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Body Appreciation, Gender, Motivation, and Competitive Success in Competition Climbing

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BODY APPRECIATION, GENDER, MOTIVATION AND COMPETITIVE SUCCESS IN COMPETITION CLIMBING

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by
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Accepted by:
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ABSTRACT

The focus of this study was to examine the relation between the constructs of body appreciation, gender, motivation, and competitive success in competition climbers. To gather data for this study, a Qualtrics survey was created and distributed amongst the competition climbing community through USA Climbing's Facebook page and member email list. Data was then collected from competition climbers between the ages of thirteen and sixty over 45 days in the winter of 2017. A total of 236 competition climbers participated in the survey and 202 of those responses were used in this study. Body appreciation in this study was analyzed through the utilization of the Body Appreciation Scale-2 (BAS-2). The Sports Motivation Scale (SMS-II) was used to determine the intrinsic and extrinsic motivation levels of the competition climbers. Competitive success was judged by the highest level of competition participated in for the three disciplines of climbing which are sport climbing, bouldering, and speed climbing. To establish the relation between each of these constructs, nine research questions were developed and analyzed using a correlation of all test variables and individual simple regressions for each research question. These analyses determined that four research questions had statistically significant results. A significant negative relation was found between extrinsic motivation and body appreciation scores (p = .032, β = -.165, SE = .046). There was a significant positive relation between intrinsic motivation and body appreciation scores (p = .002, β = .212, SE = .069). A significant positive relation between gender and extrinsic motivation was discovered (p = .020, β = .164, SE = .169). Finally, a significant positive relation between body appreciation and competitive success was found (p = .032,

β = .203, SE = .113). With these results, recommendations were made on how coaches could improve their coaching techniques to address the topics discussed in this thesis.

ACKNOWLEDGMENTS

I want to take a moment to express my appreciation for all the folks who supported me during the time it took me to complete the following Master's Thesis. These folks include but are not limited to, those who helped me through the research and writing process as well as those who provided emotional support during this time. Without my thesis chair, Ryan Gagnon, I would not have thought of the topics that lie within this thesis. Ryan's deadlines, support, and encouragement to recreate outside are what ensured my success. Without my committee members, Barry Garst and Lauren Stephens, I would not have been able to complete this process. I would like to extend a special thanks to Lauren who lent me her expertise and resources on the topic of body appreciation, allowing me to present this topic accurately and wholly. Additionally, I would like to thank USA Climbing for collaborating with us on this project. To the competition climbers, thank you for your willingness to participate and openness in your response, without you this study would not have been possible. Finally, thank you to my partner, friends, and family (near and far) who spent many hours adventuring and speaking with me on the phone. Without you all, I would not have had the courage to move to South Carolina or motivation to pursue and complete a Master's degree and thus become the person I am today.

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CHAPTER ONE

INTRODUCTION

The field of climbing has grown rapidly in popularity in recent decades. As of 2018, there were 7.7 million people in the United States that participated in recreational climbing ("State of Climbing," 2019). This surge has been supported by an increase in the number of commercial climbing gyms in the United States. As of 2020, there were 537 commercial climbing gyms in the United States ("Gyms and Trends 2020," 2021). The Climbing Wall Association (CWA) estimates that by the end of 2021 the indoor climbing gym industry will be valued at $1 billion, a stark increase from the industry's net worth of $618 million in 2017 ("State of Climbing," 2019). The growth in this industry has been supported by the expansion of the competition climbing circuit. As of 2018, USA Climbing had 2,500 licensed athletes ("State of Climbing," 2019). The number of competition climbing athletes will continue to flourish as the visibility of the sport increases. Climbing's prominence continues to increase with an academy award-winning film (Chin & Vasarhelyi, 2018), the successful addition of climbing to the 2020 Tokyo Olympics (Olympic Channel Services S.L., 2021), and the airing of climbing competitions on national level media channels ("State of Climbing," 2019).

With the growth of the sport of climbing, other challenges have also become more prominent; both indoor and outdoor climbing spaces have become more crowded leading to user conflicts (Klingsporn-Wyofile, 2021; Walz, 2021) and specialization within the sport of climbing has led to increased costs and culture shifts (Burgman, 2021; Garst et al., 2019; Hart, 2021). Further, challenges common to more mainstream sports (Gagnon

et al., 2017; Wheaton, 2010), including issues with disordered eating, body esteem, and body appreciation, are increasing in frequency. Additionally, with a review of the literature, there is a lack of research in these areas as previous studies have primarily focused on topics such as injuries in rock climbing (Grønhaug & Norberg, 2016; Miro et al., 2021; Schöff et al., 2013) and the anthropometrical and physiological profiles of climbers (Cheung et al., 2011; Tomaszewski, 2011; Watts, 2014). The lack of scientific inquiry in areas outside of these has led to a deficit of literature on topics such as body appreciation, gender, motivation, and competitive success in competition climbing. To address the dearth of knowledge on the sport of competition climbing, this thesis proposes four facilitators that may influence competition climbers. These facilitators are body appreciation, gender, motivation, and competitive success (Bidzan et al., 2018; Pelletier et al., 2013; Tsollei & Spiga, 2017).

Ferreira et al. (2017) define body appreciation as "The ability to accept, respect, and to be kind towards perceived defects in appearance and, at the same time, to recognize body flaws as part of the common human experience" (p. 2). Body appreciation has been studied in several contexts, including the field of sport. Previous studies on body appreciation have shown that it serves as a protective health factor (Ferreira et al., 2017; Halliwell, 2013; Tiggemann & McCourt, 2018). For example, a study by Halliwell (2013) found that body appreciation can reduce the risk of developing a negative body image and disordered eating in at-risk populations, such as athletes. Research by Ferreira et al. (2017) reinforces this theory by sharing body appreciation is

positively related to adaptive emotional regulation and well-being indicators such as proactive coping, life satisfaction, optimism, favorable body esteem, and intuitive eating.

Body appreciation was chosen as a factor for this study for several reasons. One, limited research has examined body appreciation levels within the competition climber population. Having a baseline for body appreciation in this population will allow for a deeper understanding of the population while contributing to body appreciation literature. Additionally, competition climbers may be considered an at-risk group regarding disordered eating and eating disorder development because athletes are generally considered to be at a higher risk of developing these conditions than the average population. A study by Sundgot-Borgen and Torstveit (2004) found that 13.5% of elite athletes had eating disorders while only 4.6% of controls suffered from eating disorders. Anecdotal media evidence, such as Treadway's (2021) documentary "LIGHT," supports this claim as well. For these reasons, it would be valuable to evaluate the body appreciation levels of competition climbers as the results could inform future interventions and educational materials for the population.

In conjunction with body appreciation, gender will be studied as this construct can serve as a moderating factor regarding body appreciation levels, a concept that has been examined in previous studies. For example, Sundgot-Borgen et al. (2021) found that 70% of students experience body appearance pressures, with females suffering at a greater rate. This implies that males experience higher levels of body appreciation than females (Sundgot-Borgen et al., 2021). Kantanista (2018) explains that this disparity is possibly a result of societal pressures that exist due to cultural beauty standards. While these studies

reflect body appreciation in gender-specific populations, limited research has investigated the relation between gender and body appreciation in competition climbers. It is important to understand how body appreciation interacts with gender in competition climbers since body appreciation acts as a protective factor (i.e. a characteristic at the community, family, psychological, or biological level that decreases the probability of problematic health outcomes or reduces the risk for negative health risk factors) for conditions such as eating disorders. This study will address whether there are disparities in body appreciation between the genders of competition climbing athletes. Having this data will allow practitioners to make recommendations on how to address said disparities.

Motivation in competition climbers is the third factor that will be discussed in this study. Self Determination Theory simplifies the concept of motivation into two primary forms of motivation which are extrinsic and intrinsic motivation (Ryan & Deci, 2000). Intrinsically motivated athletes will perform in their sport because of the inherent satisfaction it brings them (Ryan & Deci, 2000). Athletes who are extrinsically motivated will participate in their sport of choice due to the separate outcomes, such as accolades, which are promised to them (Ryan & Deci, 2000). While motivation has been studied extensively in the field of sport, limited research has been done on the motivations of competition climbers. Understanding the motivation of competition climbers will allow practitioners, such as coaches, to make adjustments to how they motivate their athletes.

Additionally, this study will investigate the possible relation between gender and motivations among competition climbers. Previous research has shown that motivation differs between genders. Chin et al. (2012) expand on this by sharing that males tend to

be more extrinsically motivated whereas females are often more intrinsically motivated. A study by Molanorouzi et al. (2015) found that males are more motivated by mastery, competition, and ego which are all highly associated with external motivation, than the females. While the connection between motivation and gender has been studied previously, limited research has been done to determine how this relation presents itself in competition climbers. This study aims to close this knowledge gap. Having this additional information will allow practitioners to further curate their recommendations on addressing motivation in competition climbing athletes.

Finally, competitive success will serve as a dependent variable for this study. Competitive success can reflect multiple dimensions including the level of competition participating (i.e., amateur versus professional), the stage of participation (i.e., beginner versus experienced), the number of wins versus losses, or, in the present study, competitive success is defined by the highest level of competition participated in for the disciplines of sport climbing, bouldering, and speed climbing. Within the present study, the levels of competition are (from lowest to highest): "Local," "Regional," "Divisional," "National," and "International." Including competitive success in this study will allow for greater insight into how the constructs of body appreciation and motivation may relate to and differentiate across the differing levels of sport. This study aims to provide an understanding of how competitive success, body appreciation, and motivation interact which will allow stakeholders to see how these variables can influence the success of their athletes. For example, if a coach sees that an athlete with low body appreciation performs poorly in competition, they may be increasingly likely to implement body

positive practices into their coaching if they are not already doing so. Overall, examining competitive success will deepen the richness of this study by providing greater insight into how the success of competition climbers may be influenced.

Individually, the scientific community has extensively studied body appreciation, gender, motivation, and competitive success. These four concepts have yet to be examined together in the context of the competition climbing population. Analyzing body esteem, gender, motivation, and competitive success will allow practitioners to better understand this population and their needs. It is for these reasons that the purpose of this study is to examine the relations between the facilitators of body appreciation, gender, motivation, and competitive success in competition climbers. The successive sections will describe the guiding research question and hypotheses, present the study, and explore the findings. The nine primary research questions and their associated hypotheses are presented in the following section along with the definitions of key terminology.

Research Question 1

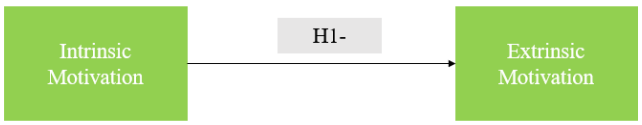
Does intrinsic motivation influence extrinsic motivation?

Hypothesis 1

H1: As intrinsic motivation in competition climbers increases, extrinsic motivation will decrease.

Figure 1

H1: As Intrinsic Motivation Increases, Extrinsic Motivation Will Decrease



Research Question 2

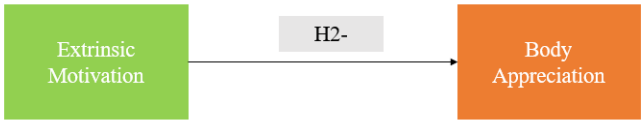
Does extrinsic motivation in competition climbers influence body appreciation in climbers?

Hypothesis 2

H2: As extrinsic motivation increases in competition climbers, body appreciation will decrease.

Figure 2

H2: As Extrinsic Motivation Increases, Body Appreciation Will Decrease



Research Question 3

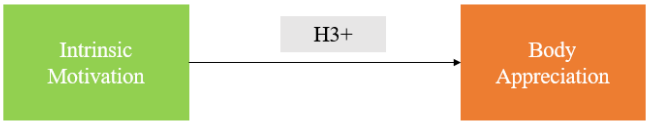
Does intrinsic motivation in competition climbers influence body appreciation in climbers?

Hypothesis 3

H3: As intrinsic motivation increases in competition climbers, body appreciation will increase.

Figure 3

H3: As Intrinsic Motivation Increases, Body Appreciation Will Increase



Research Question 4

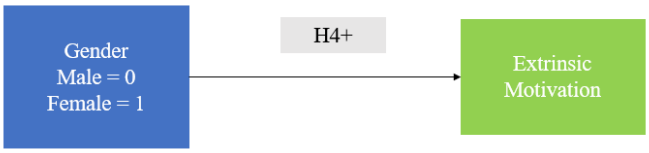
Does gender influence extrinsic motivation?

Hypothesis 4

H4: The variable extrinsic motivation will have higher levels of influence on females than males.

Figure 4

H4: Extrinsic Motivation Will Have Higher Levels of Influence on Females Than Males



Research Question 5

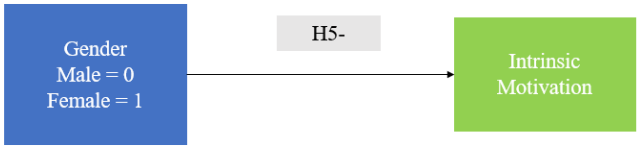
Does gender influence intrinsic motivation?

