neutral Ego ($n = 14$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Task	1.28	0.37	1.23	0.31	4.00	0.74
Ego	4.29	0.53	2.55	0.56	3.12	0.72

Note: 34 cases were excluded due to incomplete surveys

The cluster analysis revealed three distinct and significantly different ($p < .05$) clusters. Participants in Cluster 1 reported high task-orientation (i.e., score closer to one) and low ego-orientation (i.e., score closer to five). On the other hand, Cluster 2 reported a high task-orientation and more moderate ego-orientation. Cluster 3 contained the fewest number of participants ($n=14$) but reflected a unique goal perspective. They reported low task-orientation and were neutral in ego-oriented goals of racing.

Types of Goals Set and Achieved

Most of the participants (85.2%, $n = 271$) set goals for their chosen events. Only 14.8% ($n = 47$) did not set specific goals. Twenty participants did not answer the question with a “yes/no” to goal setting, but chose to write the type of goals they set in the short answer section of the question. Goals set by participants fell into four goal categories: top finisher, time, distance, and strong completion.

The top finisher type included goals of age group placing, overall placing, and top percent in women (i.e., top 10% or top five women to cross the finish line). The second type of goal revolved around finishing a distance within a given time. For some women, a time goal meant making the cutoff time to complete the race and for others it was about completing a previously raced course in a faster time. Women also set time goals for courses they had not yet run but still desired to achieve a certain time. Distance goals focused on completing new distances or finishing a difficult course. To illustrate, racing terrain varies so greatly that a 50k in one area can take ten hours to complete and a 50k race in a different area can take less time. The final type of goal set by participants was to

finish the race; which included goals of being pain and injury free, ingesting proper nutrition, completing the race feeling strong, and enjoying the experience.

Lastly, participants were asked to articulate the percentage time they reach their desired goal. On average, participants reached their goals 80% of the time ($SD = 17$).

CHAPTER 5

Discussion

The present study was designed to describe characteristics of women ultrarunners. Though ultrarunning has grown in popularity, this population (especially women) has remained unstudied until now. For this reason, the present study attempted a holistic look at women ultrarunners by collecting data from multiple facets of their life: including training and coaching habits, demographic characteristics, motivation, and goal orientations. This section will discuss the results of this study (including limitations), and offer directions for future research.

For many women, time spent training for an event is almost a part-time job averaging thirteen hours a week. It is important to note that the standard deviation was 5.2 hours, meaning some women train close to 20 hours a week; only two participants reported training fewer than six hours a week. In addition, most women trained with other people but spent over half their training hours by themselves. This is an expected finding due to ultrarunning being less popular than other individual sports and

less inclusive of others when training distances become lengthy. A typical training run can exceed four hours.

Ultrarunning, as of yet, is not a mainstream sport and therefore less information is readily available on how to train for an event. In addition, only a small amount of research in exercise physiology has been done on proper training techniques specific to ultrarunning. So the question remains, where do women obtain their information? In this sample, women relied on their own experience and on the ultrarunning community for their training information. Many women across the country stay in contact with each other through blogs, websites, and the Ultra List-serve and obtain training information in this way. Though there is no previous research to which women ultrarunners behavior can be compared, it seems they may be unique in that their connections to each other were enabled by the use of technology. The camaraderie they experience is unusual for people who are so geographically separated. The connection to each other may be partially behind the growth in numbers within the sport.

Most women chose not to use a coach and the main reason was the cost. The other reason women did not use a coach is they felt they could rely on their own experience and the ultrarunning community for guidance on training. Many women associated the use of a coach with needing accountability and training to win. Through their answers, women conveyed a disciplined approach to training with no need for outside accountability and they were happy with the performances they put forth. Those who do use a coach enjoyed the accountability but also said having someone else plan an exercise schedule, heart rate zones, and training variations made training more fun, and they did not feel “bogged down” by the science behind training. They could just go run.

After evaluating the use of coaching and the benefits that are reported from women who do utilize a coach, it is clear that coaching is an untapped resource and further education of coaches could prove useful. If coaching became more available with less expensive options, athletes and coaches could benefit.

It was hypothesized that women ultrarunners would be predominantly motivated by personal achievement and general health for participation in ultrarunning events. The results indicate that the hypothesis was correct and the two most endorsed motives (out of the subcategories) for participation were health and achievement. In addition, social recognition and affiliation were minimally endorsed as motives for running. The category of social motives was the least endorsed category and social recognition was the second lowest endorsed subcategory. These findings suggest that women ultrarunners are not similar to recreational women exercisers who tend to endorse weight concerns as their main motive for exercising (Bond, 2005; Frederick & Ryan, 1993; Gill & Overdorf, 1994). Ultra women also differed from women marathon runners and masters athletes who more strongly endorse social reasons for participation in events (Hodge et al., 2008; Masters & Ogles, 1995).

