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Exercise Dependence in Retired Collegiate Athletes

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SCHOOL OF HUMAN PERFORMANCE AND LEISURE SCIENCES

EXERCISE DEPENDENCE IN RETIRED COLLEGIATE ATHLETES

BY

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Date:

To the Dean of the College of Nursing and Health Sciences:

I am submitting herewith a thesis written by Kelli Gottry entitled "Exercise Dependence in Retired Collegiate Athletes." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science with a major in Movement Science and Human Performance.

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Abstract

Retirement from sport can be a difficult period of time for collegiate athletes. In the beginning of the time away from their sport athletes may begin to feel reductions in self-esteem, physical self-worth, and perceived physical attractiveness. The purpose of this study was to determine the relationship between recently retired athletes and exercise dependence, and how this effects one's self-esteem and body shape. The results of this study showed us after running bivariate correlations there was a small positive correlation between self-esteem and exercise dependence ($r = .25$). When comparing self-esteem to perfectionism a moderate positive correlation was found ($r = .493$). Body shape and exercise dependence are positively correlated ($r = .251$) self-esteem and body shape have a positive correlation ($r = .404$). The last bivariate correlation analyzed body shape and perfectionism which gave a medium positive correlation ($r = .499$). When running a bivariate correlation with exercise dependence and perfectionism model there was a correlation score of ($r = .359$). Self-esteem and years retired did not explain a significant amount of the variance in exercise dependence. Body shape and years retired did not explain a significant amount of the variance in exercise dependence in retired collegiate athletes. Body shape and perfectionism did not explain a significant amount of the variance in exercise dependence in retired collegiate athletes. This study and its results can be useful to many different groups of people, some being: coaches of collegiate athletes who are about to graduate, collegiate athletes, sport psychologists, and athletic departments through all colleges and universities. If an athlete we are able to conduct more research on what exercise dependence may look like after an athlete graduates from college, this will allow a greater chance for athletes to be more productive after retirement from collegiate sports. It will also help an athlete to have a better understanding of what exercise dependence is.

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CHAPTER 1

INTRODUCTION

Since the turn of the 21st century there have been two notable changes that have taken place, in regard to the aesthetic appeal of female athletes (Varnes, Stollefson, Janelle, Dorman, Dodd, & Miller, 2013). First, the sexual objectification of female athletes in the media has increased. Second, the definition of the ideal female beauty now includes appearing athletic while still maintaining a thin physique. An obsession with maintaining a slender figure (more common in women) and an athletic figure in men has led to many psychological disorders such as, exercise dependence, anorexia nervosa, and bulimia nervosa (González-Cutre, & Sicilia, 2012). Body shape concerns are indicated by body size misperception and/or negative attitudes or feelings toward the human body and their experience (Varnes et al., 2013).

Retirement from sport can be a difficult period of time for collegiate athletes. In the beginning of the time away from their sport, athletes may begin to feel reductions in self-esteem, physical self-worth, and perceived physical attractiveness. Many of these athletes who are currently going through retirement relate this transition as a period of crisis and uncertainty for themselves (Plateau, Petrie, & Papatomas, 2017). When a collegiate athlete retires from sport the results are changes to an athlete's lifestyle, which includes changes to their routines and exercise behaviors (Plateau et al., 2017). Many athletes that are retired from collegiate sport have been linked to weight gain, and reduction of muscle mass, which has been linked to causing the athletes to have reductions in physical activity and changes in food intake (Plateau et al., 2017). Athletes going through this retirement process have reported engaging in compensatory exercise behaviors, such as driven exercise to cope with these bodily changes that may occur (Plateau et al., 2017). While collegiate athletes are in the midst of their competitive careers they still engage

in highly structured and externally regulated training with their teammates. When athletes retire from collegiate sport they must make the transition to training independently and finding new motivations for exercise, as well as the type of exercise and quantity of exercise performed (Plateau et al., 2017).

In a study conducted by Panayiotoglou and colleagues (2017) it was found that Brazilian soccer players once retired had gained a great amount of body weight, with 78% becoming overweight and 4% developing obesity. Additionally, these retired athletes endured a great deal of daily pain, caused by injuries that stemmed from their playing careers and treated with injections. While these numbers are astonishing, this shows the effect of retirement on athletes and how it effects their ability to sustain adequate levels of physical activity on a daily basis (Panayiotoglou et al., 2017).

With that being said, exercise dependence has been related to many terms, specifically addiction, obsession, commitment, and excessiveness (Paradis, Cooke, Martin, & Hall, 2013). There are seven dimensions of exercise dependence that include tolerance (a need for increased amounts of exercise to achieve desired effects), withdrawal (manifested by either the characteristics withdrawal symptoms for exercise or the same amount of exercise is engaged in), intention effects (when exercise is taken in larger amounts over a longer period than was intended), lack of control (a desire or unsuccessful effort to cut down exercise), time (a great deal of time is spent in activities necessary to obtain exercise), continuance (exercise is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused by exercise), and reduction (assesses social, occupational, or recreational activities that are given up or reduced because of exercise; Paradis et al., 2013).

Examining the relationship between recently retired athletes and exercise dependence, and how this may affect a retired collegiate athlete's self-esteem and body shape is an important step to take. This will help to ensure athletes can be prepared for what they may face in the future and possibly give them some tools for what they could do to help them when they are done with collegiate athletes that some athletes have found worked and then also making them aware that they are not alone in their feelings.

Purpose

The purpose of this study is to determine the relationship between recently retired athletes and exercise dependence, and how this effects one's self-esteem and body shape.

The following ten hypotheses are postulated:

- 1) There will be a negative correlation between exercise dependence and self-esteem.
- 2) Length of sport retirement will negatively predict exercise dependence, while accounting for athlete self-esteem, such that, athletes who are more recently retired from NCAA sport participation will be more exercise dependent than athletes who are further removed from sport.
- 3a) There will be a negative correlation between body shape and exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent.
- 3b) Self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent.
- 4) Exercise dependence- tolerance will have a positive correlation with self-esteem and body shape, but a negative correlation with perfectionism.

- 5) There will be a positive correlation between exercise dependence- withdrawal and body shape, self-esteem, and perfectionism.
- 6) There will be a negative correlation between exercise dependence-intention effect and self-esteem, perfectionism, and body shape.
- 7) Exercise Dependence- lack of control will have a positive correlation with perfectionism and a negative correlation with self-esteem and body shape.
- 8) There will be a positive correlation between exercise dependence-time and body shape, perfectionism, and self-esteem.
- 9) There will be a negative correlation between perfectionism, body shape and a positive correlation with self-esteem.
- 10) Exercise dependence- continuance will have a positive correlation with self-esteem and perfectionism and have a negative correlation with body shape.

Significance

The following research has important implications for coaches, athletes, sport psychology consultants and athletic administrations. The results of the current study may be used by athletic departments to help athletes even after they have retired and left from their university. The information could also be used to help athletes prepare for retirement and see how other athletes have felt after retirement from their sport, and the problems they may run into.

Definition of Key Terms

Exercise Dependence: a process that compels an individual to exercise in spite of obstacles, and results in physical and psychological symptoms when exercise is withdrawn (Paradis et al., 2013).

Exercise Addiction: exercise addiction can be characterized as a compulsive and excessive pattern that eventually can lead to musculoskeletal injuries (Lichtenstein et al., 2017).

Body shape: “Body image refers to the internal perception of one’s own physical or outer appearance” (Swanmi, Steadman, & Tovée, 2008, p. 309).

Body Dissatisfaction: Body dissatisfaction is often a correlate of eating disorders, when there is an increased emphasis on a certain group to maintain thinness and the “ideal” body, there is a high prevalence of eating disorders that go along with it (Furnham, Badmin, & Sneade, 2002).

Assumptions

The data for this study will be collected through online surveys. With this being the case, it must be assumed that athletes answer the questions to the best of their ability and honestly. If athletes are to withhold information, it could possibly skew the data and results of the study.

Limitations and Delimitations

A limitation of the study at hand could be a low-response rate. Since the surveys will be sent out through emails and posted on social media, it is really the choice of the retired athletes to take the surveys or not. A delimitation of the study may be the years retired which we have set at least one year retired from sport up to five years retired from sport.

CHAPTER II

LITERATURE REVIEW

A challenge for most collegiate athletes is facing retirement; especially when it comes at the end of a career or abruptly in the beginning or middle of a career (Lichtenstein et al., 2017). Athletes must be able to motivate themselves to work out, once they do not have the controlled work out setting they were once accustomed to (Forrest et al., 2016). Athletes need to be able to control their levels of exercise dependence and self-esteem in order to stay healthy without playing collegiate sports (Caspersen, Powell, & Christenson, 1985). Exercise is an activity that is planned, structured, and repetitive and has a final or an intermediate objective, the improvement of maintenance of physical fitness (Caspersen et al., 1985). Exercise addiction can be characterized as a compulsive and excessive pattern that can eventually lead to musculoskeletal injuries (Lichtenstein et al., 2017). Exercise dependence has multiple definitions such as a preoccupation with exercise that is so intense it becomes a problematic state (Forrest et al., 2016). Exercise is believed to lead to positive emotions, wellness, energy, enhanced self-esteem and identity (Lichtenstein & Jensen 2016). Regular physical activity has also been described as a way to promote psychological and physical health to improve quality of life. Regular exercise can be used to help reduce high blood pressure, risk of diabetes, helping build and maintain healthy bones, muscles and joints (Chen, 2016).

Exercise Addiction

Exercise addiction is a broad topic that has been studied in many different forms, but the prevalence of exercise addiction throughout different sport cultures ranges from 3% to 29% (Lichtenstein & Jansen, 2016). The basic definition for exercise addiction can be characterized as a compulsive and excessive pattern that eventually can lead to musculoskeletal injuries

(Lichtenstein et al., 2017). Addiction to exercise belongs to the group of behavioral addictions where you get addicted to the benefits and reward of your own activity (Lichtenstein & Jensen, 2016). Even with the connections that are made between exercise addiction and mood disorders, eating disorders, and other behavioral addictions, exercise addiction is not classified as a psychiatric disorder. Lichtenstein and colleagues (2017) describe exercise addiction as having excessive and obsessive exercise patterns that may result in physical injury and overload. Subsequently, the authors also believe there are six key components of exercise addiction: salience (exercise is the most important thing in life), conflicts (interpersonal conflicts about the harm the excessive activity may be doing and/or intrapsychic conflicts), mood modification (a coping strategy to regulate emotions), tolerance (an increasing amount of exercise is needed to achieve a psychological effect), withdrawal symptoms (irritability when exercise is reduced or when missing a workout) and relapse (reversion to earlier exercise patterns in spite of attempts to reduce exercise).