Hypothesis 5

H5: The variable intrinsic motivation will have lower levels of influence on females than males.

Figure 5

H5: Intrinsic Motivation Will Have Lower Levels of Influence on Females Than Males



Research Question 6

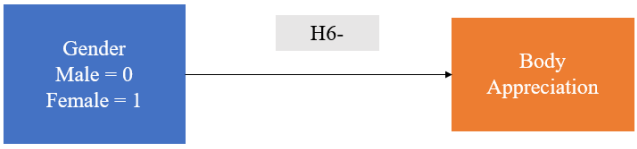
Does gender influence body appreciation?

Hypothesis 6

H6: The variable body appreciation will have less influence on females than males.

Figure 6

H6: Body Appreciation Will Have Less Influence on Females Than Males



Research Question 7

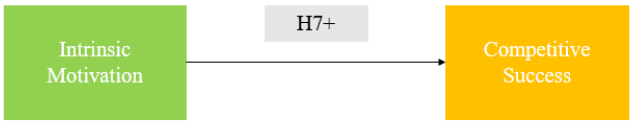
Does intrinsic motivation influence competitive success?

Hypothesis 7

H7: As intrinsic motivation increases in competition climbers, competitive success will increase.

Figure 7

H7: As Intrinsic Motivation Increases, Competitive Success Will Increase



Research Question 8

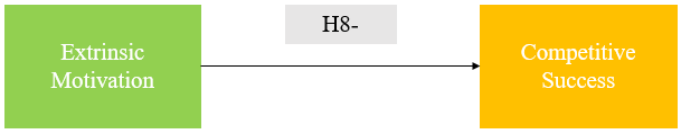
Does extrinsic motivation influence competitive success?

Hypothesis 8

H8: As extrinsic motivation increases in competition climbers, competitive success will decrease.

Figure 8

H8: As Extrinsic Motivation Increases, Competitive Success Will Decrease



Research Question 9

Does body appreciation influence competitive success?

Hypothesis 9

H9: As body appreciation increases in competition climbers, competitive success will increase.

Figure 9

H9: As Body Appreciation Increases, Competitive Success Will Increase

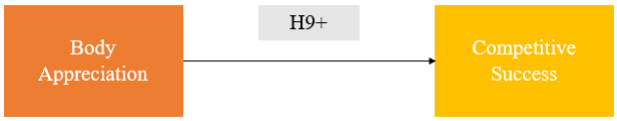
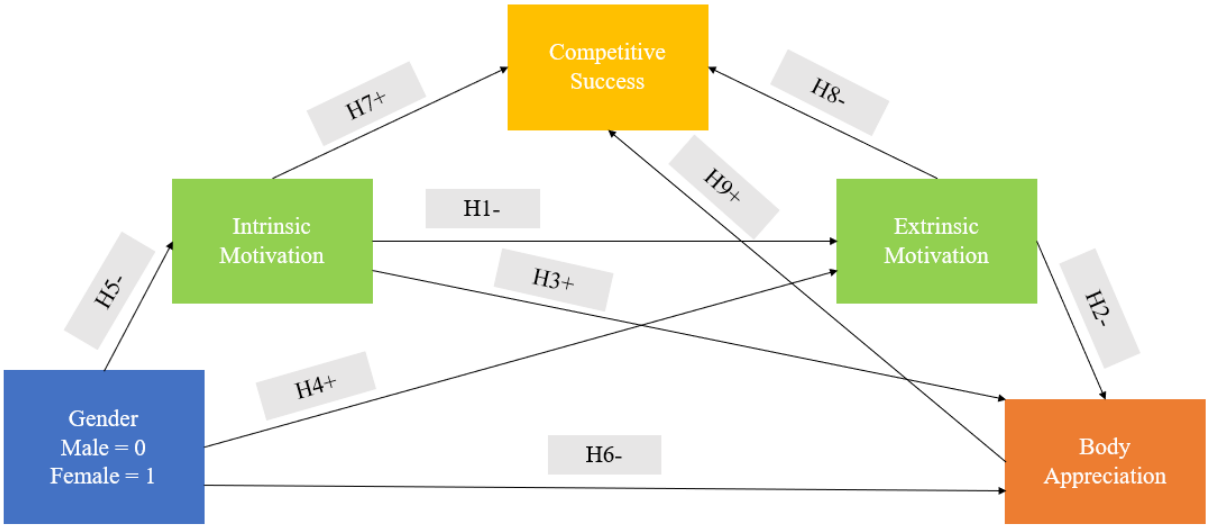


Figure 10

Hypothesized model of the relation between body appreciation, reported gender, motivation, and competitive success.



Definition of Primary Study Constructs

Body Appreciation: "The ability to accept, respect, and to be kind towards perceived defects in appearance and, at the same time, to recognize body flaws as part of the common human experience" (Ferreira et al., 2017, p. 2).

Intrinsic Motivation: "The performance of an activity for the inherent satisfaction of the activity itself" (Ryan & Deci, 2000, p. 71).

Extrinsic Motivation: "The performance of an activity in order to attain some separable outcome" (Ryan & Deci, 2000, p. 71).

Gender: "The socially constructed processes and differences, often aligned with being feminine, masculine, blended elements of both, or neither" (Rushton et al., 2019, p. 2).

Competitive Success: The highest level of competition participated in for the disciplines of sport climbing, bouldering, and speed climbing. The levels of competition within the present study are (from lowest to highest): “Local,” “Regional,” “Divisional,” “National,” and “International.”

CHAPTER TWO

LITERATURE REVIEW

Gaps of knowledge exist within the field of climbing research regarding the constructs of body appreciation, gender, motivation, and competitive success of competition climbers (Bidzan et al., 2018; Pelletier et al., 2013; Toselli & Spiga, 2017). This literature review will explore these factors in-depth through the lenses of competition climbing as a lifestyle sport, the ideal climber physique, body appreciation and its relation with gender, motivation, and Self Determination Theory, and competitive success. The exploration of these areas will provide a general understanding of the purpose of this study.

Competition Climbing as a Lifestyle Sport

Lifestyle sports first emerged during the 1960s and 1970s (Wheaton, 2010). Bordelon and Ferreira (2019) explains that lifestyle sports are deeply rooted in the counter-culture social movements of these eras. The term lifestyle sport is utilized because participants often refer to these activities as 'lifestyles' over 'sports' (Evers & Doering, 2019). Unlike traditional sports, Evers and Doering (2019) states that lifestyle sports are not competitive, masculinized, and rule bound as is traditional sports culture. Rather, participants of lifestyle sports recreate because of the meaning these activities provide (Wheaton, 2010). Wheaton (2010) expands on this by saying that the meaning is rooted in the participants' self-actualization and creative potential, in which they can 'transcend' themselves. In doing so, participants embrace danger but do so for the thrill

or ‘stoke’ associated with the experience (Rannikko et al., 2016). An additional differentiation from traditional sport is that in lifestyle sports the body is not used aggressively, nor is body contact involved (Clegg & Butryn, 2012). Instead, participants choose to focus on their personal goals and challenges over competing with others.

While lifestyle sports take many forms such as skateboarding, BMX, and kite surfing, climbing is thought to be one of the original lifestyle sports (Robinson, 2004). Rock climbing in the traditional sense is a combination of hiking and mountaineering (Gagnon et al., 2017). Climbing serves as an umbrella term for the sub-sports it involves. Gagnon et al. (2017) share that such sub-sports include bouldering, top-roping, traditional, adventure, and big-wall climbing. Such sub-sports can be seen in indoor climbing as well through top-roping, sport climbing, bouldering, and speed climbing (USA Climbing, 2014). There are several reasons why climbing is a lifestyle sport. Rahikainen (2020) posits that climbing’s intrinsic appeal, which extends past competition, and its perceived danger or risk is what differentiates it from traditional sports. Additionally, the sport of climbing often requires intense dedication and sacrifice for athletes to be successful (Rahikainen, 2020). One area that competition climbers often feel pressure to be successful is that of their physique (Watts, 2014).

The Ideal Climber Physique

Several factors can contribute to one’s climbing ability. A study executed by Sanchez et al. (2019) found that one’s ability to read routes, understand and apply climbing techniques, and climber body type all acted as predictors of competence in climbing. Tomaszewski’s (2011) research expanded on the significance of the relation

between a climber's anthropometric characteristics and their success in the sport. Tomaszewski (2011) determined that the optimal somatic build for a climber consists of small stature, low body mass, low-fat content, and high handgrip strength to their body mass. The reasoning for this is that climbing is a fight against gravity. Tomaszewski (2011) explains that additional body mass from fat or muscle is considered disadvantageous to climbers for it contributes to a greater gravitational pull. Theoretically, a climber with a lower body mass will fatigue at a slower rate than a climber of equivalent height and a higher body mass (Giles, 2006).

Several studies on competition climbing support this theory. Watts (2014) reported that today's elite climbers are generally of small stature and have low body fat percentages. Gils (2006) came to a similar conclusion after finding that finalists in climbing competitions are on average lighter than semifinalists despite the similarities in height between both groups. While taller climbers may have a longer reach, the additional weight associated with being taller requires climbers to have greater grip strength ratio to maintain prolonged contact with the holds (Watts, 2014). Giles (2006) provided support to this theory as well by sharing that reducing a climber's body fat is consequently seen as beneficial as it would enrich the climber's support and movement. It is for these reasons that a general reduction in body fat is perceived as auspicious in competition climbing.

While having a low body mass is believed to be advantageous in climbing, Watts (2014) mentions that concern has been expressed regarding the adverse effects associated with maintaining extremely low body fat levels. Treasure et al. (2020) expand on this by

sharing sustained low body fat percentages can contribute to the development of low energy levels, brittle bones, and heart problems, amongst other severe health conditions. Additionally, Watts (2014) highlighted that the utilization of weight loss practices by climbers to achieve a lightweight body can act as a contributor to the development of eating disorders. Eating disorders are severe, if not life-threatening health conditions, and therefore need to be taken seriously within the competition climbing community (Treasure et al., 2020). A way to protect against the development of eating disorders is through the acknowledgment and discussion of body appreciation (Ferreira et al., 2017; Halliwell, 2013; Tiggemann & McCourt, 2018).

Body Appreciation and Gender

Ferreira et al. (2017) defined body appreciation as "the ability to accept, respect, and be kind towards perceived defects in appearance and, at the same time, to recognize perceived flaws as part of the common human experience" (p. 2). Tiggemann and McCourt (2013) expand on this further by sharing that body appreciation allows individuals to appreciate their body for how it functions and performs, not its physical appearance. Additionally, four qualities in the literature are considered foundational to the concept of body appreciation. Halliwell (2013) states that these four qualities are holding positive evaluations of the body, acceptance of the body, respecting and seeing to the body's needs, and protecting the body through the rejection of unrealistic body appearance ideals. Embracing these body appreciation ideals allows people to feel comfortable in their bodies while contributing to their overall health and well-being (Gillen & Dunaev, 2017).

Research suggests there are several benefits associated with body appreciation. Razmus (2018) stated that body appreciation acts as a protective factor for both physical health and psychological well-being. Ferreira et al. (2017) expound on this notion. In their research, Ferreira et al. (2017) found that body appreciation positively contributed to optimism, positive affect, proactive coping, life satisfaction, body esteem, positive appearance evaluations, as well as intuitive eating. Tiggemann and McCourt (2013) came to similar conclusions in their research while also finding that high levels of body appreciation contribute to the creation and support of a broad understanding of beauty. Finally, Halliwell (2013) found that those with strong body appreciation are less likely to internalize the thin-ideal, which refers to the socially defined ideal that one must be thin to be attractive (Thompson & Stice, 2001), simultaneously being critical of the unrealistic body images presented in the media. This is important to note because research has shown that internalization of the thin-ideal serves as a predictor of not only negative body image but also disordered eating (Halliwell, 2013).

Previous research has demonstrated that disparities exist within body appreciation based on gender. Sundgot-Borgen et al. (2021) conducted a study on body appearance pressure (BAP) among Norwegian youth. They found that 70% of students experienced BAP, with the girls suffering the greatest impact These results suggest that males generally show stronger body appreciation in comparison to females. These results reflect similar research done on body image constructs and gender (O'Neill et al., 2018). Recognizing these disparities is crucial because those who show lower levels of body appreciation cannot benefit from its protective factors. Additionally, it is important to

acknowledge how the construct of body appreciation may be influenced by participation in sport.

Body Appreciation and Sport

The research regarding the relation between sports participation and body appreciation is somewhat mixed. Specifically, there is uncertainty regarding whether participation in sport positively or negatively impacts an athlete's level of body appreciation. There are several factors, such as participation level, type of sport, and gender, that can influence the body appreciation of athletes.