An unexpected finding was the strong endorsement of the main category of psychological motives. This finding makes intuitive sense because exercise is a cathartic behavior and is often used as a coping mechanism, a way to find inner peace and a self-esteem builder (Frederick & Ryan, 1993; Levy, 2002). My own experience validates this notion. In addition, ultrarunning goes beyond what most people would consider standard exercise. I experience a psychological and emotional reward for pushing myself in

extremely challenging situations. Certainly, these experiences shape my life meaning and my level of self-esteem.

The culmination of motivational factors suggests that women ultrarunners have a motivational makeup that is unique to them and/or to other rigorous endurance sports. Levy (2002) conducted a qualitative study evaluating the meaning of competition for women mountain bikers. Levy found that all the women highly valued “without exception” the feelings of “esteem, personal growth, and personal challenge” they experienced as the result of racing. Women ultrarunners are motivated by the same experiences. Levy’s research differed in that she found social affiliation to be an important motivator for racing, but mountain biking can be organized as a team sport which may account for that finding.

A cluster analysis was done to determine any natural groupings (as has been done previously by other researchers using the MOMS questionnaire). However, this study yielded very different results (Masters & Ogles, 1995; Ogles & Masters, 2003). Unlike past research, the cluster analysis yielded only two groups as opposed to four or five. The reason for this may be that the present study did not choose a specific clustering number but chose to allow only significantly different clusters to emerge. In the case of women ultrarunners, the results show that there are two types of women: one who is highly motivated and considered all subcategories of motivation important factors for running (except social recognition); the second type of participant was significantly less motivated in all subcategories, with mean scores less than four in six out of eight subcategories.

Even more interesting, there was no relationship between the two defined clusters and any other categorical variable. This included: age (categorized into decades), race distance, children, work hours, significant other, if they set goals, if they reach their goals and their type (cluster) of goal orientation (discussed in the next section). These findings differ from Masters and Ogles' (2003), who repeatedly found age, experience, gender, and factors of motivation different between clusters.

The underlying difference between the present study and those studies previously mentioned, is that marathon running might attract a wide variety of people, and both genders were studied. In this case, ultrarunning women may be a more homogeneous population and though they can differ in level of motivation, there are no other variables included in this study that are predictive of more or less motivation. These findings also validate the choice to place women who run different distances (i.e., 50k, 50 mile, and 100 mile) in the same sample. It was suggested that the choice to combine distances may be a limitation to the study, but these findings suggest that is not the case.

A second possible reason motivation in the present study differed from past findings, is that motivation for ultrarunning may not have been adequately measured. Other motives may exist that significantly contribute to participation (e.g. being outdoors in nature) that were not tested.

It was hypothesized that women ultrarunners goal orientations and goals set would center on task/mastery, but that many women would possess an ego-orientation as well. This hypothesis was partially confirmed. Most women ultrarunners (except for 14) were high in task-orientation and low to moderate ego-orientation. These findings are reflective of many studies done in multiple sporting contexts with all types of athletes

from children to elite (Hodge & Petlichkoff, 2000; Kuan, 2007; Pensgaard & Roberts, 2003). Unusually, the third cluster (14 women) was low on task-orientation and moderate on ego-orientation. These findings do not concur with any previous studies and may simply indicate that there is a small group of women who are motivated mostly by competing.

Women set goals in three main categories: 1) to win (including age group placing) and to be in the top percentage of women finishers; 2) to challenge themselves to complete a difficult course or new course length or finish within a specific time; and 3) to have fun, finish the race, and remain pain and injury free. All these goals are mainly task-oriented with components of an ego orientation.

The present study has a few limitations that need to be acknowledged. First, the sample for this study was not obtained through randomization; therefore, the results may not be generalizable to the whole population of female ultrarunners. Second, the motivation questionnaire may not have adequately measured motivational factors. Other factors may exist that were not examined. Third, it was originally thought that there may be difference between women who compete in the shorter ultra distances versus the longer distances. This does not seem to be the case, but if motivational factors were not correctly assessed, then is possible that motivation and goal orientations do differ between ultra distances.

It is amazing that only 42 years ago Kathrin Switzer was suspended from the American Athletic Union (AAU) for running the Boston Marathon because it exceeded the distance women were allowed to run and did not allow women to participate (Noakes,

2003). Today, women like Beverly Anderson (2007 U.S.A Track and Field Masters Ultrarunner of the Year), who in her 40s, is smashing course records for women and placed 2nd three times in the Western State 100, the most competitive ultramarathon on record (Berge, 2008). Comparing 1967 to today, it is difficult to fully articulate suggestions for future research since so much has changed and the scientific process has lagged behind.