Lichtenstein and colleagues (2017) completed a cross-sectional study where they collected data through the Exercise Addiction Inventory questionnaire, which were given to fitness members at two large gyms in Denmark. A total of 577 fitness exercises completed the survey, the gender distribution was 71% females whose age ranged from 15-73 years ($M = 26.7$). This study also looked into the preliminary examination of exercise support. The scoring of this questionnaire was either a score of high risk (24-30) or low risk (6-23). The results of this study found that 6.8% of the participants were categorized as being at high risk of exercise addiction. It was also found that 80.6% of participants who fell into the category of high-risk addiction exercised eight hours a week compared to those with low exercise addiction. It was concluded in

this study that exercise addiction is considered to be a “cultural norm” and is socially supported and encouraged.

Is frequent exercise a healthy habit or a behavioral addiction? Chen (2016) investigated this question further. With the lack of understanding being so at large for the exercise paradox, Chen decided to look into three theoretical models to help find out how exercise addiction develops. The first model used was the Sympathetic Arousal Hypothesis (Thompson & Blanton, 1987) which states that an organism’s adaptation to habitual exercise may lead to addiction. The second model was the Cognitive Appraisal Hypothesis (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) which views exercise as a means to cope with stress. The third is the Four Phase Model (Egorov, & Szabo, 2013) which argues that there are four stages of addiction, ranging from “recreational exercise” to “exercise addiction.”

Chen (2016) found the risk factors for exercise addiction to be very closely related to eating disorders and body shape disorders. It has been estimated that 39-48% of individuals with exercise addictions also suffer from eating disorders. One of the major predictive factors of exercise addiction is an individual that is suffering low self-esteem and is high narcissism. The last risk factor for exercise addiction Chen identified as a high-risk factor, is social physique anxiety (i.e., anxiety related to the public presentation of one’s image).

The underlying beliefs a person holds about themselves and about exercise predicts the functional utility of exercise for that individual (Meyer, Blissett, Alberry, & Sykes, 2013). A person’s core beliefs are also likely to underpin compulsive exercise in the same way as binge-eating, exercise may be used as a way to block distress from unhealthy core beliefs. The aim of a study conducted by Meyer and colleagues (2013) it was to determine the links between levels of eating psychopathology and beliefs about exercise among young female exercisers. The Exercise

Beliefs Questionnaire was used on 185 young women who were recruited from a variety of universities and workplace settings. Meyer and colleagues (2013) found that women with relatively unhealthy eating attitudes are likely to believe that exercise will prevent negative social consequences. It was also found that women with feelings of defectiveness and shame are likely to be motivated to exercise in order to increase their self-perceived social desirability. While women with unrelenting high personal standards are likely to exercise in order to increase perceptions of or to preserve their own attractiveness. Student athletes know what it takes to be good at their sport, with that being said, they also know what they must do in order to increase perceptions of themselves using exercise (e.g., run more, wear more layers to sweat more, and complete extra lifts).

Exercise Addiction in Athletes

Lichtenstein and Jensen (2016) conducted a study focusing on exercise addiction in CrossFit. CrossFit was founded in the year 2000 and in just 15 years it has quickly become a popular choice of workout worldwide. CrossFit has both a physical exercise philosophy and is also a competitive fitness sport (Lichtenstein & Jensen, 2016). It was found in earlier CrossFit studies, that 73.5% of participants sustain an injury during training. The total number of participants in the study was 603 ($n = 270$ females; $n = 328$ males) and the participants were given the Exercise Addiction Inventory (Terry, Szabo, & Griffiths, 2004). The authors concluded the mean Exercise Addiction Inventory was 17.4 and the prevalence of exercise addiction in crossfitters was 5.0%, which is similar to the other prevalence rates in other fitness settings in Denmark. The group that reported having high exercise addiction were overrepresented by young people, men and high weekly exercise amounts. The main take away of Lichtenstein and

Jensen's (2016) study was that exercise addiction does exist in CrossFit, but the problem is not larger than in other sport environments.

Lichtenstein and colleagues (2018) researched psychological functioning in injured versus non-injured athletes with exercise addiction. This study aimed to figure out the prevalence of post-injury depression and emotional stress in athletes with exercise addictions and compare them to non-addicted athletes. A cross-sectional survey was employed to 1167 athletes, 673 which were diagnosed with musculoskeletal injuries and 494 without any present injuries. Lichtenstein and colleagues (2018) concluded that 26% of the injured athletes with exercise addiction had symptoms of major depression and 53% reported emotional distress. When compared to non-addicted athletes the injured athletes' results were significantly greater. Non-addicted athletes who took the survey scored 11% on symptoms of major depression and 28% reported stress. It was concluded that injured athletes with exercise addiction report more post-injury psychological distress, compared to non-addicted athletes.

Body Shape/Dissatisfaction

“Body shape refers to the internal perception of one's own physical or outer appearance” (Swanmi et al., 2008, p. 309). Body dissatisfaction is often a correlate of eating disorders, when there is an increased emphasis on a certain group to maintain thinness and the “ideal” body, there is a high prevalence of eating disorders that go along with it (Furnham et al., 2002).

Body dissatisfaction or body shape concerns can develop when you are unhappy with a certain part of your body and feel it should be thinner, to fit in with society. In the area of body shape, concern with the body has shown to have a close relationship with body checking. Body checking has developed because athletes have body shape concerns, and are looking for body verification. The easiest way for an athlete to achieve body verification is by body checking

(Forrest, Smith, Fussner, Dodd, & Clerkin, 2016). A recent study by Fortes, Ferreira, Carvalho, and Miranda (2017) conducted research on male athletes drive for muscularity related to body checking. Male athletes are likely to develop feelings of concerns about their body shape and desire to be more “beefy”. This feeling of body shape concern can cause some male athletes to develop sudden want for muscle volume and the quickest way to achieve that is through the use of steroids (Fortes et al., (2017). Males’ desire to be more “beefy” has turned into males body checking themselves and trying to figure out what they could change about their appearance to fit in. Body checking behavior in male athletes includes: comparing one’s body to another man’s body, groping or pinching one’s muscles, checking the size of one’s muscles in the mirror and asking others to confirm the rigidity of muscles (Fortes et al., 2017). A total of 212 male athletes participated in the current study and trained for their sport an average of two hours per day at least five days a week. The authors confirmed the area of body shape concern, for the body has a close relationship to body checking. Fortes and colleagues (2017) also found that athletes who engaged in exercise and/or enjoyment in food supplements, to build their muscles, also compared their bodies to other athletes, and checked their own bodies in mirrors while flexing.

Media influences (e.g., social media cites and magazines) may play a role in endangering body dissatisfaction among different types of athletes. Many studies have found that media puts out images of the “ideal athlete” and pictures the ones with toned physiques, which creates further dissatisfaction for athletes and their body shape. Swami, Steadman, & Tovée, (2009) further extended results on media and body dissatisfactions by finding sports magazines depict thinner athletes for judged sports rather than non-judged sports. Due to social pressure and the need to attain athletic physique, it has been said that female athlete’s may be at higher risk of body shape dissatisfaction and eating disorders (Swami et al., 2009). Since the turn of the 21st

century there have been two notable changes in culture that have taken place: the sexual objectification of female athletes in the media has increased and the definition of the ideal female beauty now includes appearing athletic and being thin (Varnes et al., 2013).

Gender Differences

Men and women have many gender differences, but instead of trying to hide individual differences, why not acknowledge them and celebrate the things we as different genders can achieve? A survey sent out by Psychology Today revealed that 56% of women are dissatisfied with their overall appearance (Swami et al., 2009). In America there are male and female ideals of what one should look like and what a desired look should be. The ideal look for females is generally thought to be extremely thin with an emphasis placed on slim hips, bottom, and thighs. While the male ideal look is to obtain the V-shaped figure with an emphasis placed on large biceps, chest, and shoulders (Furnham et al., 2002). When comparing body dissatisfaction, it is slightly different between men and women. Men are more likely to perceive themselves as underweight, while women are more likely to judge themselves as overweight even when they are not.

In a study conducted by Furnham and colleagues (2002), 235 male and females from schools in England were used to help investigate gender differences in eating attitudes, self-esteem, and reasons for exercises. The authors found only 21.1% of girls and 18.3% of boys indicate their figure is matched with their ideal figure. The results showed that girls were more likely to be dissatisfied with their body shape. A big portion of girls (81.7%) and boys (79.9%) selected a different ideal boy image than their current figure. Furnham and colleagues (2002) also found that dissatisfaction with body shape for boys was not significantly correlated to self-esteem, but for girls was significantly correlated to self-esteem. Collegiate athletes can

experience low self-esteem frequently throughout their collegiate career, depending on how they are playing, their relationship with their coach and teammates, and how their academics are going. With everything a collegiate athlete goes through, it can only help female athletes to increase their body shape and self-esteem, so it does not affect other parts of their life.

Exercise Dependence

Exercise dependence can be tough for athletes to admit they are going through, which is why 42% of physiotherapists were in agreement, that exercise dependence is associated with problems in adherence to treatment recommendations (Adams & Kirkby, 1997). Exercise dependence has multiple definitions such as a preoccupation with exercise that is so intense it becomes a problematic state. It is also defined by expressing how exercise behaviors can be unhealthy requires the examination of both quantitative (duration, intensity, amount) and attitudinal (importance, compulsiveness) elements (Forrest et al., 2016). Exercise dependence can also be described as an “unhealthy and excessive exercise behavior manifested by a constellation of psychological impairments/distress such as unhealthy tolerance of exercise intensity/frequency, psychological withdrawal when unable to exercise, exercise is more than intended, lack of control over exercise, a great deal of time spent in activities, reduction in other activities because of exercise, or continuing to exercise despite recurrent physical and/or psychological problems” (Lu, Eva, Wang, Chang, Huang, & Wang, 2012, p. 618).