Swami and Harris (2012) found that body image differed for dancers between forms of dance and years of experience in that form. In their study, advanced ballet dancers were found to have lower body appreciation than ballet dancers who were beginners, whereas advanced contemporary dancers had higher body appreciation than beginners. The authors suggested that a potential explanation for these discrepancies is that ballet dancers are pressured to have an extremely slender physique, reinforcing the thin ideal, and causing them to harbor negative feelings towards their body. Alternatively, contemporary dancers are taught to integrate the mind and body through movement while staying bodily aware through creative expression (Swami & Harris, 2012). This demonstrates how the values and culture surrounding a sport can negatively influence the body appreciation of its athletes.

Soulliard et al. (2019) supported the notion that the type of sports one participates in can play a role in the body appreciation of the athlete. The researchers noted that females who participated in sports such as tennis, dance, cheerleading, swimming, and

diving had lower body appreciation when compared to females who participated in basketball, cross country, track and field, and softball due to the increased focus on appearance and physique. This aligns with Varnes' (2015) research on objectification theory, which proposes the sexual objectification of female athletes reinforces gender roles and the importance of female appearance. Varnes (2015) shared "female athletes depicted in, and objectified by, the media are more likely to be from sports that are considered sex-appropriate or feminine (e.g., gymnastics, swimming, tennis, and volleyball)" (p. 97) versus sports that are viewed as less feminine, such as basketball. This gendered sexualization can influence the desired body type of athletes and therefore their body appreciation if their body does not fit the proposed ideal.

In addition to the form of sports participation, gender can influence the body appreciation levels of athletes. Soulliard et al. (2019) reported that female athletes had lower levels of body appreciation than male athletes. They concluded that it is possible male athletes objectify their bodies less than female athletes, which therefore contributes to male athletes having higher levels of body appreciation (Soulliard et al., 2019). Research by Jankauskiene et al. (2020) yielded similar results in that the boys in their study had higher levels of body appreciation than the girls. Budzisz and Sas-Nowosielski (2021) too found that gender significantly affected body appreciation, with men reporting higher levels than women. Within their research, Budzisz and Sas-Nowosielski (2021) discovered that the female athletes had higher levels of body appreciation when performing in individual sports such as canoeing, powerlifting, sumo, and track and field versus those who participated in team sports such as volleyball, beach volleyball, rowing,

canoe-polo, and field hockey. Males, however, had limited variations in body appreciation even when participating in team sports where other men surrounded them. These results indicate that gender plays a role in the body appreciation levels of athletes, but it is also possible that being an athlete serves as a protective factor for body appreciation.

Previous research suggests that student-athletes have higher levels of body appreciation when compared to non-athletes (Soulliard et al., 2021). There are several potential reasons for this. Soulliard et al. (2019) explain that athletics provide the opportunity for athletes to develop an appreciative relationship with their bodies that is further reinforced by the need to be body aware in their sport. Homan and Tylka (2014) posited that higher levels of body appreciation are due to the frequency with which athletes train. In their research, Homan and Tylka (2014) found that those with the highest values of body appreciation trained five to eight times per week. Jankauskiene et al. (2020) added that athletes may experience higher levels of body appreciation because their bodies may align more closely with sociocultural ideals of appearance than non-athletes. Additionally, student-athletes may experience increased body appreciation because they are aware of the functionality of their body due to how they can participate in higher levels of competition versus athletes at lower levels (Soulliard et al., 2019).

Although research has been done on the relation between body appreciation and sports participation (Budzisz & Sas-Nowosielski, 2021; Jankauskiene et al., 2020; Soulliard et al., 2019; Soulliard et al., 2021; Swami & Harris, 2012; Wasyliw & Butler, 2014), to our knowledge, limited research has been done on how body appreciation is

influenced by participation in competition climbing. This study will create a baseline understanding of how body appreciation levels present in competition climbers and how these results do or do not differ between genders. Such information would allow practitioners within the field to not only have a better understanding of the competition climbing community but also a greater understanding of how a lifestyle sport, such as competition climbing, may influence body appreciation. In addition to understanding how body appreciation presents in competition climbers, researchers need to discern the motivations of competition climbers. Doing so will allow researchers to develop a full understanding of how motivation is experienced by this population, for which there is currently little known on the subject, and therefore how these motivations may interact with the other study constructs.

Self Determination Theory – Intrinsic and Extrinsic Motivation

Self Determination Theory is a theoretical framework developed to explain the concept of motivation (Pelletier et al., 2013). Pelletier et al. (2013) define Self Determination Theory (SDT) as "a theory of motivation that is built on the organismic assumption that humans have innate tendencies to move in directions of greater self-regulation, competence, and integration in action" (p. 329). Ryan and Deci (2000) explained that through SDT, people's innate psychological and fundamental growth needs can be investigated and utilized to understand their personality integration, their self-motivation, and the conditions that influenced these processes. When SDT is applied to sports participation, it is evident multiple motives can be utilized to explain a participant's reasons for engagement (Pelletier et al., 2013).

According to the literature, there are two primary forms of motivation, intrinsic motivation and extrinsic motivation (Pelletier et al., 2013; Ryan & Deci, 2000). Ryan and Deci (2000) state that intrinsic motivation occurs within an individual; it reflects an individual's natural need to challenge themselves, explore the novel, and learn. Intrinsic motivation explains humanity's need for spontaneity, assimilation, inquiry, and mastery because these traits are essential to social and cognitive development. Intrinsic motivation can be enhanced through choice, self-direction opportunities, and feelings of acknowledgment.

Contrarily, Pelletier et al. (2013) express that extrinsic motivation is externally based and is focused on performing an activity to achieve a separate outcome. This directly contradicts intrinsic motivation which focuses on choosing an activity for the satisfaction associated with participating in that activity. Additionally, the literature states that various external factors contribute to extrinsic motivation. Examples of these external factors include evaluations, rewards, social pressure, deadlines, as well as the opinions of others (Mitchell et al., 2020). Kácha, and Ruggeri (2019) contribute to the concept of external factors by explaining that external factors often inhibit intrinsic motivation due to their external locus.

Within competition climbing, it would be beneficial to distinguish whether climbers are intrinsically or extrinsically motivated to develop a deeper understand of this population. Ewert et al. (2013) touched on this by sharing an intrinsically motivated competition climber may climb because they thoroughly enjoy the sport, it contributes to their self-image, or it satiates their sensation-seeking motives. Conversely, a competition

climber who is extrinsically motivated may choose to climb to find a sense of community or to compete in competitions. Other factors may influence the motivations of competition climbers, such as their gender.

Motivation and Gender

Previous research has found that levels of intrinsic and extrinsic motivation differ based on gender. According to Chin et al. (2012), males tend to be more extrinsically motivated than females who are often more intrinsically motivated. De Pero et al. (2009) partially supports these results as they found that women exhibit lower levels of both extrinsic and intrinsic motivation when compared to men. A study done by Egli et al. (2011) concluded that female athletes were more strongly motivated by extrinsic factors, such as weight management and appearance, while male athletes had higher levels of intrinsic motivation that came from strength, challenge, and competition factors. It is clear from these resources and their inconclusive results that much is to be learned on the topic of motivation and its relation to gender.

Understanding motivation is beneficial due to its relation and influence on sport participation. In a study by Chin et al. (2012) it was found that athletes who have high levels of intrinsic motivation participate in sports because they experience fun, satisfaction, and pleasure. Chin et al. (2012) also mentions that other studies have found that female athletes who are intrinsically motivated tend to focus on task mastery. Similarly, De Pero et al. (2009) linked intrinsic motivation to both improved sportsmanship and increased sport adherence.

Conversely, those who exhibit high levels of extrinsic motivation participate in sports for the thrill of the competition as well as the satisfaction that is associated with winning (Chin et al., 2012). To support this, Chin et al. (2012) found that male athletes who are extrinsically motivated are drawn to the recognition and rewards affiliated with the sport. These extrinsic motivations can be satisfied through medals, monetary incentives, material gains, self-worth, and social approval (Evans, 2015). De Pero et al. (2009) support this but add that these individuals are also at an increased risk of dropping out of their athletic endeavors. Kácha, and Ruggeri (2019) build on this by pointing out that extrinsic factors such as these can ultimately impair intrinsic motivation.

A potential explanation for varying motivations based on gender is the stereotyping and socialization of sport. De Pero et al. (2009) explain that societally enforced gender roles influence what behavior is considered appropriate for each gender in sport as well as motivation in sport and participation. For example, males are encouraged to participate in competitive sports for it contributes to their masculine identity (Chin et al., 2012). Females, contrarily, are often discouraged against participating in competitive sports environments because it may "masculinize" their behaviors, attitudes, and physiques (Chin et al., 2012). A study by Chowdhury (2012) yielded similar results in which females reported higher motivation for appearance while males had higher motivation for topics such as challenge and affiliation. These motivational differences between genders, specifically those involving appearance, may be further explained by the construct of body appreciation.

Body Appreciation and Motivation

Limited research has examined the relation between motivation and body appreciation. Studies have explored the relation between motivation and eating disorders but there appears to be a gap in the literature on motivation and its connection to body appreciation. It can be construed from the existing literature on body appreciation, body image, and body positivity that these constructs are influenced by both internal and external factors.

For example, women are extrinsically motivated to have a specific body type. Ormsby et al. (2019) touch on this by sharing that women often strive for a slim body type because of the body image ideals imparted by advertisements and the media. Young girls and women are exposed to these cultural beauty standards throughout their life course, causing them to internalize these ideals (Ormsby et al., 2019). Women whose bodies do not fit these arbitrary molds may develop a low body image (Ormsby et al., 2019). These sources of extrinsic motivation serve as an explanation for why women are at an increased risk of having body image concerns when compared to men.

Men too are influenced by extrinsic motivation when it comes to body image ideals. According to Thompson and Cafri (2007), whereas women want a thin body, men strive for a muscular physique with a low body mass. Additionally, Thompson and Cafri (2007) explain that when these aspirations are not met men are considered at risk of developing body image issues. Data collected by Ambwani and Strauss (2007) suggested that men's body image concerns have been on the rise in recent years. Shriver et al. (2013) believe this is a result of an increase in sociocultural pressures from not only the

media but from family members and peers. These factors act as extrinsic motivators for men regarding body image. Unfortunately, while women have been encouraged by society to share their dissatisfaction with their bodies, this is not the case for men (Ambwani & Strauss, 2007). Rather, the admission of their bodily dissatisfaction is discouraged, forcing men to internalize their body image insecurities (Shriver et al., 2013).

Intrinsic motivation presents itself through the concept of body esteem and body dissatisfaction. Bidzan et al. (2013) define body esteem as the self-evaluation of the appearance of one's body, which can be simplified to the satisfaction or dissatisfaction one feel's when observing their body. As with body image, there are stark differences in body esteem presentation between men and women. Research has found that girls and women are more dissatisfied with their bodies than men are (Frisén et al., 2013). Consequently, women often have distorted perceptions of their bodies. A study by Blokstra et al. (1999) found that 23% of the women they sampled view themselves as being fat despite them being a normal weight. All of this does not discount the fact that men experience low body esteem. According to McCabe and Ricciardelli (2004), low body esteem is on the rise in men because of increased societal pressures for men to look a certain way.

It is important to acknowledge how poor body image and poor body esteem contribute to body dissatisfaction. Body dissatisfaction consists of the discrepancy between an individual's "ideal" body size and the generally negative feelings and thoughts they hold towards their body (Kantanista et al., 2018). Studies involving

adolescents have shown that many girls and boys experience body dissatisfaction, though body dissatisfaction tends to be more pronounced in girls (Smolak & Levine, 2001). With age, researchers found that body dissatisfaction increased (Frisén et al., 2013). These thoughts and feelings associated with body esteem and body dissatisfaction occur internally within the individual, implying that they are linked to intrinsic motivation.

STUDY PURPOSE AND CONTRIBUTIONS

The purpose of this study is to explore the relation between the constructs of body appreciation, gender, motivation, and competitive success in competition climbers. There are several reasons as to why these constructs were chosen, the primary being that there is an absence of research on these constructs in this population. Others have investigated subjects such as the somatic build of both competition and non-competition climbers (Giles, 2006; Tomaszewski, 2011; Watts, 2014) but did not address body appreciation, gender, motivation, or competitive success which are the primary constructs of this study. Therefore, this study will contribute to the overall literature on competition climbers.

Body appreciation was chosen to be a part of this study for multiple reasons. One reason is that while body appreciation literature is growing, limited research has been done on body appreciation in a competition climbing context. This lens is unique and will provide practitioners a different perspective to consider not only in regard to body appreciation but also body appreciation in the context of lifestyle sport such as competition climbing. Additionally, body appreciation was chosen because there is anecdotal evidence that supports that competition climbers are at an increased risk of developing eating disorders or disordered eating behaviors. This anecdotal evidence comes from documentaries (Treadway, 2021) and several media publications (Caplan-Bricker, 2017; Joubert et al., 2020). Previous research has shown that body appreciation is linked to positive health outcomes related to disordered eating and eating disorders (Ferreira et al., 2017; Razmus, 2018), such as improved optimism, life satisfaction, body esteem, and intuitive eating. Learning more about the presentation of body appreciation

in this population will allow practitioners to have a better understanding of what interventions may be most useful when attempting to address these disorders.