The present study was a first step into the understanding of women and ultrarunning. These women have proven to be unique, interesting, and inspiring and the surface has merely been scratched. For future work, demographic characteristics could be expanded on to include socio-economic status, ethnicity, and level of education. With this inclusion, many of these qualities could be examined through a multivariate perspective as opposed the univariate approach taken in the present study. Because this study was broader in nature, additional studies that are more focused may yield more in-depth results. In addition, future studies should grow more comparative in nature and include men as they are a key component of the sport and community. Many fascinating aspects of ultrarunning have been left undiscussed because they require a single purposeful analysis. Motivation is one specific fascinating aspect that could use further review especially by using a questionnaire particular to ultrarunners.

The present study could be expanded by asking open-ended qualitative questions of women on what motivates them. This would give women an opportunity to explain in their own words why they participate. From there, a better Likert scale questionnaire could be created for this specific population.

One main focus of research that would benefit the sport is to understand what contributes to success or deters from it. For example, do number of hours spent training, coach utilization, motherhood or work impact success? How is success defined by participants? Also, research should compare ultrarunning to other ultra-endurance sports such as 12 and 24 hour mountain bike racing and adventure racing. The final suggestion is repeating the study years from now to document how the present population (women ultrarunners) has evolved.

To conclude women ultrarunners, on average, are over 30, have full time careers and families, and a passion for an unusual and unique sport. These women are motivated by accomplishment and physical health and are disciplined with the time they dedicate to their training. They find an inherent joy in training and racing that most people would think unimaginable.

The present study hopes to give insight into these women so they can be better understood as people and athletes by those who know, work with, and coach them. Ultrarunning is a sport that has grown exponentially over the last twenty years and it shows no sign of stopping. To better understand current and future athletic racers, it is necessary that they no longer remain anonymous to the scientific and sporting community. In their ultrarunning endeavors, there will most likely come a time when they need to seek training help, coaching or even psychological assistance to improve performance and achieve new goals. If these athletes' motivations and goals are not understood, they cannot be adequately challenged and trained. Therefore both athletes and those who guide them will benefit from learning about and understanding the population

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APPENDIX A

Demographic Questionnaire

Demographic Questionnaire

Please answer the questions below to the best of your ability

Life

1. How old are you?
2. What state do you live in?
3. What race distance do you mainly focus on?
4. Are you married or in a long term committed relationship?
5. Does your significant other participate in this type of racing?
6. Do you have children? If so, how old are they?
7. Do you have a full or part time job?
8. If so, how many hours a week do you work?
9. Is your job flexible such that it allows you to train effectively?

Training

1. How many hours do you train a week?
2. Do you train alone, with others or both?
3. Estimate the percentage of time you train alone:
Estimate the percentage of time you train with others:
4. With whom do you train with (check all that apply):
 - a) running club
 - b) friends
 - c) significant other
 - d) athletes I coach
 - e) my coach
 - f) other _____
5. Where do you get your training information from? (check all that apply)
 - a) coach
 - b) running magazine
 - c) running website
 - d) running club
 - e) personal knowledge and experience
 - f) I have a degree in exercise science
 - g) other _____

6. Which of the following is your *primary* source for training? (Check only one answer)

- a) coach
- b) running magazine
- c) running website
- d) running club
- e) personal knowledge and experience
- f) other _____

7. Do you train for races with a specific goal in mind?

8. Give an example of two common goals for racing that you set (e.g. age group placing, run a specific distance within a certain time).

9. What percentage of the time do you reach your goals?

Coaching

1. Do you have a coach that you work with regularly? (yes/no)

(If no, skip questions 3 and 4)

2. If you do work with a coach, why?

If you don't work with a coach, why not?

3. What do you use a coach for? (check all that apply)

- a) motivation
- b) accountability
- c) training knowledge
- d) nutritional guidance
- e) other _____

4. Which of these is the **primary** reason you have a coach? (Check only one answer)

- a) motivation
- b) accountability
- c) training knowledge
- d) nutritional guidance
- e) other _____

APPENDIX B

Motivation of Marathoners Scales (MOMS)

Motivation of Marathoners Scales (MOMS)

Please rate each of the following items according to the scale below in terms of how important it is as a reason for why you run. A score of 1 would indicate that the item is "not a reason" for running; a score of 7 indicates that the item is a "very important reason" for running; scores in-between represent relative degrees of each reason.

	Not a						A Most
	Reason						Important
	Reason						Reason
	1	2	3	4	5	6	7

1. _____ To help control my weight
2. _____ To compete with others
3. _____ To earn respect of peers
4. _____ To reduce my weight.
5. _____ To improve my running speed.
6. _____ To earn the respect of people in general.
7. _____ To socialize with other runners.
8. _____ To improve my health.
9. _____ To compete with myself.
10. _____ To become less anxious.
11. _____ To improve my self-esteem.
12. _____ To have something in common with other people.