Exercise dependence develops because an individual has an unhealthy pre-occupation obsession with exercising (Paradis et al., 2013). Exercise dependence has the possibility of causing serious harm to an individual’s social, physical and psychological aspect in life (Paradis et al., 2013). Exercise dependence may also develop because an individual is unable to exercise due to injury, dieting in order to improve performance, and continuing to exercise even though

they have a minor injury (Veale, 1987). One last factor that may lead to exercise dependence is an individual's role identity. Role identity can either strengthen an individual's commitment to something or that can become too strong and it may not result in a positive outcome (Lu et al., 2016).

In a study conducted by Forrest and colleagues (2016) the authors investigated the relationship between implicit attitudes towards exercise importance, explicit measures of exercise dependence symptoms, and daily exercise behaviors. The authors found implicit exercise importance was predicted to later develop some exercise dependent symptoms. Similarly, Lu and colleagues (2012) conducted a study to examine exercise identity, exercise dependence and the two types of commitment. The study had 259 participants from local universities. The results of the study concluded that exercise identity, exercise dependence and exercise commitment are significantly correlated. Paradis and colleagues (2013) wanted to investigate if too much exercise was a good thing. They did so by examining the relationship between passion for exercise and exercise dependence. In a current study 480 kinesiology students from an Ontario university participated, and from those participants it was concluded that individuals who are obsessively passionate about exercise may experience various exercise dependence symptoms. These findings were also replicated by Paradis and colleagues (2013). They found that individuals who are obsessively passionate typically tend to demonstrate strong love for exercise, high value for exercise, and felt exercise to be a part of their identity.

Based on the articles above, the following summary can be made about the differences between exercise dependence and exercise addiction. Exercise addiction is more prone to cause injury while exercise dependence is more likely to develop after injury, because the athlete is unable to exercise. Therefore, exercise dependence is more likely to develop because the athlete

is already injured, while exercise addiction is more possible to develop because athletes are addicted to the benefits and rewards they are seeing because of exercise.

Retired Collegiate Athletes

Athletes retiring from sports have been linked to weight gain, and reduction of muscle mass, which then causes the athletes to have reductions in physical activity (Plateau et al., 2017). Some athletes who begin to have these symptoms learn to cope with it by compensatory exercise behavior (i.e.). On the other end of the spectrum, some athletes relate more positively to the change and exercise to help themselves to keep their bodies in shape, and reduce their decline in fitness (Plateau et al., 2017).

Post-retirement inactivity has been associated with physical pain, depression, injuries and ischemic heart disease (Panayiotoglou et al., (2017). Panayiotoglou et al., (2017) found that Brazilian soccer players who retired had gained a great amount of body weight, with 78% becoming overweight and 4% developing obesity. In a cross-sectional case-pilot study conducted by Panayiotoglou et al., (2017) the prevalence of metabolic syndrome in retired professional soccer players was assessed. The authors of the current study concluded there was a high prevalence of metabolic syndrome in retired athletes. It was also found that six years after post-retirement from an athletic career, psychological processes starteded to occur, causing aerobic capacity to reach the values observed in people of the same age, who hadd never participated in sport activities of a regular basis (Panayiotoglou et al., 2017). Lastly in a study conducted on cardiovascular disease in retired athletes, 189 retired athletes to 2,045 non-athletes were compared. The results of this study found that retired athletes were less likely to smoke when compared to the other group. It was also found that hypertension was significantly more common in athletes than the non-athletes (Civi, Ashtiani, & Hashemi, 2012).

The above information shows gaps in the literature regarding recently retired student athletes, and their exercise habits. While previous research indicates there are risks for athletes to gain weight and become unhealthier in retirement. There is a lack of research representing those athletes that might go in the other direction. For example, it is reasonable to believe that due to athlete's high need for perfectionism, once they discontinue sport, they may feel the need to overcompensate with exercise. Thus, the following study looks to assess if there will be a negative correlation between exercise dependence and self-esteem, and if length of sport retirement will negatively predict exercise dependence, while accounting for athlete self-esteem. Such that, athletes who are more recently retired from NCAA sport participation will be more exercise dependent than athletes who are further removed from sport. Also, if self-esteem will moderate the relationship between number of years retired and exercise dependence, such that former athletes that have been retired shorter and have a low self-esteem will be the most exercise dependent. Will body shape negatively predict exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent? Lastly, self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent.

CHAPTER III

METHODOLOGY

Purpose of Study

The purpose of this study is to determine the relationship between recently retired athletes and exercise dependence, and how this effects one's self-esteem and body shape.

Participants

By using T G*Power 3.1.3 to complete an *a priori* power analysis with linear multiple regression, in order to determine the number of participants. Using a standard alpha level (i.e., $\alpha = .05$), desired power of .80, it was revealed a minimum sample size of 82 participants would be required to reveal a significant medium effect size ($f = .20$ or an equivalent Cohen's d of .50). Participants who meet the aforementioned inclusion criteria will be invited to participate in the study. The 82 retired student-athletes who will participate in this study are former Division I, II, III collegiate athletes that competed at different universities around the United States. The retired athletes used in this study must have been removed from collegiate athletics anywhere from one to five years. This time frame was chosen because this will allow the researcher to compile information from recently retired student athletes, and then also student-athletes that are farther out and may be at different mile stones in their lives (e.g., having kids, working, pursuing masters or doctorate degrees).

Measures

Demographics Form A demographics questionnaire will be administered to attain participant's gender, age, sport, experience (i.e., years participating in sport) and number of years since retiring. Participants will be asked how many years did you play/participate in your sport? How many days of the week do you typically exercise? How many hours do they exercise during

that workout? What is your preferred type of exercise? And lastly, indicate their willingness to move on/retire from sport at the completion of their athletic career.

Rosenburg Self-Esteem Scale (RSE; Rosenberg, 1965) measures global self-worth of individuals. In this case, it will be used to measure perceived self-esteem of retire college athletes. The RSE is a unidimensional scale. There are 10 questions, which are answered on a 4-point Likert scale which ranges from strongly agree to strongly disagree. The RSE demonstrates a Guttman scale coefficient of reproducibility of .92, indicating excellent internal consistency. Test-retest reliability over a period of 2 weeks reveals correlations of .85 and .88, indicating excellent stability. The RSE demonstrates concurrent, predictive and construct validity using known groups (Rosenburg, 1979).

Exercise Dependence Scale (EDS; Ogden, Veale, & Summers 1997) is a multidimensional scale which measures the maladaptive pattern of exercise. The EDS has 21 questions, which are answered on a 6-point Likert scale which ranges from never (1) to always (6). The EDS differentiates between at-risk for exercise dependence, nondependent-symptomatic and nondependent-asymptomatic. The subscales of the EDS include tolerance, withdrawal effects, continuance, lack of control, reduction in activities, time and intention effects. The total scale reliability of the EDS is .82. the EDS demonstrates concurrent validity as well (Mcnamara, & McCabe, 2013).

Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairbum, 1987) is a 34 question self-reported measure of the concerns of body shape for individuals. Evidence of validity occurs with meaningful differential correlations of the importance of slimness, patients v nonpatients, and probable cases v definite non-cases of bulimia nervosa (Copper et al., 1986). The BSQ is answered of a 6-point Likert scale ranging from never to always.

Sport Perfectionism Scale (SPS; Nascimento Junior, Vissoci, Lavalée, & Vieira, 2015) is a unidimensional scale which measures perfectionism as it applies to sports for athletes. The SPS has 42 questions, which are answered on a 5-point Likert Scale which ranges from strongly disagree (1) to strongly agree (5). The SPS used in this study was compared to the PDC to establish validity evidence. There was a moderate to high positive relationship ($r = 0.63$) between the two measures, which supported convergent evidence of validity of the perfectionism inventory for sport scale.

Procedure

An institutional review board for human subject application for approval will be submitted prior to recruitment and data collection. Participants will be recruited in person at various places on local college campuses and through emails and social media posts calling for all former collegiate athletes (Appendix F). Participants who meet the aforementioned inclusion criteria will be invited to participate in the study. Prior to completing questionnaires, participants will be requested to read and sign an informed consent form (Appendix E). The informed consent form will provide participants with study background information, overall procedures, possible risks and benefits, and confidentiality. Participants will then be asked to complete the following questionnaires: Demographics (Appendix A), RSE (Appendix B), EDS (Appendix C), the BSQ (Appendix D), the Sport Multidimensional Perfectionism Scale-2 (SMPS-2) (Appendix G). To make sure that there is no order effect, all questionnaires will be randomized when given to participants.

The study in its entirety should take participants no more than 15-30 minutes. Questionnaires can be completed online or in-person. This will be coded to determine if responses vary by administration method.

Data Analyses

To test the hypotheses a multiple regression using an inter method to determine the relationships between recently retired athletes and exercise dependence will be implemented. Specifically, the following will be used to test the hypotheses:

Hypothesis 1: A correlation was conducted to examine the relationship between exercise dependence and self-esteem.

Hypothesis (2): A multiple regression was used to examine the effect of number of years retired and self-esteem on exercise dependence. Moderator analysis was conducted to examine the interaction between reason for exercise dependence and number of years retired on self-esteem.

Hypothesis (3a): There will be a negative correlation between body shape and exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent.

Hypothesis (3b): Self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent.

Hypothesis (4): A multiple regression was conducted to examine the effect of perfectionism and body shape on exercise dependence in retired collegiate athletes. Moderator analysis was conducted to examine the interaction between perfectionism and body shape on retired collegiate

Hypothesis 5) A correlation was conducted to examine the relationship between Exercise dependence- tolerance and self-esteem, body shape, and perfectionism.

Hypothesis 6) A correlation was conducted to examine the relationship between exercise dependence- withdrawal and body shape, self-esteem, and perfectionism.

Hypothesis 7) A correlation was conducted to examine the relationship between exercise dependence-intention effect and self-esteem, perfectionism, and body shape.

Hypothesis 8) A correlation was conducted to examine the relationship between exercise Dependence- lack of control and perfectionism, self-esteem and body shape.