Motivation, specifically intrinsic and extrinsic motivation, is being included in this study because while motivation has been studied in the context of sport, research on motivation in competition climbers is inadequate. This dearth of research is a reflection of the lack of knowledge on the competition climber population. Studying motivation in this population will not only contribute to the greater motivation and Self Determination Theory literature but it will do so through the unique perspective of competition climbers. This research will also allow practitioners to compare how motivation presents in competition climbers in comparison to other athletes. Motivation may present differently here in contrast with other more mainstream sports, such as basketball or football, due to the inherent lifestyle nature of the sport (Gagnon et al., 2017; Rahikainen, 2020; Wheaton, 2010).

Gender was chosen to be included in this study because it likely acts as a moderator for the other factors being studied. Gender has been shown to influence body appreciation. Previous research has found that females are likely to have lower levels of body appreciation than males are (Sundgot-Borgen et al., 2021). This study will determine if this too is the case for competition climbers. Research on motivation has found that differences exist in how males and females experience extrinsic and intrinsic motivation. Some studies have found that females are more intrinsically motivated whereas males are more extrinsically motivated (Molanorouzi et al., 2015), while other studies have returned inconclusive results (Chin et al., 2012). This study will aim to

address the murkiness of this topic while simultaneously contributing to the literature on the subject.

Finally, the variable of competitive success is a part of this study for it will act as a necessary dependent variable. This is because competitive success is not independent of external factors such as years spent in sport, physique, and sport specialization. In the context of this study, the external factors that will be examined are body appreciation and motivation. These findings will allow for a greater understanding of what factors influence the success of competition climbers. Additionally, the results of this study can be used to enlighten coaches on how aspects of their coaching style, such as body positive language and motivational tactics, can encourage or discourage the long-term success of their athletes.

CHAPTER THREE

METHOD

Data Collection and Sample

This study was approved under IRB2014-408 by the Institutional Review Board (IRB) at Clemson University. IRB has Federal-wide Assurance from the Office of Human Research Protection (OHRP) which ensures that human participants who were part of this study were ethically treated. These ethical standards were derived from those set by the 1964 Helsinki declaration, its later amendments, as well as the institutional and/or national research committee.

A purposeful sample was adopted for this study to intentionally target active United States competition climbers. To collect this data, a partnership was formed with USA Climbing. USA Climbing acts as an exemplary resource for this topic for they serve as the national governing body for competition climbing in the United States. The data for this study was collected from competition climbers ages thirteen to sixty over a period of 45 days in the winter of 2017. The data was collected during this time because it is the season in which competition climbing takes place and is when USA Climbing annually issues the survey used for this study. This data serves a part in the investigation of gender, sport motivation, body appreciation, and competitive success in competition climbers.

The questionnaire was uploaded to the Qualtrics online survey software for ease of access purposes. From there, the questionnaire link was posted on USA Climbing's Facebook page and sent through USA Climbing's email list. There were three

announcements spread out over the course of the 45 days (day 1, day 15, and day 30) to ensure maximum participation. These announcements were dispatched through the member email list for USA Climbing and were posted to their Facebook page. To incentivize members to participate, three climbing equipment packages were offered. Members were entered to win one of these packages when they submitted their surveys. After the closing of the survey, the data collected went under an initial review. During the initial review, the response rate of the questionnaire was determined. Of 621 possible respondents, 236 completed the survey leading to a response rate of 38%. Of those 236 respondents, the responses of 203 competition climbers are being used in this study. Since the initial review, little has been done with the data. Therefore, this thesis will serve as a further review and analysis of the data collected.

Upon receiving the data set, the demographic information of the participants was analyzed. The competition climber sample population was 44.3% (n = 90) female and 55.7% (n = 113) male. The majority of competition climbers self-identified as White, not Hispanic (n = 166). The next largest group identified as Hispanic Origin (5.4%), with other participants identifying as Asian Origin (4.4%), Multiple Race (4.4%), American Indian or Native American (1.5%), Pacific Islander (1.5%), and East Asian (India or Arabic) (1.0%). Eighty-five point two percent of competition climbers participated in bouldering, 69.0% in sport climbing, and 34.5% in speed climbing. Additional competition climber demographic information can be found in Table 1.

Table 1

Table 1.1

Competition Climber Demographics	
Factor/*Item*	**N (%)**
Gender	
Female	90 (44.3)
Male	113 (55.7)
Ethnic Group	
White, not Hispanic	166 (81.8)
Hispanic Origin	11 (5.4)
Asian Origin	9 (4.4)
American Indian or Native American	3 (1.5)
Pacific Islander	3 (1.5)
Multiple Race	9 (4.4)
East Asian (India or Arabic)	2 (1.0)

Table 1.2

Competition Climber Demographics Continued			
Factor/*Item*	**Range**	**Mean**	**Std. Deviation**
Age	47	22.685	9.145

Questionnaire and Instrumentation Development

To study the gender, sport motivation, body appreciation, and competitive success of competition climbers, data was collected through the creation and distribution of a questionnaire. The questions utilized were inspired by several published works that discussed the topics of gender, sport motivation, and body positivity. These included Pelletier et al.'s (2013) work on the revised Sport Motivation Scale, Tylka and Wood-Barcalow's (2015) definitions and conceptual foundations of positive body image and their work on the Body Appreciation Scale-2. The research in these journal articles

informed the survey questions for this questionnaire and were adjusted to ensure they were tailored for the competition climbing community.

A Qualtrics-based questionnaire was then created. This questionnaire was reviewed by undergraduate students at Clemson University as a pilot study. Portions of the questionnaire were then altered based on the students' reactions and responses. The final questionnaire was distributed with the assistance of USA Climbing to secure the sample.

Measures

Body Appreciation

Body appreciation was assessed using ten questions that were included in the Qualtrics online survey. These questions were inspired by Tylka and Wood-Barcalow's 2015 publication on the Body Appreciation Scale-2 (BAS-2). In this study, Tylka and Wood-Barcalow (2015) represented body appreciation through 10 factors: (1) *I respect my body*, (2) *I feel good about my body*, (3) *I feel that my body has at least some good qualities*, (4) *I take a positive attitude towards my body*, (5) *I am attentive to my body's needs*, (6) *I feel love for my body*, (7) *I appreciate the different and unique characteristics of my body*, (8) *My behavior reveals my positive attitude toward my body* (e.g., I walk holding my head high and smiling), (9) *I am comfortable in my body*, and (10) *I feel like I am beautiful even if I am different from media images of attractive people* (e.g., models, actresses, actors). Tylka and Wood-Barcalow (2015) reported internal consistency of the BAS-2 scale in their study ($\alpha = .96$). They expanded on this by sharing item-total correlations, Cronbach's alphas ranged between .76-.85 for college men, .66-.91 for

college women, .68-.90 for community men, and .73-.91 for community women (Tylka & Wood-Barcalow, 2015).

Due to its internal consistency, it was determined that the BAS-2 would be used in this study to determine body appreciation levels within the competition climbing population. The 10 factors of the BAS-2 were included in the Qualtrics online survey. These 10 factors were measured in this study using a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). Participants were then able to self-select the answers that aligned most with their personal beliefs on the subject. High scores signify increased levels of body appreciation. In this study, the Cronbach's alpha for the BAS-2 was .944, indicating high internal consistency.

A complete list of the questions utilized from the BAS-2 in this study can be found in Appendix A.

Gender

Competition climber gender identity was collected through competition climber self-selection in the Qualtrics online survey. Gender is a social construct that involves the roles assigned, behaviors, and norms associated with being female, male, or neither (World Health Organization, 2021). Gender is separate from sex, as sex relates to the biological and psychological differences between females, males, and intersex persons. Such distinctions include reproductive organ and hormonal differences. An individual's gender identity refers to their internal, personal experience with gender which may or may not align with the sex they were given at birth. It is important to recognize these

differences as an individual's gender has a great influence on their perceptions, interactions, and experiences in the world around them.

Gender was recorded for this study using the following gender identities:

a. Female
b. Male
c. Transgender
d. Nonbinary
e. Please Fill In

To make it so gender, a categorical variable, could be used in the required statistical analyses, dummy coding was utilized. Dummy coding allows one to change a categorical variable, such as ethnic group, into a nominal variable that can be used in statistical analyses, such as a linear regression. For this study, gender was recoded with SPSS so that in the categorical variable male was equivalent to 0 and female was equivalent to 1. These changes made it possible to conduct between-group analyses. Other gender identities were excluded due to limited representation in the sample.

Motivation

Motivation was assessed using an adapted version of the revised Sports Motivation Scale (SMS-II). Pelletier et al. (2013) proposed the SMS-II to improve upon the original Sports Motivation Scale (SMS). The SMS-II consists of six primary factors, each of which is made up of subfactors. For example, Pelletier et al. (2013) divide intrinsic motivation into the three subfactors of (1) *because it gives me pleasure to learn more about my sport*, (2) *because I find it enjoyable to discover new performance*

strategies, and (3) *because it is very interesting to learn how I can improve*. This was done for each of the six forms of motivation which include intrinsic, integrated, identified, introjected, external, and amotivated. Pelletier et al. (2013) found that the SMS-II had good internal consistency values for all subscales in which Cronbach's alphas were greater or equal to .70. Therefore, the internal consistency of the six items was high ($\alpha = .75$) (Pelletier et al., 2013).

The SMS-II was chosen for this study due to its internal consistency. The six factors and associated subfactors from the SMS-II were included in the Qualtrics online survey. A 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*) was utilized to measure motivation within the population. Participants self-selected the answers that were most well suited to them. High scores signify high levels of that particular form of motivation. This thesis chose to focus on internal and external motivation within the competition climbing population. The Cronbach's alpha for intrinsic motivation was .833 and was .780 for extrinsic motivation. These results align with the findings of Pelletier et al. (2013) who found strong internal consistency within the items of the SMS-II ($\alpha = .75$).

In Appendix B, a copy of the SMS-II scale can be found, as well as the related questions on external and internal motivation.

Competitive Success

Competitive success was determined through the results of three questions on the Qualtrics survey. These three questions were: (1) *What is the highest level of competition you have participated in sport climbing?*, (2) *What is the highest level of competition you have participated in bouldering?*, (3) *What is the highest level of competition you have*

participated in speed climbing? These three questions were chosen to determine competitive success, as they best represented the sample of competition climbers since sport climbing, bouldering, and speed climbing are the most highly participated in forms of competition climbing ("State of Climbing," 2019).

Competition climbers had the opportunity to self-report this information using the following levels of competition:

1. I don't compete in Sport
2. Local
3. Regional
4. Divisional
5. National
6. International

A composite for the variable of competitive success was then created by combining the results of the three questions.

CHAPTER FOUR

DATA PROCESSING, ANALYSIS, AND FINDINGS

Data Preparation

Prior to data analysis, initial descriptives were run on each test variable to serve as a baseline reference. During these initial frequencies, it was noticed that there were 15 ten- to twelve-year-old competition climbers who had completed the survey. These 15 competition climbers made up 6.3% of the entire dataset. It was decided that these individuals would be excluded from the final dataset because the questions on the survey were written at the 8th grade reading level, which was above their age. The "Filter" function in SPSS was utilized to remove these age groups from future analyses.

Outliers then had to be identified and removed from the dataset. Outliers are variables that differ from most other variables in a data set. Field (2018) explains "outliers bias statistics (e.g., the mean) and their standard errors and confidence intervals" (p. 747). Mahalanobis distance was utilized to identify the outliers within the data set. The results of the Mahalanobis distance were then recoded in SPSS. Outliers were coded by having the lowest values through .001 equal to 1 which was equivalent to the outlier variable. Missing variables were coded to equal the value 2 by using the "Missing" function in SPSS. Finally, all other variables were coded to equal 0 using SPSS's "Else" function. Frequencies were then run using the "Outlier" variable to determine how many outliers were within the dataset. The frequencies analysis revealed that there were 9 outliers and 12 missing cases. It was then decided that the 9 outliers would be removed from the data set using the "Filter" function in SPSS. The outliers were removed because

doing so would reduce the potential for a Type I error, therefore increasing the statistical power of the dataset. With the outliers removed, the data was reviewed yet again for incorrect data points. No incorrect data was uncovered.

Following outlier removal, the normality of the data set needed to be checked. Normality is defined by a "bell shaped" curve as it represents an evenly distributed sample (Cohen et al., 2003). Having normality within a data set is important as it implies the data set is representative of the population. When normality is violated, this increases the chances of Type I and Type II errors, decreasing the statistical validity of test results. For this data set, Cronbach's alphas were used to determine normality. Cronbach's alphas are formulated by a random sample of test items that measure the same construct and have been shown to accurately estimate reliability (Bandalos, 2018). For this study, Cronbach's alphas were calculated using the reliability analysis tool in SPSS. Then, each item of the composite variable was inputted. For example, to calculate the Cronbach's alpha for body appreciation, all ten items from the questionnaire were inputted before the analysis was run. The same was done for intrinsic motivation, extrinsic motivation, and competitive success. Once these items were inputted the analysis was run and the Cronbach's alphas were created.