13. _____ To add a sense of meaning to life.
14. _____ To prolong my life.
15. _____ To become less depressed.
16. _____ To meet people.
17. _____ To become more physically fit.
18. _____ To distract myself from daily worries.
19. _____ To make my family or friends proud of me.
20. _____ To make my life more purposeful.
21. _____ To look leaner.
22. _____ To try to run faster.
23. _____ To feel more confident about myself.
24. _____ To participate with my family or friends.
25. _____ To make myself feel whole.
26. _____ To reduce my chance of having a heart attack.
27. _____ To make my life more complete
28. _____ To improve my mood.
29. _____ To improve my sense of self-worth.
30. _____ To share a group identity with other runners.
31. _____ It is a positive emotional experience.
32. _____ To feel proud of myself.
33. _____ To visit with friends.
34. _____ To feel a sense of achievement.
35. _____ To push myself beyond my current limits.

36. _____ To have time alone to sort things out.
37. _____ To stay in physical condition.
38. _____ To concentrate on my thoughts.
39. _____ To solve problems.
40. _____ To see how high I can place in races.
41. _____ To feel a sense of belonging in nature.
42. _____ To stay physically attractive.
43. _____ To get a faster time than my friends.
44. _____ To prevent illness.
45. _____ People look up to me.
46. _____ To see if I can beat a certain time.
47. _____ To blow off steam.
48. _____ Brings me recognition.
49. _____ To have time alone with the world.
50. _____ To get away from it all.
51. _____ To make my body perform better than before.
52. _____ To beat someone I've never beaten before.
53. _____ To feel mentally in control of my body.
54. _____ To get compliments from others.
55. _____ To feel at peace with the world.
56. _____ To feel like a winner.

MOMS Scoring Instructions.

Average the items for each of the following nine scales. We use averages since each of the scales have a different number of items. No items are reverse scored.

Health orientation - 8, 14, 17, 26, 37, 44

Weight concern - 1, 4, 21, 42

Personal Goal Achievement - 5, 9, 22, 35, 46, 51

Competition - 2, 40, 43, 52

Recognition - 3, 6, 19, 45, 48, 54

Affiliation - 7, 12, 16, 24, 30, 33

Psychological Coping - 10, 15, 18, 28, 36, 38, 39, 47, 50

Life Meaning - 13, 20, 25, 27, 41, 49, 55

Self- esteem - 11, 23, 29, 31, 32, 34, 53, 56

Table 1. General categories, scales and sample items for MOMS

I. Physical Health Motives

General Health Orientation - to improve my health, to prolong my life, to become more physically fit

Weight Concern - to look leaner, to help control my weight, to reduce my weight

II. Social Motives

Affiliation - to socialize with other runners, to meet people, to visit with friends, to share a group identity with runners

Recognition - to earn respect of peers, people look up to me, brings me recognition, to make my family or friends proud of me

III. Achievement Motives

Competition - to compete with others, to see how high I can place, to get a faster time than my friends

Personal Goal Achievement - to improve my running speed, to compete with myself, to push myself, to beat a certain time, to try to run faster

IV. Psychological Motives

Psychological Coping - to become less anxious, to distract myself from daily worries, to improve my mood, to concentrate on my thoughts,

Self-Esteem - to improve my self-esteem, to feel proud of myself, to feel a sense of achievement, to feel mentally in control of my body

Life Meaning - to make my life more purposeful, to make myself feel whole, to feel a sense of belonging with nature

APPENDIX C

Perception of Success Questionnaire (PSQ)

Perception of Success Questionnaire (PSQ)

What does success in an ultrarunning event mean to you? There are no right or wrong answers. We ask that you check the circle that best indicates how you feel. There are no right or wrong answers. We ask that you write the number that best indicates how you feel.

WHEN RUNNING IN AN EVENT, I FEEL MOST SUCCESSFUL WHEN:

Strongly agree

Neutral

Strongly disagree

1

2

3

4

5

1. _____ I beat other people.
2. _____ I am clearly better.
3. _____ I am the best.
4. _____ I work hard.
5. _____ I show clear personal improvement.
6. _____ I outperform my opponents.
7. _____ I reach a goal.
8. _____ I overcome difficulties.
9. _____ I reach personal goals.
10. _____ I win.
11. _____ I show other people I am the best.

12. _____ I perform the best to my ability.

Scoring of the PSQ

On questions 1, 2,3, 6, 10,11 a lower score indicates high ego orientation. On questions 4, 5, 7, 8, 9, 12 a lower score indicates high task-orientation.