Hypothesis 9) A correlation was conducted to examine the relationship between exercise dependence-time and body shape, perfectionism, and self-esteem.

Hypothesis 10) A correlation was conducted to examine the relationship between perfectionism, body shape and a positive correlation with self-esteem.

Hypothesis 11) A correlation was conducted to examine the relationship between exercise dependence- continuance and self-esteem, perfectionism and body shape.

CHAPTER 4**REFERENCES**

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CHAPTER 5

MANUSCRIPT

Introduction

Since the turn of the 21st century there have been two notable changes that have taken place, in regard to the aesthetic appeal of athletes (Varnes et al., 2013). First, the sexual objectification of female athletes in the media has increased. Second, the definition of the ideal female beauty now includes appearing athletic while still maintaining a thin physique. An obsession with maintaining a slender figure (more common in women) and an athletic figure in men has led to many psychological disorders such as, exercise dependence, anorexia nervosa, and bulimia nervosa (González-Cutre, & Sicilia, 2012). Body shape concerns are indicated by body size misperception and/or negative attitudes or feelings toward the human body and their experience (Varnes et al., 2013).

With that being said exercise dependence has been related to many terms, specifically addiction, obsession, commitment, and excessiveness (Paradis et al., 2013). There are believed to be seven dimensions of exercise dependence which are tolerance (either a need for increased amounts of exercise to achieve desired effects), withdrawal (manifested by either the characteristics withdrawal symptoms for exercise or the same amount of exercise is engaged in), intention effects (when exercise is taken in larger amounts over a longer period than was intended), lack of control (a desire or unsuccessful effort to cut down exercise), time (a great deal of time is spent in activities necessary to obtain exercise), continuance (exercise is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been cause by exercise), and reduction (assesses social, occupational, or recreational active that are given up or reduced because of exercise) (Paradis et al., 2013).

A challenge for most collegiate athletes is facing retirement; especially when it comes at the end of a career or abruptly in the beginning or middle of a career. Athletes must be able to motivate themselves to work out, once they do not have the controlled work out setting they were once accustomed too. Athletes need to be able to control their levels of exercise dependence and self-esteem in order to stay healthy without playing collegiate sports. Exercise is a planned, structured, and repetitive activity that has a final or an intermediate objective, the improvement of maintenance of physical fitness (Caspersen et al., 1985). Exercise addiction can be characterized as a compulsive and excessive pattern that eventually can lead to musculoskeletal injuries (Lichtenstein et al., 2017). Exercise dependence has multiple definitions such as a preoccupation with exercise that is so intense it becomes a problematic state (Forrest et al., 2016).

Exercise Addiction

Exercise addiction is a broad topic that has been studied in many different forms, but the prevalence of exercise addiction throughout different sport cultures ranges from 3% to 29% (Lichtenstein and Jansen 2016). The basic definition for exercise addiction can be characterized as a compulsive and excessive pattern that eventually can lead to musculoskeletal injuries (Lichtenstein et al., 2017). Addiction to exercise belongs to the group of behavioral addictions where you get addicted to the benefits and reward of your own activity (Lichtenstein & Jensen 2016). Even with the connections that are made between exercise addiction and mood disorders, eating disorders, and other behavioral addictions, exercise addiction is not classified as a psychiatric disorder. Lichtenstein and colleagues (2017) describe exercise addiction as having excessive and obsessive exercise patterns that may result in physical injury and overload. These authors also believe there are six key components of exercise addiction, they are: salience

(exercise is the most important thing in life), conflicts (interpersonal conflicts about the harm the excessive activity may be doing and/or intrapsychic conflicts) , mood modification (a coping strategy to regulate emotions), tolerance (an increasing amount of exercise is needed to achieve a psychological effect), withdrawal symptoms (irritability when exercise is reduced or when missing a workout) and relapse (reversion to earlier exercise patterns in spite of attempts to reduce exercise).

Chen (2016) found the risk factors for exercise addiction to be very closely related to eating disorders and body shape disorders. It has been estimated that 39-48% of individuals with exercise addictions also suffer from eating disorders. One of the major predictive factors of exercise addiction is an individual that is suffering low self-esteem and is high narcissism. The last risk factor for exercise addiction Chen (2016) identified as a high-risk factor is social physique anxiety, which is anxiety related to the public presentation of one's image.

Exercise Addiction in Athletes

Lichtenstein and colleagues (2018) researched psychological functioning in injured versus non-injured athletes with exercise addiction. This study aimed to figure out the prevalence of post-injury depression and emotional stress in athletes with exercise addictions and compare them to non-addicted athletes. A cross-sectional survey was employed to 1167 athletes, 673 which were diagnosed with musculoskeletal injuries and 494 without any present injuries. Lichtenstein and colleagues (2018) concluded from their results that 26% of the injured athletes with exercise addiction had symptoms of major depression and 53% reported emotional distress. When compared to non-addicted athletes the injured athletes' results were significantly greater. Non-addicted athletes who took the survey scored 11% on symptoms of major depression and

28% reported stress. It was concluded that injured athletes with exercise addiction report more post-injury psychological distress, compared to non-addicted athletes.

Body Shape/Dissatisfaction

“Body shape refers to the internal perception of one’s own physical or outer appearance” (Swami et al., 2008, p. 309). Body dissatisfaction is often a correlate of eating disorders, when there is an increased emphasis on a certain group to maintain thinness and the “ideal” body, there is a high prevalence of eating disorders that go along with it (Furnham et al., 2002).

Body dissatisfaction or body shape concerns can develop when you are unhappy with a certain part of your body and feel it should be thinner, to fit in with society. In the area of body shape, concern with the body has shown to have a close relationship with body checking. Media influences may play a role in endangering body dissatisfaction among different types of athletes. Many studies have found that media puts out images of the “ideal athlete” and pictures the ones with toned physiques, which creates further dissatisfaction for athletes and their body shape. Swami and colleagues (2009) further extended results on media and body dissatisfactions by finding sports magazines depict thinner athletes for judged sports rather than non-judged sports. Due to social pressure and the need to attain athletic physique, it has been said that female athlete’s may be at higher risk of body shape dissatisfaction and eating disorders (Swami et al., 2009).

Gender Differences

In America there are male and female ideals of what one should look like and what a desired look should be. Men and women have many gender differences and it is a well-known fact. However, instead of trying to hide individual differences, why not acknowledge them and

celebrate the things we as different genders can achieve. A survey sent out by Psychology Today revealed that 56% of women are dissatisfied with their overall appearance (Swami et al., 2009).

In a study conducted by Furnham and colleagues (2002), 235 male and females from schools in England were used to help investigate gender differences in eating attitudes, self-esteem, and reasons for exercises. The authors found only 21.1% of girls and 18.3% of boys indicate their figure is matched with their ideal figure. The results showed that girls were more likely to be dissatisfied with their body shape. A big portion of girls (81.7%) and boys (79.9%) selected a different ideal boy image than their current figure. Furnham and colleagues (2002) also found that dissatisfaction with body shape for boys was not significantly correlated to self-esteem, but for girls was significantly correlated to self-esteem.

Exercise Dependence

Exercise dependence can be tough for athletes to admit they are going through, which is why 42% of physiotherapists were in agreeance, exercise dependence is associated with problems in adherence to treatment recommendations (Adams & Kirkby, 1997). Exercise dependence develops because an individual has an unhealthy pre-occupation obsession with exercising. Exercise dependence has the possibility of causing serious harm to an individual's social, physical and psychological aspect in life (Paradis et al., 2013). Exercise dependence may also develop because an individual is unable to exercise due to injury, dieting in order to improve performance, and continuing to exercise even though they have a minor injury (Veale, 1987). One last factor that may lead to exercise dependence is an individual's role identity. Role identity can either strengthen an individual's commitment to something or that can become too strong and it may not result in a positive outcome (Lu et al., 2012).

Paradis and colleagues (2013) wanted to investigate if too much exercise was good thing. They did so by examining the relationship between passion for exercise and exercise dependence. 480 kinesiology students from an Ontario university participated in current study. It was concluded that those participants who are obsessively passionate about exercise may experience various exercise dependence symptoms. These findings were also replicated by Paradis and colleagues (2013). They found that individuals who are obsessively passionate typically tend to demonstrate strong love for exercise, high value for exercise, and felt exercise to be a part of their identity.

Retired Collegiate Athletes

Athletes retiring from sports have been linked to weight gain, and reduction of muscle mass, which then causes the athletes to have reductions in physical activity. Some athletes who begin to have these symptoms learn to cope with it by compensatory exercise behavior. On the other end of the spectrum some athletes relate more positively to the change and exercise to help themselves to keep their bodies in shape, and reduce their decline in fitness (Plateau et al., 2017). Post-retirement inactivity has been associated with physical pain, depression, injuries and ischemic heart disease (Panayiotoglou et al., (2017). Panayiotoglou and colleagues (2017) found that Brazilian soccer players who retired had gained a great amount of body weight, with 78% becoming overweight and 4% developing obesity.

The following research has important implications for coaches, athletes, sport psychology consultants and athletic administrations. The results of the current study may be used by athletic departments to help athletes even after they have retired and left from their university. The information could also be used to help athletes prepare for retirement and see how other athletes have felt after retirement from their sport, and the problems they may run into.

Purpose

The purpose of this study is to determine the relationship between recently retired athletes and exercise dependence, and how this effects one's self-esteem and body shape.

The following ten hypotheses are postulated:

- 1) There will be a negative correlation between exercise dependence and self-esteem.
- 2) Length of sport retirement will negatively predict exercise dependence, while accounting for athlete self-esteem, such that, athletes who are more recently retired from NCAA sport participation will be more exercise dependent than athletes who are further removed from sport.
- 3a) There will be a negative correlation between body shape and exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent.
- 3b) Self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent.
- 4) Exercise dependence- tolerance will have a positive correlation with self-esteem and body shape, but a negative correlation with perfectionism.
- 5) There will be a positive correlation between exercise dependence- withdrawal and body shape, self-esteem, and perfectionism.
- 6) There will be a negative correlation between exercise dependence-intention effect and self-esteem, perfectionism, and body shape.
- 7) Exercise Dependence- lack of control will have a positive correlation with perfectionism and a negative correlation with self-esteem and body shape.