To determine if the Cronbach's alphas for this study were sufficient, the scale .70 and above is acceptable, .80 and above is better, and .90 and above is best was utilized (Field, 2018). It was found that body appreciation had a Cronbach's alpha of .944, which shows high accuracy. Intrinsic motivation had a Cronbach's alpha of .833, which demonstrates high accuracy as well. Finally, extrinsic motivation had a Cronbach's alpha

of .780, and the Cronbach's alpha for competitive success was .790. While these scores were lower than the other two composites, it was determined that they were still adequate measures for this study. Overall, it was found that the data set and test variables exhibited normality.

Although normality was found within the data set, it was decided that bootstrapping would be used in all analyses. Flora (2018) explains that bootstrapping derives an empirical sampling distribution for a particular statistic in order to learn about the variability of a statistic across various samples. Bootstrapping is useful when it is believed the theoretical sampling distribution will be incorrect due to small sample size (Flora, 2018). Due to the small sample size in this study ($N = 203$), it was decided that a bootstrap of 10,000 would be used in all of the analyses for this thesis.

Composite variables were then created using the transformed dataset. These composite variables were Body Appreciation, Intrinsic Motivation, Extrinsic Motivation, and Competitive Success, which can be seen in Table 2. To create the Body Appreciation composite variable the ten factors from Tylka and Wood-Barcalow's (2015) Body Appreciation Scale-2 (BAS-2) were used. The responses in this study to these ten factors were combined using the "Compute Variable" function in SPSS to create the Body Appreciation composite variable. This variable was then used in the following analyses to represent body appreciation levels within the study's population of competition climbers.

The Intrinsic Motivation composite variable was rooted in the revised Sports Motivation Scale (SMS-II) that was proposed by Pelletier et al. (2013). Within the SMS-II there were three factors that determined intrinsic motivation. For this study, the

responses to these three factors were combined using the SPSS "Compute Variable" function, creating the Intrinsic Motivation composite variable. This composite was used in the following analyses to represent the intrinsic motivation of the competition climber population.

The third composite variable that was developed was that for extrinsic motivation. The Extrinsic Motivation composite variable was created using the three factors proposed by Pelletier et al. (2013) in the SMS-II. With the "Compute Variable" function in SPSS, these three factors were combined to construct the Extrinsic Motivation composite which was used in the analyses for this study to reflect the extrinsic motivation levels of competition climbers.

The final composite created for this study was for competitive success. The composite for competitive success was founded in the responses to the three questions regarding the highest level of competition participated in for the disciplines of sport climbing, bouldering, and speed climbing. The "Compute Variable" function in SPSS was utilized to combine these results and create the Competitive Success composite variable. This composite was used in this study to demonstrate the competitive success of the competition climbers in the sample.

Table 2

Descriptive Statistics for Composite Variables

Factor/*Item*	***M*◊ (*SD*)**	**Cronbach's α**
Body Appreciation	5.041 (.730)	.944
I respect my body.	5.350 (.739)	
I feel good about my body.	4.940 (.942)	
I feel that my body has at least some good qualities.	4.830 (.972)	
I take a positive attitude towards my body.	5.010 (.957)	
I am attentive to my body's needs.	4.910 (1.006)	
I feel love for my body.	5.490 (.655)	
I appreciate the different and unique characteristics of my body.	5.080 (.870)	
My behavior reveals my positive attitude toward my body (e.g., I walk holding my head high and smiling).	4.950 (.872)	
I am comfortable in my body.	4.880 (.970)	
I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses, actors).	4.970 (.914)	
Intrinsic Motivation	6.223 (.732)	.833
Because it gives me pleasure to learn more about my sport.	6.110 (.943)	
Because I find it enjoyable to discover new performance strategies.	6.240 (.822)	
Because it is very interesting to learn how I can improve.	6.330 (.760)	
Extrinsic Motivation	2.553 (1.200)	.780
Because people I care about would be upset with me if I didn't.	2.440 (1.472)	
Because I think others would disapprove of me if I did not.	2.120 (1.274)	
Because people around me reward me when I do.	3.100 (1.561)	
Competitive Success	2.729 (1.319)	.790
What is the highest level of competition you have participated in sport climbing?	2.840 (1.646)	
What is the highest level of competition you have participated in bouldering?	3.310 (1.478)	
What is the highest level of competition you have participated in speed climbing?	2.040 (1.588)	

Analysis and Findings

Prior to conducting the individual analyses for the nine research questions, a bivariate correlation test was run. This was done to determine what relation existed between the study constructs of body appreciation, gender, intrinsic motivation, extrinsic motivation, and competitive success through the creation of a correlation coefficient. Field (2018) defines a correlation coefficient as "a measure of the strength of association

or relationship between two variables" (p. 728). The bivariate correlate function in SPSS was used to determine the correlation coefficients. Gender, the body appreciation composite, intrinsic motivation composite, extrinsic motivation composite, and competitive success composite were inputted as variables and the analysis was run.

The bivariate correlation showed that there were multiple variables that were significantly correlated with one another through their correlation coefficients. Specifically, Pearson's correlation coefficients, which measure the strength between two test variables, were utilized (Cohen et al., 2003). Gender and extrinsic motivation had Pearson correlation of .164, which was significant at the .05 level (2-tailed). The 2-tailed test was used here because the proposed hypothesis is non-directional, which means both directions must be considered, whereas a one-tailed test would be used if the hypothesis were directional (Field, 2018). Additionally, three of the study constructs were correlated with body appreciation. There was a Pearson correlation of .212 between intrinsic motivation and body appreciation that was significant at the .01 level (2-tailed). Extrinsic motivation was correlated with body appreciation as well, with a Pearson correlation of -.165 at the .05 level (2-tailed). Finally, competitive success and body appreciation had a Pearson correlation of .203 which was significant at the .01 level (2-tailed). All other correlations were not statistically significant. These results can be seen in Table 3.

Table 3

Bivariate Correlations of Composite Variables (*N* = 203)

	1	2	3	4
1. Body Appreciation				
2. Intrinsic Motivation	.212 (.002)			
3. Extrinsic Motivation	-.165 (.019)	.002 (.755)		
4. Competitive Success	.203 (.004)	.079 (.263)	-.001 (.988)	
5. What is your gender? (0 = Male; 1 = Female)	-.041 (.566)	-.047 (.509)	.164 (.019)	.076 (.283)

All *p*-values reported in ( ); except for p < .001.

Research Question 1

Does intrinsic motivation influence extrinsic motivation?

Hypothesis 1

H1: As intrinsic motivation in competition climbers increases, extrinsic motivation will decrease.

Results 1

A simple regression test was utilized to determine if there is a relation between intrinsic motivation and extrinsic motivation in competition climbers. Simple regressions are a form of linear regression in which one outcome is approximated from a singular predictor variable (Field, 2018). Simple regression is the best fit for this type of research question because there are two variables within the question: the predictor variable which is the level of intrinsic motivation, and the outcome variable, which is the level of extrinsic motivation. For the analysis, the linear regression function in SPSS was used. The independent variable for the analysis was the intrinsic motivation composite variable, and the dependent variable was the extrinsic motivation composite variable.

The Model Summary of the analysis revealed that intrinsic motivation and extrinsic motivation had an R^2 value of .000 which means 100% of the variance in extrinsic motivation in competition climbers remains unaccounted for. These results can be seen in Table 4. The constant in Table 4 and all following tables refers to the Y intercept of the regression line and is therefore the predictive value when all other variables are equivalent to 0 (Field, 2018).

The *F*-value of .098 suggests there is not a significant influence on the independent variable or the dependent variable. Additionally, the *F*-statistic was found to be .098 and the associated significance value was .761. These results indicate that the model is a poorer predictor of extrinsic motivation than if the mean value of extrinsic motivation was used. The linear model does not predict extrinsic motivation significantly. It is with 95% confidence that the relation between intrinsic motivation and extrinsic motivation is between -.200 and .271. A 95% confidence interval (CI) indicates that there is a 95% probability that the true score will be found within plus or minus two standard errors of measurement (SEMs) (Bandalos, 2018). Slight bias was recognized to exist within this analysis (Bias = .001). Bias occurs when the difference between two quantities is unequal when they should be equal (Camilli, 2006). When these quantities are unequal, that implies that bias has been introduced, either due to the test or the item used.

Table 4 shows that the beta value is .022 (SE = .119, p = .761, 95% CI = -.200 to .271). The standard error of measurement (SEM) here is comprised of the standard deviation of the observed scores around the true score (Bandalos, 2018). These results,

which can be found in Table 6, are not significant due to the *p*-value being greater than .05. Therefore, the results of the linear regression indicate that there is no significant relation between intrinsic motivation and extrinsic motivation scores, therefore the alternative hypothesis was rejected.

Figure 11

Results 1: No Significant Relation Between Intrinsic Motivation and Extrinsic Motivation Scores

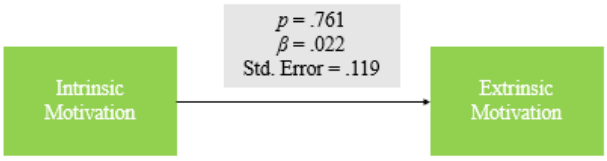


Table 4

Linear Regression Coefficients for Intrinsic Motivation and Extrinsic Motivation

								95% Confidence Interval	
Model		**R Square**	***F***	**Beta (*β*)**	**Bias**	**Std. Error**	**Sig. (2-tailed)**	**Lower**	**Upper**
1	(Constant)				-.005	.731	.002	.900	3.797
	Intrinsic Motivation	.000	.098	.022	.001	.119	.761	-.200	.271

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 2

Does extrinsic motivation in competition climbers influence body appreciation in climbers?

Hypothesis 2

H2: As extrinsic motivation increases in competition climbers, body appreciation will decrease.

Results 2

To determine the relation between extrinsic motivation and body appreciation a simple linear regression was selected. It was determined that a simple linear regression would be the best fit for this research question, as there is one predictor variable, extrinsic motivation levels, and one outcome variable, body appreciation levels. For the linear regression, SPSS was utilized. The dependent variable for the analysis was the body appreciation composite, and the independent variable was the extrinsic motivation composite.

The analysis revealed that the R^2 value was .027, which can be seen in Table 5. The R^2 results of the analysis imply that 2.7% of the variance in body appreciation is explained by extrinsic motivation, which leaves 97.3% of the variance in body appreciation unaccounted for. The F value of 5.602 (p = .032) suggests there is a significant influence on the dependent variable by the independent variable, which can be seen in Table 5 as well. These results imply that the proposed model is a better predictor of body appreciation than if the mean value of body appreciation was utilized. Therefore, the linear model predicts body appreciation significantly.

The beta results further support the conclusion that there is a significant relation between extrinsic motivation and body appreciation. For extrinsic motivation, the beta value is -.165 (SE = .046, 95% CI = -.195 to -.014), which means that for every one unit increase in extrinsic motivation, there is a corresponding .165 decrease in body appreciation. Slight bias was recognized within the linear regression analysis (Bias = -.002). The results of the linear regression conclude that there is a significant negative

relation between extrinsic motivation and body appreciation in competition climbers. It is for this reason that the alternative hypothesis was accepted.

Figure 12

Results 2: Significant Negative Relation Between Extrinsic Motivation and Body Appreciation Scores

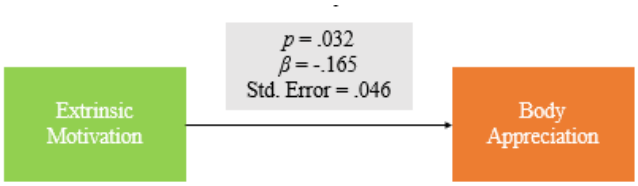


Table 5

Linear Regression Coefficients for Extrinsic Motivation and Body Appreciation

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.005	.126	<.001	5.056	5.542
	Extrinsic Motivation	.027	5.602	-.165	-.002	.046	.032	-.195	-.014

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 3

Does intrinsic motivation in competition climbers influence body appreciation in climbers?

Hypothesis 3

H3: As intrinsic motivation increases in competition climbers, body appreciation will increase.

Results 3

A simple linear regression was conducted to determine the relation between intrinsic motivation and body appreciation in competition climbers. Simple linear regression was decided upon for it was considered the best fit for the research question

since it includes one predictor variable, intrinsic motivation, and one outcome variable, body appreciation. For these reasons, the body appreciation composite variable was designated the dependent variable and the intrinsic motivation composite variable was the independent variable in the SPSS linear regression.

The linear regression showed that the R^2 value for the analysis was .045. These results imply that 4.5% of the variance in body appreciation is accounted for by intrinsic motivation and 95.5% is accounted for by other variables. The R^2 value and following results can be found in Table 6. Additionally, the linear regression found the *F*-value and *p*-value ($F = 9.432$, $p = .002$). With the significance value being less than .05, this confirms the relation between intrinsic motivation and body appreciation in climbers is statistically significant. These results indicate that the proposed model surpasses the mean value in terms of body appreciation prediction. To put it simply, the linear model significantly predicts body appreciation.

