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The Mediation of Perfectionism and Rumination on Mindfulness and Burnout in Collegiate Athletes

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THE MEDIATION OF PERFECTIONISM AND RUMINATION ON MINDFULNESS AND BURNOUT IN COLLEGIATE ATHLETES

by

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ABSTRACT

Several positive and negative sport-related experiences can occur throughout an athlete's career, which can affect the continuation or termination of said career. Although research has associated sport participation with positive outcomes (e.g., increases in motivation, autonomy), there are also negative sport-related outcomes such as burnout (Akhrem & Gazdowska, 2016; Garcia, 2015). Specifically, burnout has been identified as a multidimensional construct that includes three dimensions. Furthermore, mindfulness has been studied to minimize the risk of experiencing burnout (Kabat-Zinn, 2003). While several studies have examined mediators between mindfulness and burnout, there has been a dearth of research on perfectionism and rumination as mediators. Perfectionism and rumination can be considered multidimensional traits with adaptive and maladaptive qualities that remain stable across situations. It was hypothesized that perfectionism and rumination would significantly mediate the relationship between mindfulness and burnout in collegiate athletes. Results found that depressive rumination and doubts about actions significantly mediate the relationship between mindfulness and subscales of burnout. If athletes specifically exhibit a higher susceptibility to burnout, monitoring depressive rumination and doubts about actions while improving mindfulness can reduce the risk of burnout. Practical implications and future directions are also discussed.

INDEX WORDS: Mindfulness, Perfectionism, Rumination, Burnout, NCAA, Athletes, Sport Psychology

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by

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DEDICATION

I dedicate this thesis to my family, friends, and everyone who supported me throughout the journey. Without their support and encouragement, I would not have had the same experience throughout my graduate school career. Further, I would like to dedicate this thesis to the Sport and Exercise Psychology program here at Georgia Southern University as there have been so many people who have supported and motivated me. Thank you for all of your support.

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TABLE OF CONTENTS

CHAPTER

1 INTRODUCTION 5

2 METHODS 12

Participants 12

Instrumentation.....12

Procedures 14

Data Analysis.....15

3 RESULTS 17

4 DISCUSSION.....20

REFERENCES 26

APPENDICES

A DEMOGRAPHICS QUESTIONNAIRE.....36

B MINDFUL ATTENTION AWARENESS SCALE.....37

C RUMINATIVE RESPONSE SCALE.....38

D SPORT-MULTIDIMENSIONAL PERFECTIONISM SCALE-2 40

E ATHLETE BURNOUT QUESTIONNAIRE.....43

F LIST OF TABLES AND FIGURES 44

G LITERATURE REVIEW 50

CHAPTER 1

INTRODUCTION

Several positive and negative sport-related experiences can occur throughout an athlete's career, which can affect the continuation or termination of said career. Further, positive sport-related experiences have been noted to include increases in social support, motivation, autonomy, and learning life skills **(**Garcia, 2015). Although research has associated sport participation with positive outcomes, there are also negative sport-related outcomes such as burnout (Akhrem & Gazdowska, 2016). More specifically, burnout has been identified as a multidimensional construct containing physical/emotional exhaustion, sport devaluation, and reduced athletic accomplishment (Raedeke & Smith, 2001).

Burnout has been studied extensively over the past several decades and although difficult to ascertain, estimates have suggested that between 1-9% of female and 2-6% male athletes may burn out of their sport (Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007). As previous research has suggested burnout to be a multidimensional construct, these prevalence rates denote athletes who have scored high on all three dimensions suggested by Raedeke and Smith (2001). In understanding burnout over the years, researchers have operationally defined burnout relative to at least one of several theoretical frameworks; each explaining burnout as the product of a variety of processes.