- 8) There will be a positive correlation between exercise dependence-time and body shape, perfectionism, and self-esteem.
- 9) There will be a negative correlation between perfectionism, body shape and a positive correlation with self-esteem.
- 10) Exercise dependence- continuance will have a positive correlation with self-esteem and perfectionism and have a negative correlation with body shape.

METHODS

Participants

In order to participate in this study, participants had to be retired from NCAA sports for one to five years. Year retired was set as inclusion criteria in order to ensure that retired athletes were far enough removed and going through an active transition, and therefore recalling information. Five years was the maximum for this study because the researchers did not want participants too far removed from sport and had therefore moved completely past the transition phase. Of the 123 respondents who completed the study, 42 were removed for not completing significant portions of the administered surveys. A final sample size of $N = 81$ was used to analyze the study hypotheses.

Participants in this study were female ($n = 55$) and male ($n = 26$) former NCAA Divisions I ($n = 21$), Division II ($n = 52$), or Division III ($n = 8$) athletes from over 39 different universities and colleges from across the United States, ranging in age from 23 to 27 years old ($n = 26$). A large variety of sports were represented in the current study including soccer ($n = 20$), football ($n = 5$), cheerleading ($n = 1$), basketball ($n = 10$), tennis ($n = 5$), baseball ($n = 10$), track and field ($n = 4$), swimming and diving ($n = 3$), softball ($n = 5$), lacrosse ($n = 7$), field hockey ($n = 1$), volleyball ($n = 9$) and wrestling ($n = 1$). Participants in this study were primarily Caucasian

($n = 61$), but other ethnicities were represented: African American ($n = 9$), Hispanic ($n = 2$), Asian ($n = 2$), Pacific Islander ($n = 1$), Multi-Ethnic ($n = 4$), and Other ($n = 2$).

Measures

Demographics Form A demographics questionnaire was administered to attain participant's gender, age, sport, experience (i.e., years participating in sport) and number of years since retiring. On the demographics form, participants were asked how many days of the week do you typically exercise? How many hours do they exercise during that workout? What is your preferred type of exercise?

Rosenburg Self-Esteem Scale (RSE; Rosenberg, 1965) measures global self-worth of individuals. In this case, it will be used to measure perceived self-esteem of retire college athletes. The RSE is a unidimensional scale. There are 10 questions, which are answered on a 4-point Likert scale which ranges from strongly agree to strongly disagree.

Exercise Dependence Scale (EDS; Ogden, Veale, & Summers 1997) is a multidimensional scale which measures the maladaptive pattern of exercise. The EDS has 21 questions, which are answered on a 6-point Likert scale which ranges from never (1) to always (6). The EDS differentiates between at-risk for exercise dependence, nondependent-symptomatic and nondependent-asymptomatic. The subscales of the EDS include tolerance, withdrawal effects, continuance, lack of control, reduction in activities, time and intention effects.

Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairbum, 1987) is a 34 question self-reported measure of the concerns of body shape for individuals. The BSQ is answered of a 6-point Likert scale ranging from never to always.

Sport Perfectionism Scale (SPS; Nascimento Junior, Vissoci, Lavallee, & Vieira, 2015) is a unidimensional scale which measures perfectionism as is applies to sports for athletes.

The SPS has 42 questions, which are answered on a 5-point Likert Scale which ranges from strongly disagree (1) to strongly agree (5).

Procedure

An institutional review board for human subject application for approval was submitted prior to recruitment and data collection. Participants were recruited in person at various places on local college campuses and through emails and social media posts calling for all former collegiate athletes (Appendix F). Participants who met the aforementioned inclusion criteria were invited to participate in the study. Prior to completing questionnaires, participants were then requested to read and sign an informed consent form (Appendix E). The informed consent form was provided to participants with study background information, overall procedures, possible risks and benefits, and confidentiality. Participants then were asked to complete the following questionnaires: Demographics (Appendix A), RSE (Appendix B), EDS (Appendix C), and the BSQ (Appendix D), SMPS (Appendix G). To make sure that there is no order effect, all questionnaires were randomized when given to participants. After completing these questionnaires, participants will be debriefed.

The study in its entirety took participants no more than 15-30 minutes. Questionnaires were completed online using Qualtrics software.

Data Analyses

To test the hypotheses a multiple regression using an inter method to determine the relationships between recently retired athletes and exercise dependence will be implemented. Specifically, the following will be used to test the hypotheses:

Hypothesis 1): A correlation was conducted to examine the relationship between exercise dependence and self-esteem.

Hypothesis 2): A multiple regression was used to examine the effect of number of years retired and self-esteem on exercise dependence. Moderator analysis was conducted to examine the interaction between reason for exercise dependence and number of years retired on self-esteem.

Hypothesis 3a): There will be a negative correlation between body shape and exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent.

Hypothesis 3b): Self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent.

Hypothesis 4): A multiple regression was conducted to examine the effect of perfectionism and body shape on exercise dependence in retired collegiate athletes. Moderator analysis was conducted to examine the interaction between perfectionism and body shape on retired collegiate

Hypothesis 5) A correlation was conducted to examine the relationship between Exercise dependence- tolerance and self-esteem, body shape, and perfectionism.

Hypothesis 6) A correlation was conducted to examine the relationship between exercise dependence- withdrawal and body shape, self-esteem, and perfectionism.

Hypothesis 7) A correlation was conducted to examine the relationship between exercise dependence-intention effect and self-esteem, perfectionism, and body shape.

Hypothesis 8) A correlation was conducted to examine the relationship between exercise Dependence- lack of control and perfectionism, self-esteem and body shape.

Hypothesis 9) A correlation was conducted to examine the relationship between exercise dependence-time and body shape, perfectionism, and self-esteem.

Hypothesis 10) A correlation was conducted to examine the relationship between perfectionism, body shape and a positive correlation with self-esteem.

Hypothesis 11) A correlation was conducted to examine the relationship between exercise dependence- continuance and self-esteem, perfectionism and body shape.

RESULTS

Descriptive Statistics

First, descriptive statistics and bivariate correlations were assessed. Table 1 represents the means and standard deviations of each of the study variables that we computed. In the table below, it was revealed the highest average scores of this study were Exercise Dependence ($M = 60.38$), Body Shape ($M = 42.16$), and Perfectionism ($M = 130.14$).

Table 1

Descriptive Statistics for Years Retired from Sport, Self-Esteem, Exercise Dependence, Body Shape, and Perfectionism

| Variables | <i>Min</i> | <i>Max</i> | <i>M</i> | <i>SD</i> |
|--------------------------------|------------|------------|----------|-----------|
| Overall ($n = 81$) | | | | |
| Years Retired | 1 | 5 | 2.83 | 1.421 |
| Self – Esteem Score | 10 | 36 | 19.74 | 6.18 |
| Exercise Dependence Score | 22 | 113 | 60.38 | 21.69 |
| Withdrawal | 3 | 18 | 10.74 | 4.19 |
| Continuance | 3 | 18 | 8.7 | 4.16 |
| Tolerance | 3 | 18 | 11.21 | 4.33 |
| Lack of Control | 3 | 18 | 6.95 | 3.9 |
| Intention Effect | 3 | 18 | 7.41 | 3.81 |
| Time | 3 | 16 | 9.09 | 3.8 |
| Reduction in Activities | 3 | 14 | 6.28 | 2.89 |
| Body Shape Questionnaire Score | 16 | 96 | 42.16 | 17.88 |
| Perfectionism Score | 94 | 197 | 130.14 | 21.79 |

Self-Esteem

After running bivariate correlations there was a small positive correlation between self-esteem and exercise dependence ($r(79) = r = .25, r^2 = 0.063, p = 0.022$). Self-esteem and exercise dependence are related to each other, but only 13% of change in exercise dependence can be associated with changes in self-esteem. Meaning, those individuals with high self-reported self-esteem, also are more likely to have a higher dependence on exercise post athletic retirement. When comparing self-esteem to perfectionism a moderate positive correlation was found ($r(79) = r = .493, r^2 = 0.243, p = 0.00$). Self-esteem and perfectionism are related to each other, but only 24% of change in self-esteem can be associated with changes in perfectionism.

Body Shape

Body shape and exercise dependence are positively correlated ($r(79) = r = .251, r^2 = 0.063, p = 0.024$). Body shape and exercise dependence are related to each other, but only 6% of change in exercise dependence can be associated with changes in body shape. Self-esteem and body shape have a positive correlation ($r(79) = r = .404, r^2 = 0.163, p = 0.00$). Self-esteem and body shape are related to each other, but only 16% of change in self-esteem can be associated with changes in body shape. This means, those individuals who have high reported body shape issue, are more likely to have higher exercise dependence. Self-esteem and body shape also share a positive correlation which mean if an individual reported high self-esteem, they will have higher reported body shape. The last bivariate correlation was to look at body shape and perfectionism. After analyzing it was concluded there is a medium positive correlation ($r(79) = r = .499, r^2 = 0.249, p = 0.00$). Body shape and perfectionism are related to each other, but only 25% of change in body shape can be associated with changes in perfectionism. Meaning, when

individuals have high self-reported body shape concerns, their perfectionism will report higher as well.

Exercise Dependence

When running a bivariate correlation with exercise dependence and perfectionism model there was a correlation score of ($r(79) = r = .359, r^2 = .128, p = 0.001$). Exercise dependence and perfectionism are related to each other, but only 13% of change in exercise dependence can be associated with changes in perfectionism. This shows us there was medium positive correlation, showing us that exercise dependence and perfectionism are going to have an effect on one another, meaning when an individual self-reports high scores in exercise dependence they will also have high scores in perfectionism. Based on athletes scores they are considered at risk for exercise dependence by scoring between 105 to 126, are considered nondependent-symptomatic by scoring between 63 to 104, and lastly nondependent asymptomatic by scoring 21 to 26 (Pujals, Baile, & González-Calderón, 2018).