The bootstrap for coefficients revealed that beta for the relation between intrinsic motivation and body appreciation was equivalent to .212 (SE = .069, 95% CI = .076 to .349). These results imply that for every one unit increase in intrinsic motivation, there is a corresponding .212 unit increase in body appreciation. No bias was recognized within this analysis (Bias = .000). Therefore, it can be concluded that there is a significant positive relation between intrinsic motivation and body appreciation in competition climbers and the alternative hypothesis is accepted.

Figure 13

Results 3: Significant Positive Relation Between Intrinsic Motivation and Body Appreciation Scores

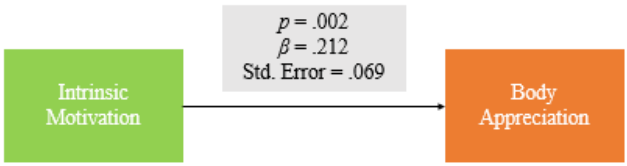


Table 6

Linear Regression Coefficients for Intrinsic Motivation and Body Appreciation

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.429	.126	<.001	2.877	4.549
	Extrinsic Motivation	.045	9.432	.212	.000	.046	.002	.076	.349

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 4

Does gender influence extrinsic motivation?

Hypothesis 4

H4: The variable extrinsic motivation will have higher levels of influence on females than males.

Results 4

To determine if there was a relation between the constructs of gender and extrinsic motivation in competition climbers a simple regression was utilized. Simple regression was chosen because it best fits the research question which contains one predictor variable, gender, and one outcome variable, extrinsic motivation. To perform this analysis, the linear regression function in SPSS was utilized. The independent

variable for the analysis was gender, and the dependent variable was the extrinsic motivation composite.

The linear regression analysis determined R^2 equaled .027, which can be seen in Table 7. The R^2 value indicates that 2.7% of the variance is determined by gender, which leaves 97.3% of the variance unexplained. Additionally, the F-value of 5.59 (p = .019) indicates a statistically significant relation between the test variables since the value is less than .05. Lastly, the beta value was .164 (SE = .169, 95% CI = .058 to .723). The beta value indicates that for every one unit increase in gender, as you move from male to female, there is a corresponding .164 increase in extrinsic motivation. Minor bias was recognized to exist within the linear regression analysis (Bias = -.002). These results confirm that there is a significant positive relation between gender and extrinsic motivation in competition climbers. For these reasons, the alternative hypothesis was accepted.

Figure 14

Results 4: Significant Positive Relation Between Gender and Extrinsic Motivation

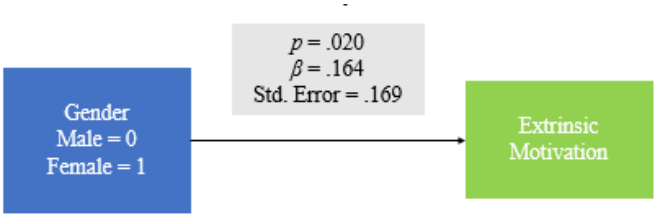


Table 7

Linear Regression Coefficients for Gender and Extrinsic Motivation

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.000	.109	<.001	2.168	2.590
	Gender	.027	5.590	.164	-.002	.169	.020	.058	.723

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 5

Does gender influence intrinsic motivation?

Hypothesis 5

H5: The variable intrinsic motivation will have lower levels of influence on females than males.

Results 5

A test of simple regression was chosen to determine the relation between gender and intrinsic motivation in competition climbers. Due to the research question having one predictor variable, gender, and one outcome variable, intrinsic motivation, a simple regression was believed to be the best fit for analysis. The linear regression function in SPSS was used to conduct this analysis. The independent variable was gender, and the dependent variable was the intrinsic motivation composite variable.

Upon analysis, it was found that the R^2 value was .002 which implies that .2% of the variance in intrinsic motivation is related to gender, while the remaining 99.8% is explained by other factors. These and the following results can be found in Table 8. The linear regression calculated the *F*-statistic ($F = .438$) and the *p*-value ($p = .511$). Both values suggest that there is no significant influence on the independent variable or the dependent variable. The beta value supports the conclusion that the relation between the

two test variables is not statistically significant (β = -.047, SE = .101, 95% CI = -.263 to .128). No bias was detected in this analysis (Bias = .000). For these reasons, it was determined that there is no statistically significant relation between gender and intrinsic motivation in competition climbers. Therefore, the alternative hypothesis was rejected.

Figure 15

Results 5: No Significant Relation Between Gender and Intrinsic Motivation

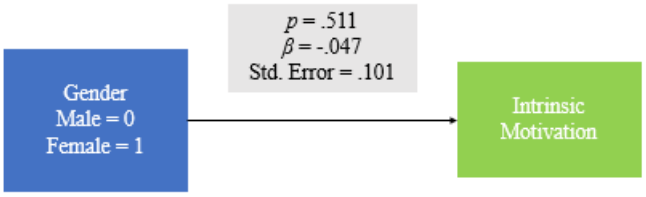


Table 8

Linear Regression Coefficients for Gender and Intrinsic Motivation

								95% Confidence Interval	
Model		**R Square**	***F***	**Beta (β)**	**Bias**	**Std. Error**	**Sig. (2-tailed)**	**Lower**	**Upper**
1	(Constant)				.000	.075	<.001	6.106	6.396
	Gender	.002	.438	-.047	.000	.101	.511	-.263	.128

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 6

Does gender influence body appreciation?

Hypothesis 6

H6: The variable body appreciation will have less influence on females than males.

Results 6

A simple regression test was utilized to determine the relation between gender and body appreciation in climbers. It was chosen because a simple regression was best suited

to this form of question which has a predictor variable, gender, and an outcome variable, body appreciation. For the analysis the linear regression function in SPSS was used. The independent variable was gender, and the dependent variable was the body appreciation composite.

The linear regression showed that the R^2 value was 0.002 implying that only .2% of the variance in body appreciation was explained by gender. The remaining 99.8% is left unexplained by other untested variables. These and the following results are located in Table 9. The *F*-statistic and *p*-value were calculated as well. The *F*-value of .331 (p = .558) indicates that there is no significant influence of the independent variable or the dependent variable.

Finally, the beta value was found to be -.041 (SE = .100, 95% CI = -.256 to .140). No bias was found within this analysis (Bias = .000). With these results it can be concluded that there is no statistically significant relation between gender and body appreciation in competition climbers. Therefore, the alternative hypothesis was rejected.

Figure 16

Results 6: No Significant Relation Between Gender and Body Appreciation

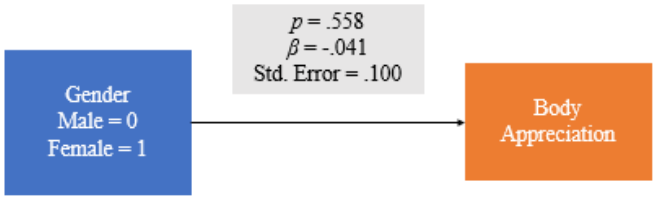


Table 9

Linear Regression Coefficients for Gender and Body Appreciation

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.000	.072	<.001	4.922	5.203
	Gender	.002	.331	-.041	.000	.100	.558	-.256	.140

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 7

Does intrinsic motivation influence competitive success?

Hypothesis 7

H7: As intrinsic motivation increases in competition climbers, competitive success will increase.

Results 7

To determine the relation between intrinsic motivation and competitive success in competition climbers, a simple regression was chosen. A simple regression was utilized because the research question had one predictor variable, intrinsic motivation, and one outcome variable, competitive success, which aligns with what a simple regression addresses. To conduct this analysis, SPSS's linear regression function was utilized. The independent variable was intrinsic motivation, and the dependent variable was competitive success.

The linear regression produced several key results, the first being the R^2 value. R^2 was found to be .006, indicating that intrinsic motivation explained only .6% of the variance in competitive success. This means that other variables that were not tested explain the remaining 99.4% of variance. These and the following results are located in

Table 10. Additionally, the linear regression produced the *F*-statistic and *p*-value (F = 1.262, p = .255). With a *p*-value greater than .05, this indicated that the relation between the two test variables was not significant. This conclusion was further confirmed by the beta value (β = .079, SE = .125, 95% CI = -.108 to .390). No bias was detected in the linear regression analysis (Bias = .000). For these reasons, it was concluded that intrinsic motivation is not significantly related to competitive success in competition climbers. Therefore, the alternative hypothesis was rejected.

Figure 17

Results 7: No Significant Relation Between Intrinsic Motivation and Competitive Success

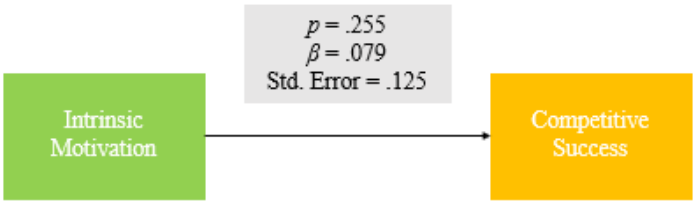


Table 10

Linear Regression Coefficients for Intrinsic Motivation and Competitive Success

Model		R Square	*F*	Beta (β)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.001	.793	.022	.279	3.438
	Intrinsic Motivation	.006	1.262	.079	.000	.125	.255	-.108	.390

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 8

Does extrinsic motivation influence competitive success?

Hypothesis 8

H8: As extrinsic motivation increases in competition climbers, competitive success will decrease.

Results 8

A simple regression test was utilized to determine if there is a relation between extrinsic motivation and competitive success in competition climbers. The simple regression was chosen for this analysis because it was believed to be the best fit for the research question as it contains one predictor variable, extrinsic motivation, and one outcome variable, competitive success. To do the analysis, the linear regression function in SPSS was utilized. The independent variable was the extrinsic motivation composite, and the dependent variable was the competitive success composite.

The linear regression outputted several key results, which can be seen in Table 11. The R^2 value was .000 which indicates that 0% of the variance in competitive success could be explained by extrinsic motivation, leaving 100% of the variance to be explained by other untested variables. In addition to the R^2 value, the linear regression created a F statistic and p-value for the research question. The F statistic of .000 (p = .987) suggests that there is not a significant influence on the independent variable or the dependent variable.

The conclusion that there is no significant relation between the two test variables was confirmed by the beta value. The beta value was found to equal -.001 (SE = .073, 95% CI = -.142 to .146), which confirms that there is no significant relation between extrinsic motivation and competitive success in competition climbers. No bias was detected in the linear regression analysis. With these results the alternative hypothesis was rejected.

Figure 18

Results 8: No Significant Relation Between Extrinsic Motivation and Competitive Success

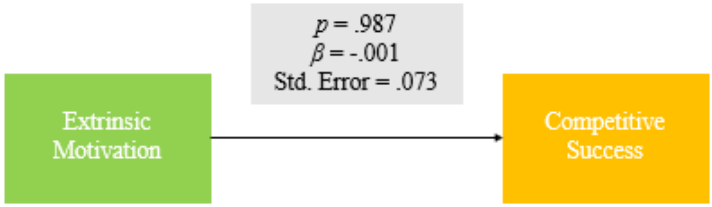


Table 11

Linear Regression Coefficients for Extrinsic Motivation and Competitive Success

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.001	.215	<.001	2.314	3.163
	Extrinsic Motivation	.000	.000	-.001	.000	.073	.987	-.142	.146

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

Research Question 9

Does body appreciation influence competitive success?

Hypothesis 9

H9: As body appreciation increases in competition climbers, competitive success will increase.

Results 9

To determine the relation between intrinsic motivation and competitive success in competition climbers, a simple regression was chosen. A simple regression was utilized because the research question had one predictor variable, body appreciation, and one outcome variable, competitive success, which aligns with what a simple regression addresses. To conduct this analysis, SPSS's linear regression function was utilized. The

independent variable was body appreciation, and the dependent variable was competitive success.

The linear regression found the R^2 to be .041, indicating that 4.1% of the variance in competitive success is explained by body appreciation, leaving 95.9% of the variance unexplained. The F value of 8.677 (p = <.001) indicated that there is a significant influence on the independent variable and the dependent variable. These results were further confirmed by the beta value (β = .203, SE = .113, 95% CI = .137 to .582). This means that for every one unit increase in body appreciation, there is a corresponding .203 increased in competitive success. Minor bias was recognized within the simple regression analysis (Bias = -.002). From the results of the simple regression, it was concluded that there is a statistically significant positive relation between body appreciation and competitive success in competition climbers and the alternative hypothesis was accepted. The results of the simple regression can be found in Table 12.