Theoretical frameworks for burnout typically include stress-based (i.e. Silva, 1990; Smith, 1986), sociology-based (Coakley, 1992), or achievement motivation-based models (Deci & Ryan, 1985; Lonsdale, Hodge, & Raedeke, 2007; Nicholls, 1984; Raedeke, 1997). Though there are numerous theories of burnout, the multidimensional perspective forwarded by Maslach and Jackson (1984) has been noted to be the most widely accepted definition in a non-sport

environment (Raedeke, 1997). As the work of Maslach and Jackson (1984) included non-sport environments, Raedeke (1997) modified their multidimensional definition to be sport-specific. Further, Raedeke and Smith (2001) stated that physical and emotional exhaustion arise because of the intense demands of practice and competition, sport devaluation occurs when athletes stop caring about their sport and performance, and reduced sense of accomplishment pertains to a decrease in sport skills and abilities.

With burnout remaining a complex phenomenon due to its multidimensional nature, researchers have found positive and negative associations among burnout and various constructs. For example, previous research has found that burnout is positively related to stress, anxiety, and low social support, while negatively related to motivation, optimism, and hope (Akhrem & Gazdowska, 2016; Gustafsson, Kenttä, & Hassmén, 2011; Gustafsson & Skoog, 2012; Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013; Henschen, 1998). These numerous variables help exemplify the diversity and complex nature of the burnout experience. Further, among these variables, some have received increasing attention more recently, including mindfulness, perfectionism, and rumination (Hill, Hall, Appleton, & Kozub, 2008; Košir, Tement, Licardo, & Habe, 2015; Walker, 2013).

Mindfulness in Relation to Burnout

Mindfulness has been studied extensively outside of the sport psychology literature and has been defined as the awareness that occurs by paying attention deliberately, presently, and nonjudgmentally to experience each moment (Kabat-Zinn, 2003). Furthermore, Kabat-Zinn (1990) stated that mindfulness training can contribute to several different outcomes of well-being in clinical populations (e.g., stress reduction), while also minimizing the risk of experiencing burnout in athletes (Moen, Federici, & Abrahamsen, 2015). Indeed, previous research has

consistently demonstrated the inverse relationship among mindfulness and burnout using both qualitative and quantitative methodologies (Furrer, Moen, & Firing, 2015; Gustafsson, Davis, Skoog, Kenttä, & Haberl, 2015; Moen, Abrahamsen, & Furrer, 2015; Moen et al., 2015; Moen & Wells, 2016; Walker, 2013; Zhang, Si, Chung, & Gucciardi, 2016). For example, Moen and colleagues (2015) found that mindfulness was inversely related to burnout in elite Norwegian athletes while Walker (2013) found that mindfulness was inversely related to all dimensions of burnout in adolescent tennis players. Previously cited, this extensive research regarding mindfulness and burnout has continued to demonstrate the important role that mindfulness may play regarding athletes who are susceptible to burnout.

Furthermore, several studies have examined mediators between these two constructs, such as experiential avoidance, perceived stress, and positive and negative affect (Gustafsson et al., 2015; Moen et al., 2015; Zhang et al., 2016). While previous research has examined these constructs as mediators, there has been a paucity of research examining perfectionism as a mediator between mindfulness and burnout. Given previous research documenting the association between perfectionism and burnout, it has been suggested researchers also examine perfectionism as a mediator to burnout (Hill & Curran, 2016).

Perfectionism as a Mediator to Mindfulness and Burnout

Perfectionism has also been suggested to be a multidimensional construct and is considered a personality trait that tends to remain stable across situations. Flett and Hewitt (2005) broadly defined perfectionism as an individual's desire to perform flawlessly. Perfectionism has been suggested to contain two dimensions including adaptive and maladaptive qualities (Dunn, Causgrove Dunn, & Syrotuik, 2002; Flett & Hewitt, 2005). Recently, these components have been termed as perfectionistic strivings (PS) and perfectionistic concerns (PC),

respectively (Gotwals, Stoeber, Dunn, & Stoll, 2012; Stoeber, 2012). Stoeber (2012) defined PS as striving for perfection and setting extremely high performance standards; PC were denoted to include fear of negative evaluation from others, having concerns over mistakes, and perceiving discrepancies between one's performance and expectations.