Table 2

Bivariate Correlation for Years Retired, Exercise Dependence, Self-Esteem, Body Shape, and Perfectionism

| Variable | 1 | 2 | 3 | 4 | 5 |
|-----------------------|---|------|------|-------|-------|
| 1 Years Retired | - | -.12 | -.05 | -.03 | -.22 |
| 2 Exercise Dependence | | - | .25* | .25* | .36** |
| 3 Self-Esteem | | | - | .40** | .49** |
| 4 Body Shape | | | | - | .50** |
| 5 Perfectionism | | | | | - |

Note: * $p < .05$ ** $p < .01$

Table 3

Bivariate Correlation for Years Retired from Sport, Self-Esteem, Exercise Dependence, Withdrawal, Continuance, Tolerance, Lack of Control, Intention Effect, Time, Reduction in Activities, Body Shape, and Perfectionism

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1 Years Retired | - | -0.05 | -0.01 | 0.01 | -0.15 | -0.08 | -0.06 | -0.15 | -0.09 | -0.19 | -0.03 | -0.21 |
| 2 Self Esteem | | - | .25* | .29** | .26* | 0.09 | .24* | 0.2 | 0.05 | .29** | .40** | .49** |
| 3 Exercise Dependence | | | - | .76** | .73** | .82** | .84** | .86** | .82** | .79** | .25* | .36** |
| 4 Withdrawal | | | | - | .48** | .57** | .59** | .54** | .48** | .55** | .44** | .24* |
| 5 Continuance | | | | | - | .51** | .56** | .56** | .46** | .49** | .31** | .38** |
| 6 Tolerance | | | | | | - | .53** | .61** | .74** | .62** | 0.12 | .29** |
| 7 Lack of Control | | | | | | | - | .81** | .61** | .61** | 0.14 | .29** |
| 8 Intention Effect | | | | | | | | - | .65** | .65** | 0.08 | .31** |
| 9 Time | | | | | | | | | - | .67** | 0.05 | 0.16 |
| 10 Reduction of Activities | | | | | | | | | | - | .25* | .43** |
| 11 Body Shape | | | | | | | | | | | - | .49** |
| 12 Perfectionism | | | | | | | | | | | | - |

Note: * $p < .05$. ** $p < .01$

Hypothesis (2) investigated the effect of number of years retired and self-esteem on exercise dependence. A moderator analysis was conducted to examine the interaction between reason for exercise dependence and number of years retired on self-esteem.

Two models were used to test these hypotheses. Model 1 included self-esteem and years retired, while Model 2 included the interaction term in the second block. As shown in Table 3, self-esteem and years retired did not explain a significant amount of the variance in exercise dependence.

Table 4

Summary of Regression Analysis for Variables Predicting Exercise Dependence in Retired Collegiate Athletes

| Variable | β | R^2 | ΔR^2 | F change |
|---------------|---------|-------|--------------|------------|
| Model I | | .08 | .05 | 3.23 |
| Self-Esteem | .87 | | | |
| Years Retired | -1.68 | | | |
| Model II | | .10 | .06 | 1.94 |

| | |
|----------------------------------|-------|
| Self-Esteem | -.29 |
| Years Retired | -8.69 |
| Interaction (SE x Years Retired) | .39 |

Hypothesis (3) investigated the effect of body shape and number of years retired on exercise dependence. A moderator analysis was conducted to examine the interaction between self-esteem and body shape on exercise dependence.

Two models were used to test these hypotheses. Model 1 included body shape and years retired, while Model 2 included the interaction term in the second block. As shown in Table 4, body shape and years retired did not explain a significant amount of the variance in exercise dependence in retired collegiate athletes.

Table 5

Summary of Regression Analysis for Variables Predicting Exercise Dependence in Retired Collegiate Athletes

| Variable | β | R^2 | ΔR^2 | F change |
|-----------------------------------|---------|-------|--------------|------------|
| Model I | | .08 | .05 | 3.23 |
| Body Shape | .30 | | | |
| Years Retired | -1.76 | | | |
| Model II | | .08 | .05 | .63 |
| Body Shape | .55 | | | |
| Years Retired | 1.71 | | | |
| Interaction (BSQ x Years Retired) | -.09 | | | |

Hypothesis (4): A multiple regression was conducted to examine the effect of perfectionism and body shape on exercise dependence in retired collegiate athletes. Moderator analysis was conducted to examine the interaction between perfectionism and body shape on retired collegiate.

Two models were used to test these hypotheses. Model 1 included body shape and perfectionism, while Model 2 included the interaction term in the second block. As shown in Table 5, body shape and perfectionism did not explain a significant amount of the variance in exercise dependence in retired collegiate athletes.

Table 6

Summary of Regression Analysis for Variables Predicting Exercise Dependence in Retired Collegiate Athletes

| Variable | β | R^2 | ΔR^2 | F change |
|-----------------------------------|---------------------------|-------------------------|--------------------------------|------------------------------|
| Model I | | .14 | .11 | 6.13 |
| Body Shape | .12 | | | |
| Perfectionism | .31 | | | |
| Model II | | .14 | .11 | .45 |
| Body Shape | -.44 | | | |
| Perfectionism | .10 | | | |
| Interaction (BSQ x Perfectionism) | .004 | | | |

Discussion

The authors of this study examined the relationships between exercise dependence, self-esteem, perfectionism, and satisfaction of body shape. The purpose of this study was to determine the relationship between recently retired athletes and what factors account for the variance in the exercise dependence of recently retired collegiate athletes. This research has important implications for coaches, athletes, sport psychology consultants and athletic administrations. The information can be used to show that more research needs to be done in the area of exercise dependence in recently retired athletes. Also, this study can show that some athletes do classify as being exercise dependent, but if they do not score highly is this because

they are used to their exercise schedule and do not find it to be dependent? As well, an exercise dependence scale that specifically relates to athletes, may have been better suited to us.

Exercise Dependence and Self-Esteem

It was predicted there would be a negative correlation between exercise dependence and self-esteem. However, results show a positive relationship between the two. No current studies have specifically looked at how exercise dependence and self-esteem relate to each other after athletes retire from college. One possible reason for the positive relationship is because excessive exercise leads to individuals being in better physical shape which is considered aesthetically appealing, therefore, increasing one's self-esteem. Veale (1987) concluded exercise is a stimulant which leads to psychological arousal of the brain, it can also lead to a "mood state" often related to a "runner high" and can allow individuals to feel the higher levels of self-esteem on days when they are exercising a lot. A conclusion can be drawn that athletes who exhibit high levels of exercise dependence would have a higher self-esteem, because they are working out constantly and in the best shape they can be in physically. But if an individual is unable to find a healthy balance of exercise it can cause serious harm to the individual later down the road in their fitness journey after college athletics. However, it is important to note, while exercise is physically healthy, and high self-esteem is psychologically healthy, exercise dependence can be extremely unhealthy. Exercise dependence develops because an individual has an unhealthy pre-occupation obsession with exercising. From an Ontario University 480 kinesiology students participated in a study conducted by Paradis and colleagues (2013). It was concluded that those participants who are obsessively passionate about exercise and feeling the exercise high are likely to experience various exercise dependence symptoms.

Length of Retirement and Exercise Dependence

It was predicted that the length of sport retirement would negatively predict exercise dependence, while accounting for athlete self-esteem, such that, athletes who are more recently retired from NCAA sport participation will be more exercise dependent than athletes who are further removed from sport. The results of the study show us that if an athlete has been retired from sport one year or five years, it makes no difference on how exercise dependent they are. The prediction did not relate to the findings, and the findings were in agreement with findings of other studies when comparing length of retirement to exercise dependence.

Plateau and colleagues (2017) found there were no associations between years since retirement and athlete's exercise behavior and motives. During the study they found there were no clear time frames that had been consistently identified for the transition period from collegiate sports, and that it is possible that by two years post-retirement, former collegiate athletes have negotiated an initial crisis period. This includes changes to exercise and athletes are starting to construct a new identity beyond sport. Our study agrees with the finding of Plateau and colleagues (2017) discovering as well that there is no significance between length of retirement and exercise dependence.

These results were very interesting since once an athlete retired from sport, they are more likely to have weight gain, reduction of muscle mass, and reduction in physical activity. Based on the results of this study we believe that recently retired collegiate athletes are able to learn how to cope with these symptoms of exercise dependence, and like Plateau and colleagues (2017) found that recently retired collegiate athletes on the other end of the spectrum can relate more positively to retirement and use exercise to help themselves to keep their bodies in shape, and reduce their decline in fitness.

Self-Esteem and Length of Retirement

It was predicted self-esteem would moderate the relationship between number of years retired and exercise dependence, such that former athletes that have been retired shorter and have a low self-esteem will be the most exercise dependent. The findings of this study showed that there was no significant relationship between years retired and self-esteem. It was also found that self-esteem did not moderate the relationship between years retired and exercise dependence. This is believed to be because years retired from collegiate sport truly has no relevance when comparing it to exercise dependence or self-esteem. It is believed self-esteem would moderate the relationship between number of years retired and exercise dependence, such that former athletes that have been retired shorter and have a low self-esteem will be the most exercise dependent. This was not the case in this study, it was shown by results that being recently retired or father removed from collegiate athletics made no difference between if an athlete was exercise dependent or had low self-esteem.

Body Shape and Exercise Dependence

“Body shape refers to the internal perception of one’s own physical or outer appearance” (Swanmi et al., 2008, p. 309). It was predicted body shape would negatively predict exercise dependence, such that retired athletes with a poorer body shape will be more exercise dependent. The study found that there was a small positive correlation between the two variables. The study had similar findings to a study conducted by Varnes and colleagues (2013) who compared non-athletes to athletes and reported more positive overall body esteem in athletes compared to nonathletes. Also, it was found that athletes have more positive feelings about their body’s physical condition, a component of body esteem because they are regulated to workout more and stick to strict workout regimens.

Self Esteem, Body Shape, and Exercise Dependence

Self-esteem will moderate the relationship between body shape and exercise dependence, such that former athletes with lower self-esteem and lower body shape will be more exercise dependent. Based on the evidence of this study it can be concluded that self-esteem will help to moderate the relationship between body shape and exercise dependence. This is found by there being a positive correlation between body shape and exercise dependence. If you have low levels of self-esteem and body shape you are more likely to become exercise dependent. These results are similar to what Chen (2016) found which was the risk factors for exercise addiction to be very closely related to eating disorders and body shape disorders. It has been estimated that 39-48% of individuals with exercise addictions also suffer from eating disorders. One of the major predictive factors of exercise addiction is an individual that is suffering low self-esteem and is high narcissism.