Figure 19

Results 9: Significant Positive Relation Between Body Appreciation and Competitive Success

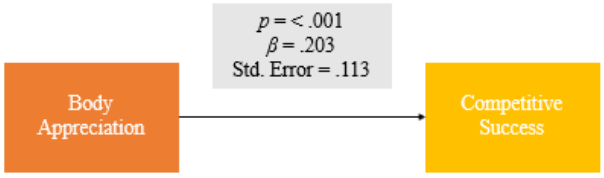


Table 12

Linear Regression Coefficients for Body Appreciation and Competitive Success

Model		R Square	*F*	Beta (*β*)	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	95% Confidence Interval Upper
1	(Constant)				.010	.565	.120	-.170	2.039
	Body Appreciation	.041	8.677	.203	-.002	.113	<.001	.137	.582

a. Unless otherwise noted, bootstrap results are based on 10000 bootstrap samples

CHAPTER FIVE

DISCUSSION AND CONCLUSION

This study aimed to determine the relation between the constructs of body appreciation, gender, motivation, and competitive success in competition climbers. Each of the nine research questions focused on direct relations between body appreciation, gender, motivation, and competitive success, using composite scores created from the questionnaire results. A summary of the study results that will be discussed in this section can be found below in Table 13.

Table 13

Summary of Study Results

	Research Question	Hypothesis	Significant Result
1	Does intrinsic motivation influence extrinsic motivation?	As intrinsic motivation in competition climbers increases, extrinsic motivation will decrease.	No
2	Does extrinsic motivation in competition climbers influence body appreciation in climbers?	As extrinsic motivation increases in competition climbers, body appreciation will decrease.	Yes
3	Does intrinsic motivation in competition climbers influence body appreciation in climbers?	As intrinsic motivation increases in competition climbers, body appreciation will increase.	Yes
4	Does gender influence extrinsic motivation?	The variable extrinsic motivation will have higher levels of influence on females than males.	Yes
5	Does gender influence intrinsic motivation?	The variable intrinsic motivation will have lower levels of influence on females than males.	No
6	Does gender influence body appreciation?	The variable body appreciation will have less influence on females than males.	No
7	Does intrinsic motivation influence competitive success?	As intrinsic motivation increases in competition climbers, competitive success will increase.	No
8	Does extrinsic motivation influence competitive success?	As extrinsic motivation increases in competition climbers, competitive success will decrease.	No
9	Does body appreciation influence competitive success?	As body appreciation increases in competition climbers, competitive success will increase.	Yes

Discussion

The primary focus of this study was to examine the relation between the constructs of body appreciation, gender, motivation, and competitive success in competition climbers. The findings from research question one determined that there is no significant relation between intrinsic motivation and extrinsic motivation. These results were relatively surprising as previous research on intrinsic motivation and extrinsic motivation has conveyed these constructs has having an inverse relation (Pelletier et al., 2013; Ryan & Deci, 2000), yet this was not found to be the case in this study. Additionally, these results do not provide support for the hypothesis that a competition climber's level of intrinsic motivation will influence their level of extrinsic motivation. Therefore, intrinsic motivation is not a significant predictor of extrinsic motivation in competition climbers. While intrinsic motivation may not be a significant predictor, other factors could impact the extrinsic motivation levels of competition climbers, such as gender and body appreciation levels.

The second research question of this study analyzed the relation between extrinsic motivation and body appreciation in competition climbers. The results of this analysis indicated a significant negative relation between extrinsic motivation and body appreciation scores in competition climbers. To put it simply, as extrinsic motivation increases in competition climbers, body appreciation levels decrease. These results align with previous research on extrinsic motivation and its relation with body appreciation (Ambwani & Strauss, 2007; Ormsby et al., 2019; Shriver et al., 2013; Thompson & Cafri,

2007). Despite the lifestyle nature of competition climbing, athletes are not protected from decreases in body appreciation through extrinsic motivators.

Research question three analyzed the relation between intrinsic motivation and body appreciation in competition climbers. The results of this analysis indicated that there was a significant positive relation between intrinsic motivation and body appreciation scores. Therefore, as intrinsic motivation increases in competition climbers so do body appreciation levels. This relation is well documented (Blokstra et al., 1999; Frisén et al., 2013; McCabe & Ricciardelli, 2004; Smolak & Levine, 2001) and is further supported by this study.

The fourth research question focused on the relation between gender and extrinsic motivation in competition climbers. It was hypothesized that extrinsic motivation would have higher levels of influence on female competition climbers than males. The results of the analysis indicated that this hypothesis was true for the competition climber population because a significant positive relation was found between gender and extrinsic motivation. These results contradict conclusions made by Chin et al. (2012), De Pero et al. (2009), and Molanorouzi et al. (2015) who had determined that males experienced greater levels of extrinsic motivation than females. Additionally, the results of this study confirm research by Egli et al. (2011) and Chowdhury (2012), who concluded that females were more greatly impacted by external motivators than males as they had higher levels of extrinsic motivation. Overall, these results contribute to the literature on the relation between extrinsic motivation and gender.

Research question five examined the gender variable against intrinsic motivation. Through analysis, no significant relation was discovered between gender and intrinsic motivation in competition climbers. These results contradict the conclusion made by Chin et al. (2012), who found that females tended to be more intrinsically motivated than males. De Egli et al.'s (2011) results are negated as well, as they concluded that male athletes had higher levels of intrinsic motivation than females. It is possible other moderating factors, such as age or the preferred discipline of climbing, influence the relation between gender and intrinsic motivation in competition climbers that, if analyzed, would align further with previous research.

Gender and its relation with body appreciation levels was the focal point of research question six. It was determined that there was no significant relation between gender and body appreciation levels in competition climbers. This was an intriguing result as it contradicts previous research that concluded females had lower levels of body appreciation than males (Kantanista, 2018; O'Neill et al., 2018; Sundgot-Borgen et al., 2021). It is possible other factors within this population that were not addressed in this study may be acting as a protective factor against lower body appreciation levels. O'Neill et al. (2018) posited that higher levels of body appreciation may be related to health-related quality of life which focuses on body functioning, well-being, and perceived physical health. Therefore, it may be that competition climbers have higher levels of health-related quality of life, which acts as a protective factor for them against lower levels of body appreciation. Additionally, Sundgot-Borgen et al. (2021) theorized that body appreciation levels could be influenced by cultural and context-based

characteristics. In the context of this study, it is possible that the competition climbing culture, such as it being a lifestyle sport, could be acting as a protective factor and therefore preventing lower levels of body appreciation in the population. Additionally, Kantanista et al. (2018) concluded that athletes may have higher levels of body appreciation because they have lower BMIs than non-athletes. Previous research by Tomaszewski (2011) concluded that the optimal somatic build for climbers consisted of low body mass, low-fat context, a small stature, and a high hand grip strength in regard to their body mass. For these reasons, it is possible that competition climbers have lower BMIs than the general population, allowing them to align with the sociocultural ideal, and that is what is contributing to the higher levels of body appreciation in the population. Future studies on the subject would allow for increased clarity on the subject.

The seventh research question addressed intrinsic motivation and its relation with competitive success in competition climbers. From the analysis, it was clear that there was no significant relation between the constructs of intrinsic motivation and competitive success in the competition climber population. Therefore, it was concluded that intrinsic motivation is not a significant predictor of competitive success in competition climbers. While previous studies have not necessarily focused on the relation between intrinsic motivation and competitive success, they have highlighted intrinsic motivation's connection to sport enjoyment as well as continued participation in sport (Berestetska, 2019). For example, a study by Benczenleitner et al. (2013) studied hammer throwers and concluded that athletes who are intrinsically motivated enjoy participating in their sport and are therefore less likely to drop out from their associated sport. Research done by

Malchrowicz-Mo´sko et al. (2020) found that intrinsic motivation increased with time spent in sport. For example, professional judokas who had been training for ten or more years had the highest levels of intrinsic motivation (Malchrowicz-Mo´sko et al., 2020). Future studies should consider observing intrinsic motivation through these lenses to further determine how intrinsic motivation is expressed in this population and how these constructs may relate to competitive success in competition climbing.

Research question eight analyzed the relation between extrinsic motivation and competitive success. It was hypothesized that as extrinsic motivation levels increased in competition climbers, their competitive success would decrease. From the analysis, it was evident that there was no significant relation between extrinsic motivation and competitive success in competition climbers. These results contradict research done by Benczenleitner et al. (2013) which concluded that extrinsic motivation was slightly higher than intrinsic motivation in hammer throwers. A study by Gonzalez (2019) determined that climbers had high intrinsic motivation levels which may be why extrinsic motivation did not predict competitive success in this population. If competition climbers do not experience high levels of extrinsic motivation, then it is understandable that there is no relation between extrinsic motivation and competitive success in this population. Additionally, it is possible that competitive success may increase regardless of the specific form of motivation being discussed (i.e., intrinsic, or extrinsic). If an overarching motivator variable was used in this study instead of focusing on intrinsic motivation and extrinsic motivation it is possible that this study would have yielded different results. Further research needs to be done to determine how extrinsic motivation, and motivation

as a whole, is expressed within competition climbers and what factors influence competitive success.

The final research question, research question nine, focused on determining the relation between body appreciation and competitive success in competition climbers. It was thought that competition climbers with higher levels of body appreciation would experience greater competitive success because of how they appreciate and care for their bodies. The analysis revealed that there was a significant positive relation between body appreciation and competitive success, confirming the alternative hypothesis. Unfortunately, limited research has been done on this subject and no other studies could be found to corroborate these results. It is possible that the way in which competition climbers perceive their bodies (i.e., body appreciation) contributes to their increased competitive success or this relation could be explained by a moderating factor, such as BMI. In the future, additional research should be done to determine how body appreciation influences competitive success in competition climbers as well as athletes in other sports.

Understanding the relation between body appreciation, gender, motivation, and competitive success is important in developing a deeper knowledge and sense of the competition climbing community. Following this is a discussion on what implications this study's findings may have on competition climbers, coaches, and associated organizations such as USA Climbing.

Implications for Practice and Future Directions

The purpose of this study was to determine the relation between the constructs of body appreciation, gender, motivation, and competitive success in competition climbers. Through this study, several key findings emerged. These include a significant negative relation between extrinsic motivation and body appreciation scores, a significant positive relation between intrinsic motivation and body appreciation scores, a significant positive relation between gender and extrinsic motivation, and a significant positive relation between body appreciation and competitive success. Knowing this, recommendations can be made such as creating educational programs for coaches, as they serve as external motivators, which will train them on how to develop intrinsic motivation within athletes, what body appreciation is and its importance, and how to incorporate body positive language into their coaching.

Previous studies have found that coaches act as an external motivator for athletes and therefore can significantly influence the success of those they oversee (Pelletier et al., 2013). Pelletier et al. (2013) expand on this by sharing that coaches can present challenges, offer choices, or create spaces for athletes to provide feedback, all of which support the athletes' autonomy through compassionate group engagement. Alternatively, coaches can hinder the autonomy of their athletes through an emphasis on rewards, intimidation tactics, controlling feedback usage, and punishment enforcement (Pelletier et al., 2013). Jowett and Ntoumanis (2003) add that the relationship developed between a coach and their athletes plays a pivotal role in the physical and psychosocial development

of an athlete. Therefore, it is crucial for coaches to understand how their actions and the words they use can impact their athletes.

For these reasons, it would be to the benefit of competition climbing coaches and athletes to create an educational training program that focuses on the constructs of body appreciation, gender, motivation, and competitive success in the context of competition climbing. Such a program could be modeled from previously successful programs such as the Free to Be Program (Regehr et al., 2020) or Body Image Curriculum (Robertson & Thomson, 2014) that were implemented in Canada. This competition climbing-specific program would be designed with the assistance of a committee. The committee would consist of health practitioners, researchers, eating disorder specialists, and coaches who are well versed in the topics discussed in this study (Robertson & Thomson, 2014). Together they would develop a body appreciation curriculum that highlights how the actions of coaches can impact athletes as well as how the use of body inclusive language and incorporation of body appreciation topics can positively impact athletes.

As with the Free to Be program, there could be a series of sessions and each session could discuss the nuances of a particular topic (Regehr et al., 2020). For example, Regeher et al. (2020) explain that Session 1 of the Free to Be program focused on "understanding appearance pressures and corresponding media messages" (p. 791). The committee would be responsible for determining what aspects of the Free to Be and Body Image Curriculum would be included in the training for competition climbing coaches, athletes, and parents. Topics directly related to the issues in this study should be incorporated into this training as well.

Once the key constructs of the training have been outlined, a formal online training program should be created. This training could be created and implemented by a governing body such as USA Climbing to ensure that all coaches have the same foundational knowledge. The section on body appreciation would highlight what body appreciation is, how it is represented within the climbing community, and what can be done to improve the body appreciation of athletes. For example, there could be a section on how body appreciation acts as a protective factor against health concerns, such as the development of eating disorders (Ferreira et al., 2017; Razmus, 2018). Another section could focus on how body inclusive language could be incorporated into the verbiage of coaches. Cunningham and Pickett (2020) discuss how inclusion was the result of "inclusive language, where the words instructors and employees use are meant to edify others rather than stigmatize them" (p. 755). In the context of competition climbing, inclusive language may look like a coach focusing on the positive aspects of a climber's technique rather than making comments on their body size or lack of muscularity. Program creators should ensure that examples are specific to climbing so that coaches can understand the importance and how to apply the information to their work. Ideally, this program would be offered online to remove the barrier of folks not being able to travel to in-person locations.