Because PC are maladaptive, it may be important to understand it in relation to burnout. Previous research has suggested that PC may be positively related with athlete burnout while PS are inversely related (Appleton, Hall, & Hill, 2009; Hill, Hall, & Appleton, 2010; Hill et al., 2008; Hill, Hall, Appleton, & Murray, 2010). Understanding the consequences of PC and PS in relation to burnout can provide further evidence of specific constructs affecting burnout. Furthermore, it is possible that perfectionism can be affected by levels of mindfulness to diminish levels of burnout.

Previous research has also examined mindfulness and perfectionism collectively. For example, Wimberley, Mintz, and Suh (2016) found that a mindfulness-based intervention helped decrease maladaptive perfectionism. Moreover, Short and Mazmanian (2013) found that mindfulness functioned as an inhibitory factor regarding perfectionism and that participants high in mindfulness had lower levels of maladaptive perfectionism. Since high levels of mindfulness are associated with lower levels of maladaptive perfectionism, perhaps maladaptive perfectionism would have less of an effect on burnout in athletes with high mindfulness.

While perfectionistic concerns have been suggested to directly affect burnout, there are other constructs that can affect burnout including rumination, which can be defined as a repetitive and negative response to stressful events and the event's symptoms (Nolen-Hoeksema, 1991). Previous research has found that rumination and perfectionism are related constructs, and both maladaptive components have been found to positively relate to burnout (Flett & Hewitt,

2008; Flett, Madorsky, Hewitt, & Heisel, 2002; Short & Mazmanian, 2013). Furthermore, previous research has underscored the importance of future investigations regarding the role of rumination on mindfulness and burnout (Gustafsson et al., 2015).

Rumination as a Mediator to Mindfulness and Burnout

Rumination has also been described as a trait that remains stable across varying situations. Rumination is considered a multidimensional construct with the three dimensions that include (a) reflection, (b) brooding, and (c) depressive rumination. The reflection dimension is considered a possible adaptive form of rumination that involves a problem-solving and self-reflective orientation. The brooding dimension is considered maladaptive because it encompasses negative thoughts of self-reflection and focuses on obstacles to overcoming problems. The depressive rumination dimension is similar to clinical definitions of depression and previous studies have found that rumination oftentimes predicts the onset of depression-related symptoms (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961; Egan, Hattaway, & Kane, 2014; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). These three dimensions underscore the complexity of rumination. Given its multidimensional nature it also suggests that each component of rumination may affect burnout differently. Specifically, the existing literature of rumination and burnout suggests that maladaptive rumination is a predictor of burnout while adaptive rumination, or reflection, is not (Košir et al., 2015). It is important to further examine the potential influence these dimensions of rumination have on burnout with a different population, such as athletes. Similarly, understanding the relationship between mindfulness, rumination, and burnout can also be helpful to examine if athletes high in mindfulness can have lower levels of burnout and rumination. Specifically, improving mindfulness could allow athletes to experience lower levels of rumination and make them less susceptible to burnout.

For example, Im and Follette (2016) found that mindfulness was negatively correlated with rumination in college students, whereby participants with higher levels of mindfulness were less likely to begin maladaptive ruminative thinking. Additionally, Selby, Fehling, Panza, and Kranzler (2016) found that low mindfulness and rumination to be positively related, while de Bruin, Topper, Muskens, Bögels, and Kamphuis (2012) also found that mindfulness was negatively related to rumination outside of sport. Further, previous qualitative studies with athletes found themes of decreased rumination with increases in mindfulness (Furrer et al., 2015; Moen et al., 2015). Because previous qualitative literature has suggested the themes of rumination and mindfulness in athletes and that rumination and mindfulness are conflicting ideas, it is important to examine this relationship quantitatively to understand the complex nature in a different methodology. These previous studies help explain the importance of mindfulness on ruminators.

Though previous research has examined the varying associations among burnout, mindfulness, rumination, and perfectionism independently, there has been a paucity of work completed regarding the examination of these variables collectively. Further, there has been very little examination among athletes regarding mindfulness and rumination, and mindfulness and perfectionism. Finally, research has yet to incorporate both perfectionism and rumination when examining the relationship between mindfulness and burnout among athletes. Studies that integrate these variables can aid in understanding the potentially complex nature of mindfulness and burnout.