Exercise Dependence

Exercise dependence has seven subscales which are tolerance, withdrawal, intention effect, lack of control, time, reductions in other activities, and continuance. All were compared to the main variables of this study: self-esteem, body shape and perfectionism. These subscales affected each of the main variables differently, but after assessing the correlations it was found that each of the main variables had different correlations to the seven subscales of exercise dependence. Years retired did not have a significant correlation to any of the seven exercise dependence subscales (withdrawal, continuance, tolerance, lack of control, intention effect, time, and reduction of activities). It is concluded the reason for this is because retirement looks different for all athletes. In reference to the variable self-esteem it was found there was a positive correlation with four of the seven exercise dependence subscales (withdrawal,

continuance, lack of control, and reduction of activities). It is believed these relationships have a positive correlation because when an athlete retires from sport the feelings, they may feel are the very closely related to the four subscales of exercise dependence listed above. Exercise dependences subscales showed us that the percent variance covered our model of self-esteem and years retired only predicted 7.7% of the variance of exercise dependence and when interaction was added it changed to 9.9%, but still did not create a significance.

Body shape was found to have a positive correlation with three exercise dependence subscales (withdrawal, continuance, and reduction of activities). These three subscales are believed to have a positive correlation on body shape because if a retired athlete is becoming concerned with their body shape, they are also having issues with withdrawal, continuance and reduction of activity. Exercise dependences subscales showed us that the percent variance covered our model of body shape and years retired only predicted 7.6% of the variance of exercise dependence and when interaction was added it changed to 8.4%, but still did not create a significance. Lastly, perfectionism was shown to have a positive correlation with six of the seven exercise dependence subscales (withdrawal, continuance, tolerance, lack of control, intention effect, and reduction of activity). These subscales show a positive correlation to perfectionism because perfectionism is a very strong trait and wants great control over all aspects, this is why it is believed that perfectionism has a positive correlation with six of the seven exercise dependence subscales. Exercise dependences subscales showed us that the percent variance covered by our model of perfectionism and body shape only predicted 11.4% of the variance of exercise dependence and when interaction was added it changed to 10.9%, which created even less of a variance than the first model.

Future Directions

This study offers preliminary evidence regarding exercise dependence, self-esteem, perfectionism, and body shape. If one was to want to further research on this topic it would be recommended to investigate the relationship further between years retired and specifically break down each year and compare them to each of the four main variables of this study. It would also be recommended to further research in the area of comparing males to females within their results to exercise dependence and self-esteem. It would also be interesting to further research if media plays a role on exercise dependence and self-esteem in retired collegiate athletes.

Limitations

This study has a few limitations, the first limitation being there was a relatively small sample size. It is recommended to try and find an email list of retired athletes from the current school you are studying at or the schools you have attended in the past. The second limitation of the study was that this study only looks at Division I, II, and III collegiate athletes and did not take into account NAIA universities and Junior colleges. The third limitation on this study was there was not a lot of research to compare results to that compared all the variables of this study (ED, SE, BS, and Perfectionism). The fourth limitation of this study was having a large amount of the participants identify as Caucasian ($n=61$). The last limitation is only allowing participants to be 5 years at most removed from sport to participant in the study.

Applied Implications

This study and its results can be useful to many different groups of people, some being: coaches of collegiate athletes who are about to graduate, collegiate athletes, sport psychologists, and athletic departments through all colleges and universities. This study did not find any evidence to state that exercise dependence is a significant problem for retiring collegiate athletes.

In this study this is believed to have happened because we do not know what creates exercise dependence and there needs to be more research done on the topic. There was also found to be no relevance on years retired for athletes between one to five years. It is believed this is because this is not a big enough age gap, there needs to be a larger range of years retired from sport to compare. Another implication of this study was that a good portion of the athletes did not score highly on the exercise dependence scale, it is unknown whether these athletes even classify as exercise dependent.

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APPENDICES**APPENDIX A****Demographics Questionnaire**

Please fill in or circle the appropriate answer to all of the following questions:

Age: _____

Did you compete in collegiate athletics: YES / NO

Gender: Male Female

Ethnicity:

| | | |
|-----------------|------------------------|--------------------------|
| Caucasion | Prefer not to identify | Other (Please Specify) |
| Hispanic | Pacific Islander | Multi Ethnic/ Mixed Race |
| African America | American Indian | |
| Asia | Middle Eastern | |

Are you currently retired from collegiate sports: _____

Please indicate the amount of time (years) you have been retired from sport (Circle One):

1 2 3 4 5

What division of sport did you play (Circle One):

NCAA Division I NCAA Division II NCAA Division III

What College or University did you Attend: _____

NCAA Sport (Select only one, if more than one choose the sport you consider to be your primary sport):

| | | | |
|------------|-------------|-----------------|--------------|
| Football | Cheer/Dance | Swimming/Diving | Volleyball |
| Basketball | Baseball | Softball | Wrestling |
| Tennis | Soccer | Lacrosse | Other: _____ |

Hockey Track and Field/CC Field Hockey

How many years did you play/participate in your sport (Total): _____

How many days a week do you exercise (Circle One):

1 2 3 4 5 6 7

When you exercise how many hours do you spend working out: _____

What is your preferred type of exercise: _____

Please choose the answer that best explains why you are not still playing your sport:

- A) Ready to move on to next chapter in life
- B) Wanted to compete at college level but was not able due to lack of resources (time, money, skill etc.)
- C) An injury ended my sport career
- G) I was willing to terminate my sport career because I wanted to focus on academics
- D) Lost interest in the sport
- E) Was tired of the lifestyle and obligations

Other: _____

Please indicate what your willingness to move on/ retire from athletics was at the completion of your athletic career:

| | | | | | | |
|------------|---|---|------------|---|---|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Neither | | | Completely |
| willing | | | willing or | | | willing to |
| | | | unwilling | | | retire |

APPENDIX B

Rosenburg Self-Esteem Scale

Instructions

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

2. At times I think I am no good at all.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

3. I feel that I have a number of good qualities.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

4. I am able to do things as well as most other people.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

5. I feel I do not have much to be proud of.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

6. I certainly feel useless at times.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

7. I feel that I'm a person of worth, at least on an equal plane with others.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

8. I wish I could have more respect for myself.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

9. All in all, I am inclined to feel that I am a failure.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

10. I take a positive attitude toward myself.

| | | | |
|-------------------|-------|----------|----------------------|
| 1 | 2 | 3 | 4 |
| Strongly Agree | Agree | Disagree | Strongly Disagree |

Scoring:

Strongly Disagree Strongly Disagree Strongly Disagree Strongly Disagree

Items 2, 5, 6, 8, 9 are reverse scored. Give “Strongly Disagree” 1 point, “Disagree” 2 points, “Agree” 3 points, and “Strongly Agree” 4 points. Sum scores for all ten items. Keep scores on a continuous scale. Higher scores indicate higher self-esteem.

APPENDIX C**Exercise Dependence Scale**

Copyright © 2002 by Heather A. Hausenblas and Danielle Symons Downs

Hausenblas & Symons Downs (2002)

Instructions. Using the scale provided below, please complete the following questions as honestly as possible. The questions refer to current exercise beliefs and behaviors that have occurred in the past 3 months. Please place your answer in the blank space provided after each statement.

| | | | | | |
|-------|---|---|---|---|--------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Never | | | | | Always |

1. I exercise to avoid feeling irritable. _____
2. I exercise despite recurring physical problem. _____
3. I continually increase my exercise intensity to achieve the desired effect/benefits. _____
4. I am unable to reduce how long I exercise. _____
5. I would rather exercise than spend time with family/friends. _____
6. I spend a lot of time exercising. _____
7. I exercise long than I intended. _____
8. I exercise to avoid feeling anxious. _____
9. I exercise when injured. _____
10. I continually increase my exercise frequency to achieve desired effects/benefits. _____
11. I am unable to reduce how often I exercise. _____
12. I think about exercise when I should be concentrating on school/work. _____
13. I spend most of my free time exercising. _____
14. I exercise longer than I expect. _____
15. I exercise to avoid feeling tense. _____
16. I exercise despite persistent physical problems. _____
17. I continually increase my exercise duration to achieve the desired effects/benefits. _____
18. I am unable to reduce how intense I exercise. _____
19. I choose to exercise so that I can get out of spending time with family/friends. _____
20. A great deal of my time is spent exercising. _____
21. I exercise longer than I plan. _____

APPENDIX D

Body Shape Questionnaire (BSQ)

We should like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and circle the appropriate number to the right. Please answer all the questions.

OVER THE PAST FOUR WEEKS:

| | Never | | Rarely | | Sometimes | | Often | | Very often | | Always |
|---|-------|---|--------|---|-----------|---|-------|--|------------|--|--------|
| | | | | | | | | | | | |
| 1. Has feeling bored made you brood about your shape?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 2. Have you been so worried about your shape that you have been feeling you ought to diet?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 3. Have you thought that your thighs, hips or bottom are too large for the rest of you?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 4. Have you been afraid that you might become fat (or fatter)?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 5. Have you worried about your flesh being not firm enough?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 6. Has feeling full (e.g. after eating a large meal) made you feel fat?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 7. Have you felt so bad about your shape that you have cried?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 8. Have you avoided running because your flesh might wobble?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 9. Has being with thin women made you feel self-conscious about your shape?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 10. Have you worried about your thighs spreading out when sitting down? | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 11. Has eating even a small amount of food made you feel fat?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 13. Has thinking about your shape interfered with your ability to concentrate (e.g. while watching television, reading, listening to conversations)?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 14. Has being naked, such as when taking a bath, made you feel fat?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |
| 16. Have you imagined cutting off fleshy areas of your body?..... | 1 | 2 | 3 | 4 | 5 | 6 | | | | | |

APPENDIX E

Barry University

Informed Consent Form

Your participation in a research project is requested. The title of the study is “Exercise Dependence in Retired Collegiate Athletes.” The research is being conducted by Kelli Gottry, a student in the Sport and Exercise Sciences department at Barry University, and is seeking information that will be useful in the field of Sport Psychology. The aims of the research is further the knowledge on the exercise dependence in retired collegiate athletes. In accordance with these aims, the following procedures will be used: A questionnaires called: Demographics Questionnaire, Rosenberg Self-Esteem Scale, Exercise Dependence Scale, Body Shape Questionnaire, and Sport Perfectionism Scale follow this letter. We anticipate the number of participants to be 100. The data will be collected on the Qualtrics web-page.