While these changes have the potential to positively impact athletes, it is also critical for coaches to recognize the different ways that athletes may experience motivation. This study showed that intrinsic motivation was positively linked to body appreciation levels whereas extrinsic motivation was inversely related to body

appreciation levels. Since body appreciation serves as a protective factor, it is important for coaches to recognize this relation, how motivation presents within their athletes, and what they can do to develop higher levels of intrinsic motivation within this population.

Although it is important to engage coaches in the topics of body appreciation, gender, and motivation, it is imperative to have parents and guardians involved in the conversation as well. A similar educational training program should be created for parents and guardians of competition climbers. This educational program would highlight the same key points as that of the program for coaches, but it would shift the context so it can be understood and applied through the parental and guardian lenses. Providing education for parents and guardians will allow them to become familiar with body appreciation in the context of their children and themselves. It is important for the parental population to be aware of body appreciation because they act as primary influencers on their children. Carbonneau et al. (2019) explain that children are likely to both notice and imitate how their parents talk about their bodies, their children's body, and the bodies of others. Previous research by Arroyo and Andersen (2015), Arroyo et al. (2020), Damiano et al. (2019), McCabe et al. (2016), and Webb et al. (2018) found that parents and guardians had significant influences on body appreciation within their children. For these reasons, it is important for parents and guardians to incorporate positive body talk into their home environments rather than focusing on discussions of weight or body dissatisfaction.

To educate parents on the subject of body appreciation and its importance, an educational program, similar to that of the program for coaches, should be created and

offered online and in-person to ensure maximum involvement. The in-person program would provide community for parents while the online program would reach those that may not have the time or ability to attend an in-person program. This program should be modeled from the Confident Body, Confident Child program (Meskin et al., 2021) and the Body Talk workshop (McCabe et al., 2016). The Confident Body, Confident Child (CBCC) program is a prevention program that was designed to help parents and guardians create an environment that promotes body satisfaction, healthy eating, and movement habits. Through the CBCC program participants learn about weight stigma, the importance of promoting health at every size, addressing healthy choices through a non-diet approach, as well as how to recognize sociocultural influences that impact body appreciation development within children and adolescents. Meskin et al. (2021) found that CBCC was successful in increasing participant knowledge on body satisfaction as well as healthy habits. Therefore, aspects of the CBCC should be incorporated into the proposed education program for the parents and guardians of competition climbers.

Along with the CBCC, aspects of the Body Talk workshop should be included as well. Body Talk was an intervention program that was created by McCabe et al. (2016) to help educate parents and guardians on how to address body image and associated topics with their sons. The program consisted of two 2-hour workshops that were delivered over the course of two weeks. During this program, participants learned about how children perceive their bodies, what body areas they focus on, what body image is, the definition of self-esteem, and other relevant topics. After completion of the workshop, participants had an increased understanding of body appreciation within their children as well as

increased levels of body appreciation in themselves. Utilizing the CBCC program and Body Talk workshop would allow practitioners to create a tailored program for the parents and guardians of competition climbers that would focus on body appreciation and the other topics presented within this study.

After their initial creation and implementation through USA Climbing, these education programs should be applied to other spaces in which climbing walls are present. Such areas may include collegiate climbing walls, outdoor artificial climbing walls, commercial climbing gyms, and climbing walls at camps. These are areas in which climbing occurs and the same challenges discussed in this thesis are applicable. Therefore, it is recommended that future collaboration occurs between the creators of the coach and parent education program and experts in the program areas mentioned here to adapt the program to fit the populations in these spaces.

In addition to the creation and implementation of these educational training programs, further research should be done within the competition climbing community to corroborate the results of this study. It would be interesting as well to see if the constructs of this study interact with other factors such as body fat dissatisfaction, muscularity dissatisfaction, body mass index (BMI), income, and other items from the SMS-II (e.g., integrated motivation, identified motivation, introjected motivation, and amotivated). For example, do athletes with higher levels of body appreciation have lower levels of body fat dissatisfaction and muscularity dissatisfaction? Is there a correlation between BMI and body appreciation, body fat dissatisfaction, and muscularity dissatisfaction in competition climbers? While questions on these topics were incorporated into the

Qualtrics questionnaire that was distributed to the participants in the current study, they were not addressed in this thesis due to time constraints. Additionally, it would be interesting to redistribute this survey and see how the results from the competition climbers in 2017 differ from those in 2022. It is quite possible that the events of the past five years, particularly that of the COVID-19 pandemic, would impact the results if the survey were redistributed.

Limitations

One limitation of this study is that it views gender through a binary lens, the two genders being male and female. Transgender and nonbinary individuals did respond to the questionnaire, but due to the low sample size were removed from the data set because too few cases resulted. If these responses had been included, it would have resulted in limited statistical precision and power due to low subsample size, inflating the probability of a Type II error. Excluding these individuals' questionnaire responses indicates that the results of this study are not representative of all competition climbers. This is because previous studies have shown that the experience of a transgender or nonbinary individual differs from that of the cisgender population studied. Research done by Jones et al. (2019) and Witcombe et al. (2015) determined that transgender and nonbinary populations had high rates of body dissatisfaction when compared with cisgender populations. The results of this study may have differed if transgender, nonbinary, and other gender identity responses had been concluded. Future studies on these subjects should include open-ended questions to provide a space for these populations to be heard through qualitative research measures.

An additional limitation is that the questionnaire was only posted to USA Climbing's Facebook page and no other form of social media. By only posting the questionnaire to Facebook, those who did not have Facebook accounts were excluded from participating, limiting the overall representativeness of this study and increasing the probability for response bias. If the questionnaire had been posted on various social media platforms, such as Instagram and Twitter in addition to Facebook, there may have been a higher response rate. A higher response rate would have led to an increasingly representative sample of the competition climbing population in 2017.

The age of the dataset serves as a limitation as well. While participant responses may have been representative of the climbing population in 2017, it is quite possible these results would differ if the survey were to be redistributed. This is largely due to the COVID-19 pandemic which greatly impacted the physical and mental health of the American population. In a systematic review, Xiong et al. (2020) concluded that females, those of a poor economic status, lower education level, and those who were unemployed were at an increased risk for developing symptoms of mental disorders such as depression, anxiety, PTSD, and stress during the COVID-19 pandemic. The findings from Xiong et al. (2020) were supported by Pfefferbaum and North (2020) who determined individuals in quarantine experienced stress, insomnia, and depression. Additionally, Robertson et al. (2021) learned that women and young people were disproportionately likely to report changes in thought and behavior regarding food, particular difficulty with eating regulation, preoccupation around thoughts of food, and body image concerns throughout the COVID-19 pandemic. Those with previous or active

eating disorders exhibited elevated rates of perceived body image change, eating, and exercise (Robertson et al., 2021). For these reasons, it would be beneficial to redistribute this survey to compare the results between the 2017 and 2022 groups to determine how the competition climbing community was impacted by the COVID-19 pandemic, particularly in regard to the topics of this study.

An additional limitation of this study is the racial and ethnic demographics of the population studied and its relation to the thin ideal. Of the 203 study participants 81.8% of them identified as White, not Hispanic which is representative of the competition climbing community within the United States. While these demographics are representative of competition climbers in the United States, they are not representative of competition climbers in other countries such as Japan, South Korea, or Kazakhstan (International Olympic Committee, 2022). Expanding on this, the construct of the thin ideal that was discussed within this study is a Westernized concept (Gilbert et al., 2009; O'Garo et al., 2019; Rochelle & Hu, 2016). The Western roots of the thin ideal indicate that the sociocultural body ideal discussed within this study may not align with the sociocultural body ideals of other countries. Therefore, practitioners need to consider these implications when applying the results of this study to non-American populations.

A final limitation is that individuals had the opportunity to decide whether they wanted to participate in the questionnaire. Giving participants this choice over conducting a randomized control trial contributes to voluntary response bias. This voluntary response bias within this sample may act as a threat to internal validity.

Conclusion

To develop an increased understanding of the competition climbing population in the United States the constructs of body appreciation, gender, motivation, and competitive success were studied in the context of competition climbers. It was found that body appreciation in competition climbers was significantly related to body appreciation, intrinsic motivation, and competitive success. These results indicate that body appreciation is an influential factor within the competition climbing community. To address body appreciation in this community, it is recommended that educational programs be created for coaches and parents. Developing and implementing such programs will allow coaches and parents to have increased awareness of their body appreciation and how their interactions may influence the body appreciation of their athletes.

These programs should incorporate information on extrinsic motivation and intrinsic motivation as well. Extrinsic motivation must be emphasized since body appreciation was found to be negatively correlated with extrinsic motivation. The educational programs should discuss how motivation may interact with body appreciation and how to encourage particular forms of motivation. Additionally, future studies should expand on what was discussed within this study to corroborate our results and to work towards developing a deeper understanding of this community.

APPENDICES

Appendix A

Body Appreciation Scale-2

1. I respect my body.
2. I feel good about my body.
3. I feel that my body has at least some good qualities.
4. I take a positive attitude towards my body.
5. I am attentive to my body's needs.
6. I feel love for my body.
7. I appreciate the different and unique characteristics of my body.
8. My behavior reveals my positive attitude toward my body (e.g., I walk holding my head high and smiling).
9. I am comfortable in my body.
10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses, actors).

(Tylka and Wood-Barcalow, 2015)

Appendix B

Sports Motivation Scale-II

Intrinsic

1. Because it gives me pleasure to learn more about my sport.
2. Because I find it enjoyable to discover new performance strategies.
3. Because it is very interesting to learn how I can improve.

Integrated

1. Because practicing sports reflects the essence of who I am.
2. Because participating in sport is an integral part of my life.
3. Because through sport, I am living in line with my deepest principles.

Identified

1. Because I have chosen this sport as a way to develop myself.
2. Because I found it is a good way to develop aspects of myself that I value.
3. Because it is one of the best ways I have chosen to develop other aspects of myself.

Introjected

1. Because I would feel bad about myself if I did not take the time to do it.
2. Because I feel better about myself when I do.
3. Because I would not feel worthwhile if I did not.

External

1. Because people I care about would be upset with me if I didn't.
2. Because I think others would disapprove of me if I did not.

3. Because people around me reward me when I do.

Amotivated

1. I used to have good reasons for doing sports, but now I am asking myself if I should continue.
2. So that others will praise me for what I do.
3. It is not clear to me anymore; I don't really think my place is in sport.

(Pelletier et al., 2013)

Appendix C

Definition of Key Terms

Citation	Term	Definition
Bidzan et al., 2018, p. 1901	Body esteem	"Self-evaluation of the appearance of one's body, i.e., the extent to which one is satisfied with one's body."
Ferreira et al., 2017, p. 2	Body appreciation	"The ability to accept, respect, and to be kind towards perceived defects in appearance and, at the same time, to recognize body flaws as part of the common human experience."
Ferreira da Costa et al., 2013, p. 172	Disordered eating (DE)	"A group of abnormal eating behaviors such as restrictive eating, fasting, frequently skipping meals, the use of diet pills, laxatives, diuretics, or enemas, overeating, binge eating, purging (vomiting), and excessive exercise."
Kantanista et al., 2018, p. 1	Body dissatisfaction	"Negative thoughts and feelings about one's body and a perceived discrepancy between current and "ideal" body size."
Leboeuf, 2019, p. 113	Body positivity	"The movement to accept our bodies, regardless of size, shape, skin tone, gender, and physical abilities."
O'Connell et al., 2009, p. xxvii	Protective factor	"A characteristic at the biological, psychological, family, or community (including peers and culture) level that is associated with a lower

		likelihood of problem outcomes or that reduces the negative impact of a risk factor on problem outcomes."
Pelletier et al., 2013, p. 329	Extrinsic motivation	"Refers to doing something as a mean to an end because it leads to a separable outcome."
Pelletier et al., 2013, p. 329	Intrinsic motivation	"Refers to doing something because it is inherently interesting or enjoyable."
Pelletier et al., 2013, p. 329	Self Determination Theory	"A comprehensive framework for understanding both the extrinsic and intrinsic motivations that can maintain sport participation, and how various motives are differently associated with sport engagement and the benefits derived from it."
Thompson and Stice, 2001, p. 181	Thin-ideal internalization	"The extent to which an individual cognitively "buys into" socially defined ideals of attractiveness and engages in behaviors designed to produce an approximation of these ideals."
Varnes et al., 2015, p. 96	Body image	"A multidimensional construct characterized by an individual's attitude toward, or evaluation of, his or her body weight, -shape, -size, or -appearance."
Ramseyer Winter et al., 2019, p. 637	Positive body image	"A multidimensional, complex construct that includes, but is not limited to body appreciation, body acceptance, and body satisfaction and is influenced by many factors

		such as culture and social identities, among others.”

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