Therefore, the purpose of the present study is to examine the relationship between mindfulness and burnout with perfectionism and rumination as mediators. More specifically, this study seeks to determine if mindfulness is associated with collegiate athletes' levels of burnout

when accounting for the mediating effects of adaptive and maladaptive perfectionism and rumination. It is hypothesized that subscales of rumination and perfectionism will significantly mediate the relationship between mindfulness and subscales of burnout (see Figure 1).

CHAPTER 2

METHODS

Participants

Participants in the present study consisted of 109 student-athletes between the ages of 18-23 years from NCAA Division I (*n* = 101), II (*n* = 7), and III (*n* = 1) universities located in the southeastern United States. Participants were from volleyball (*n* = 13), softball (*n* = 19), track and field (*n* = 8), cross country (*n* = 6), baseball (*n* = 5), soccer (*n* = 17), lacrosse (*n* = 3), golf (*n* = 6), football (*n* = 5), swimming (*n* = 14), diving (*n* = 1), basketball (*n* = 3), rowing (*n* = 3), cross country and track and field (*n* = 4), tennis (*n* = 1), and one participant declining to answer. Participants were predominantly Caucasian (*n* = 82) with other ethnicities including African American (*n* = 11), Hispanic (*n* = 3), Native American (*n* = 1), Asian/Pacific Islander (*n* = 4), European (*n* = 1), Black/Afro Caribbean (*n* = 1), Middle Eastern (*n* = 1), multiple races (*n* = 2), and two declining to answer. Furthermore, participants were predominantly female (*n* = 89) with male (*n* = 20) being the only other gender that participants identify with.

Instrumentation

Demographics. Information on participants' age, gender identity, race, ethnicity, sport, year in college, years of experience in sport, and the University's Division were obtained.

Burnout. Burnout was assessed by using the 15-item Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001). This five-point, Likert-type scale (1 = almost never, 5 = most of the time) consists of three subscales: reduced sense of accomplishment (five items; e.g., "I'm accomplishing many worthwhile things in sports"), physical and emotional exhaustion (five items; e.g., "It seems that no matter what I do, I don't perform as well as I should"), and sport devaluation (five items; e.g., "I have negative feelings towards sports"). Individual item scores

from each subscale were averaged together. This questionnaire has demonstrated strong reliability (α=.71-.87) and validity in multiple studies (Cresswell & Eklund, 2005; Lemyre, Roberts, & Stray-Gunderson, 2007; Lonsdale & Hodge, 2011). The current study examined Cronbach's alpha for each subscale, and found it to be .87 for reduced sense of accomplishment, .94 for physical and emotional exhaustion, and .93 for sport devaluation.

Mindfulness. Mindfulness was assessed by using the 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS is a six-point Likert-type scale (1 = almost always, 6 = almost never), and measures consciousness on two levels: awareness and attention (e.g., "I run through activities without being really attentive to them"). Awareness is described as continuously monitoring the internal and external environment while attention is focusing on conscious awareness (Westen, 1999). All 15 items were averaged to create one score, in which higher scores related to a higher level of mindfulness (Brown & Ryan, 2003). This scale has good reliability (α=.82) and has been tested for multiple forms of validity (Black, Sussman, Johnson, & Milam, 2012; Goodall, Trejnowska, & Darling, 2012; Osman, Lamis, Bagge, Freedenthal, & Barnes, 2016; Qu, Dasborough, & Todorova, 2015). For the current study, Cronbach's alpha for the MAAS was .92.

Perfectionism. The Sport-Multidimensional Perfectionism Scale-2 (S-MPS-2) was used to assess perfectionism (Gotwals & Dunn, 2009). The S-MPS-2 is a five-point, Likert-type scale (1 = strongly disagree, 5 = strongly agree) that consists of 42 items measuring perfectionism in sport that were summed to obtain six composite subscale scores: personal standards (PS; seven items; e.g., "I have extremely high goals for myself in my sport"), concern over mistakes (COM; eight items; e.g., "If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance"), perceived parental pressure (PPP; nine items; e.g., "In