If you decide to participate in this research, you will be asked to do the following: fill out a quick demographic questionnaire, fill out a series of questions regarding self-esteem, exercise dependence, body shape and perfectionism. The estimated length of participation is approximately 15-30 minutes. Your consent to be a research participant is strictly voluntary and should you decline to participate, or should you choose to drop out at any time during the study.

There are no known risks to you. There are no direct benefits to you, your participation in this study may help our understanding of burnout in coaches.

As a research participant, information you provide will be held in confidence to the extent permitted by law. Any published results of the research will refer to group averages only and no names will be used in the study. Data will be kept on Kelli Gottry’s personal computer. Your signed consent form will be kept separate from the data. All data will be destroyed after five years.

If you have any questions or concerns regarding the study or your participation in the study, you may contact me, Kelli Gottry, at (910) 409-0536, my supervisor, Dr. Kimberly Cologgi, at (305) 899-4890, or the Institutional Review Board point of contact, Jasmine Trana, at (305) 899-3020. If you are satisfied with the information provided and are willing to participate in this research, please signify your consent by signing this consent form.

Voluntary Consent

I acknowledge that I have been informed of the nature and purposes of this experiment by Kelli Gottry and that I have read and understand the information presented above, and that I have received a copy of this form for my records. I give my voluntary consent to participate in this experiment.

Signature of Participant Date

Researcher Date

Witness Date

(Witness signature is required only if research involves pregnant women, children, other vulnerable populations, or if more than minimal risk is present.)

APPENDIX F

Email/Social Media Template

The recruitment email:

Dear Retired Athlete,

My name is Kelli Gottry and I am a graduate student at Barry University in Miami, FL. I am e-mailing you about a study that I'm conducting for my master's thesis in Sport, Exercise, and Performance Psychology. The study is about how exercise dependence in retired collegiate athletes affects their self-esteem and body shape. All NCAA Division I, II, and III athletes with at least one year removed from sport are invited to participate.

I am emailing to ask if you would be willing to fill out the survey that includes a quick demographic questionnaire, series of questions regarding body shape, exercise dependence, perceived self-esteem, and perfectionism. The survey will likely take 30 minutes to complete. Even if you begin the survey, you can stop, and not complete it. Your consent to be a research participant is strictly voluntary, and you will have an option to refuse to participate, as well as to withhold participation at any point of the study. Participants that have agreed to participate will be allowed to stop taking the survey at any time if they feel the need to do so. There are no known risks to participation. This study has been cleared by the Institutional Review Board. If you agree to participate, please follow the link for the survey and additional information: If you have any questions, please do not hesitate to contact me at kelli.gottry@mymail.barry.edu my mentor Kimberly Cologgi at kcloggi@barry.edu or (305) 899-4890, or IRB contact Jasmine Trana at jtrana@barry.edu or (305) 899-3020 (10). Thank you for your time.

Sincerely,

Kelli Gottry

Recruitment Facebook Post:

Dear Retired Athletes,

As most of you know I am currently a graduate student at Barry University in Miami, Fl. I am posting today to reach out to you about a study that I'm conducting for my Master's thesis in Sport, Exercise, and Performance Psychology. The study is about how exercise dependence in retired collegiate athletes affects their self-esteem and body shape. All NCAA Division I, II, and III athletes with at least one year removed from sport are invited to participate.

If you would be willing to fill out the survey that includes a quick demographic questionnaire, series of questions regarding body shape, exercise dependence, perceived self-esteem, and perfectionism. The survey will likely take 15-30 minutes to complete. Even if you begin the survey, you can stop, and not complete it. Your consent to be a research participant is strictly voluntary, and you will have an option to refuse to participate, as well as to withhold participation at any point of the study. Participants that have agreed to participate will be allowed to stop taking the survey at any time if they feel the need to do so. There are no known risks to participation. This study has been cleared by the Institutional Review Board. If you agree to participate, please follow the link for the survey and additional information:
https://fsu.qualtrics.com/jfe/form/SV_0JTXiceoFEpqR81

If you have any questions, please do not hesitate to contact me at kelli.gottry@mymail.barry.edu my mentor Kimberly Cologgi at kcloggi@barry.edu or (305) 899-4890, or IRB contact Jasmine Trana at jtrana@barry.edu or (305) 899-3020 (10). Thank you for your time.

Sincerely,

Kelli Gottry

APPENDIX G

Sport Multidimensional Perfectionism Scale-2

INSTRUCTIONS The purpose of this questionnaire is to identify how players view certain aspects of their competitive experiences in sport. Please help us to more fully understand how players view a variety of their competitive experiences by indicating the extent to which you **agree or disagree** with the following statements. (Circle one response option to the right of each statement). Some of the questions relate to your sport experiences in general, while others relate specifically to experiences on the team that you have most recently played with. **There are no right or wrong answers** so please don't spend too much time on any one statement; simply choose the how you view each statement. answer that best describes

| To what extent do you agree or disagree with the following statements? | SD | D | N | A | SA |
|--|----|---|---|---|----|
| 1. If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player. | 1 | 2 | 3 | 4 | 5 |
| 2. Even if I fail slightly in competition, for me, it is as bad as being a complete failure. | 1 | 2 | 3 | 4 | 5 |
| 3. I usually feel uncertain as to whether or not my training effectively prepares me for competition. | 1 | 2 | 3 | 4 | 5 |
| 4. My parents set very high standards for me in my sport. | 1 | 2 | 3 | 4 | 5 |
| 5. On the day of competition I have a routine that I try to follow. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel like my coach criticizes me for doing things less than perfectly in competition. | 1 | 2 | 3 | 4 | 5 |
| 7. In competition, I never feel like I can quite meet my parents' expectations. | 1 | 2 | 3 | 4 | 5 |
| 8. I hate being less than the best at things in my sport. | 1 | 2 | 3 | 4 | 5 |
| 9. I have and follow a pre-competitive routine. | 1 | 2 | 3 | 4 | 5 |
| 10. If I fail in competition, I feel like a failure as a person. | 1 | 2 | 3 | 4 | 5 |
| 11. Only outstanding performance during competition is good enough in my family. | 1 | 2 | 3 | 4 | 5 |
| 12. I usually feel unsure about the adequacy of my pre-competition practices. | 1 | 2 | 3 | 4 | 5 |
| 13. Only outstanding performance in competition is good enough for my coach. | 1 | 2 | 3 | 4 | 5 |
| 14. I rarely feel that my training fully prepares me for competition. | 1 | 2 | 3 | 4 | 5 |
| 15. My parents have always had higher expectations for my future in sport than I have. | 1 | 2 | 3 | 4 | 5 |
| 16. The fewer mistakes I make in competition, the more people will like me. | 1 | 2 | 3 | 4 | 5 |
| 17. It is important to me that I be thoroughly competent in everything I do in my sport. | 1 | 2 | 3 | 4 | 5 |
| 18. I follow pre-planned steps to prepare myself for competition. | 1 | 2 | 3 | 4 | 5 |
| 19. I feel like I am criticized by my parents for doing things less than perfectly in competition. | 1 | 2 | 3 | 4 | 5 |
| 20. Prior to competition, I rarely feel satisfied with my training. | 1 | 2 | 3 | 4 | 5 |
| 21. I think I expect higher performance and greater results in my daily sport-training than most players. | 1 | 2 | 3 | 4 | 5 |
| 22. I feel like I can never quite live up to my coach's standards. | 1 | 2 | 3 | 4 | 5 |

| To what extent do you agree or disagree with the following statements? | SD | D | N | A | SA |
|--|-----------|----------|----------|----------|-----------|
| 23. I feel that other players generally accept lower standards for themselves in sport than I do. | 1 | 2 | 3 | 4 | 5 |
| 24. I should be upset if I make a mistake in competition. | 1 | 2 | 3 | 4 | 5 |
| 25. In competition, I never feel like I can quite live up to my parents' standards. | 1 | 2 | 3 | 4 | 5 |
| 26. My coach sets very high standards for me in competition. | 1 | 2 | 3 | 4 | 5 |
| 27. I follow a routine to get myself into a good mindset going into competition. | 1 | 2 | 3 | 4 | 5 |
| 28. If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree. | 1 | 2 | 3 | 4 | 5 |
| 29. My parents expect excellence from me in my sport. | 1 | 2 | 3 | 4 | 5 |
| 30. My coach expects excellence from me at all times: both in training and competition. | 1 | 2 | 3 | 4 | 5 |
| 31. I rarely feel that I have trained enough in preparation for a competition. | 1 | 2 | 3 | 4 | 5 |
| 32. If I do not do well all the time in competition, I feel that people will not respect me as an athlete. | 1 | 2 | 3 | 4 | 5 |
| 33. I have extremely high goals for myself in my sport. | 1 | 2 | 3 | 4 | 5 |
| 34. I develop plans that dictate how I want to perform during competition. | 1 | 2 | 3 | 4 | 5 |
| 35. I feel like my coach never tries to fully understand the mistakes I sometimes make. | 1 | 2 | 3 | 4 | 5 |
| 36. I set higher achievement goals than most athletes who play my sport. | 1 | 2 | 3 | 4 | 5 |
| 37. I usually have trouble deciding when I have practiced enough heading into a competition. | 1 | 2 | 3 | 4 | 5 |
| 38. I feel like my parents never try to fully understand the mistakes I make in competition. | 1 | 2 | 3 | 4 | 5 |
| 39. People will probably think less of me if I make mistakes in competition. | 1 | 2 | 3 | 4 | 5 |
| 40. My parents want me to be better than all other players who play my sport. | 1 | 2 | 3 | 4 | 5 |
| 41. I set plans that highlight the strategies I want to use when I compete. | 1 | 2 | 3 | 4 | 5 |
| 42. If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance. | 1 | 2 | 3 | 4 | 5 |