competition, I never feel like I can quite meet my parents' expectations"), perceived coach pressure (PCP; six items; e.g., "Only outstanding performance in competition is good enough for my coach"), doubts about actions (DAA; six items; e.g., "I usually feel uncertain as to whether or not my training effectively prepares me for competition"), and organization (Org; six items; e.g., "I have and follow a pre-competitive routine"). Previous research has evidenced strong reliability for these subscales (α = .74-.89) and validity (e.g., internal, convergent, discriminant; Dunn et al., 2016; Gotwals & Dunn, 2009; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010). For the current study, Cronbach's alpha for each subscale was .80 for personal standards, .88 for concern over mistakes, .91 for perceived parental pressure, .84 for perceived coach pressure, .82 for doubts about actions, and .84 for organization.

Rumination. The Ruminative Response Scale (RRS) was used to assess rumination (Nolen-Hoeksema & Morrow, 1991). This 22-item, four-point, Likert-type scale (1 = almost never, 4 = almost always) was summed to obtain three composite subscale scores: reflection (five items; e.g., "How often do you write down what you are thinking and analyze it"), brooding (five items; e.g., "How often do you think 'What am I doing to deserve this?'"), and depressive-rumination (12 items; e.g., "How often do you think about how alone you feel"). Previous research has documented this measure's internal consistency (α = .89), test-retest reliability (r= .67), and validity (Nolen-Hoeksema & Morrow, 1991; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). For the current study, Cronbach's alpha for each subscale was recorded as .88 for reflection, .87 for brooding, and .92 for depressive-rumination.

Procedures

After obtaining IRB approval, as well as consent from athletic directors and coaches from prospective universities for recruitment, a link via Qualtrics was administered to student-athletes.

Athletic directors from universities also administered the survey to student-athletes via email or text message. During this time, athletes completed a passive informed consent as well as the study's questionnaires. In total, the surveys took approximately 15-20 minutes to complete. The athletes' names were not recorded in order to keep identifying information confidential. Further, Qualtrics did not record any personal information and removed contact association to provide more confidentiality.

Data Analysis

There were four steps taken for the data analyses. The first step was to screen data to determine if statistical assumptions were met. The variables were checked for normality and found that data were skewed and kurtosis was high on certain variables. The data were not transformed as there are several possible issues that can occur when transforming (Field, 2013). For example, transformed data changes the hypothesis by using geometric means instead of arithmetic means, which could change the averages of each score. Also, applying the incorrect transformation could make data worse by increasing skewness or kurtosis. Moreover, the bootstrapping method was used in the mediation analysis as recommended by previous research (Hayes, 2012). Next, descriptive statistics were run to determine the means and standard deviations of each variable. Before analyzing mediation, a Pearson correlation analysis was run to examine the relationships between the variables. Only subscales that were correlated were used in the mediation analysis.

A total of three parallel multiple mediation analyses were run to examine the mediation of the predictor, mediating, and criterion variables. Subscales from the RRS and the S-MPS-2 that were significantly correlated with the predictor and criterion variables were used as mediating variables. Multiple mediation allows for multiple mediators to be analyzed

simultaneously through the PROCESS macro created by Preacher and Hayes (2008) in SPSS. Three mediation analyses were run by using one of the three subscales of burnout as criterion variables for each analysis. Furthermore, the MAAS and mediating variables (i.e., depressive rumination, brooding, reflection, personal standards, concern over mistakes, and doubts about actions) were used to predict burnout scores. As shown in figures 1-4, the models consisted of the predictor variable (i.e., mindfulness), the mediating variables (i.e., subscales of the RRS and S-MPS-2), and the criterion variables (i.e., subscales of the ABQ). These variables contain several paths (i.e., a, b, c, and c') that establish mediation. Path a examines the regression of the predictor on the mediating variables, path b examines the regression of the mediating variables on the criterion variables, path c examines the direct effect of mindfulness on burnout subscales, and path c' examines the indirect effect with the mediating variables accounted for. Suggested by previous research, 5,000 bootstrapping samples were generated and 95% confidence intervals (CI) were used in the mediation (Hayes, 2012; Preacher & Hayes, 2008). The bootstrapping and CI methods were used, instead of the Sobel test, to reduce possible limitations of non-normal distribution and the power of the indirect effect (Evans & Eys, 2015; MacKinnon, Lockwood, & Williams, 2004; Sobel, 1982). Bootstrapping is a nonparametric resampling procedure that provides multiple samples to the existing data set that does not impose on the normality of distribution while CI are used to examine the indirect effect of the mediating variables on the predictor and criterion variables (Preacher & Hayes, 2008; Wadey et al., 2014). If CI do not contain zero in the range, then this indicates that the mediator has a significant indirect effect (Preacher & Hayes, 2008).

CHAPTER 3

RESULTS

Descriptive Statistics and Pearson Correlations

Descriptive statistics and Pearson correlations are presented in Tables 1 and 2, respectively. There were several significant relationships among the variables. The MAAS was negatively correlated to all RRS subscales, all ABQ subscales, and four S-MPS-2 subscales (i.e., personal standards, concern over mistakes, perceived parental pressure, and doubts about actions). For the ABQ subscales, reduced sense of accomplishment (RSA) was positively related to all RRS subscales, concern over mistakes and doubts about actions, and negatively related to organization. Physical and emotional exhaustion (E) was positively related to depressive rumination, brooding, concern over mistakes, perceived coach pressure, and doubts about actions. Sport devaluation (SD) was significantly positively related to depressive rumination, brooding, concern over mistakes, perceived parental pressure and doubts about actions, and negatively related to personal standards and organization.

Parallel Multiple Mediation Analyses

Parallel multiple mediation analyses were run between the variables that were significantly correlated to each other (see Figures 1-4). Figure 1 displays a sample model for each mediation analysis. For RSA and E, the MAAS, all RRS subscales, concern over mistakes and doubts about actions were examined. For SD, the MAAS, all RRS subscales, personal standards, concern over mistakes and doubts about actions were examined.

Mediation between the MAAS and RSA. A parallel multiple mediation analysis was run to examine the direct and indirect effects of the MAAS and the five mediating variables (i.e., depressive rumination, brooding, reflection, concern over mistakes, and doubts about actions) on

RSA. As shown in figure 2, depressive rumination and doubts about actions significantly mediated the relationship between the MAAS and RSA (a_1 = -.49, p < .001; a_2 = -.39, p < .001; b_1 = .40, p = .01; b_2 = .51, p < .001). The direct effect of the MAAS on RSA was significant (c = -.44, p < .001) while the total effect was nonsignificant (c' = -.08, p = .31). The total completely standardized indirect effect of the MAAS on RSA with all mediators was significant (indirect effect = -0.36, *SE* = 0.07, 95% CI [-0.50, -0.23]). Depressive rumination (indirect effect = -0.19, SE = .08, 95% CI [-0.38, -0.05]) and doubts about actions (indirect effect = -0.20, SE = 0.06, 95% CI [-0.32, -0.10]) mediated the relationship between the MAAS and RSA (see Figure 2).

Mediation between the MAAS and E. As with RSA, the MAAS and E contained the same five mediating variables (i.e., depressive rumination, brooding, reflection, concern over mistakes, and doubts about actions). As shown in figure 3, depressive rumination significantly mediated the relationship between the MAAS and E (a = -.49, p < .001; b = .50, p = .01). The direct and total effects of the MAAS on E were significant (c = -.43, p < .001; c' = -.24, p = .02). The total completely standardized indirect effect of the MAAS on E with all mediators was significant (indirect effect = -0.19, SE = 0.07, 95% CI [-0.33, -0.06]). Depressive rumination (indirect effect = -0.24, SE = 0.11, 95% CI [-0.49, -0.06]) mediated the relationship between the MAAS and E (see Figure 3).

Mediation between the MAAS and SD. The MAAS and SD contained six mediating variables (i.e., depressive rumination, brooding, reflection, personal standards, concern over mistakes, and doubts about actions). As shown in figure 4, depressive rumination and doubts about actions significantly mediated the relationship between the MAAS and SD (a_1 = -.49, p < .001; a_2 = -.39, p < .001; b_1 = .38, p = .03; b_2 = .37, p < .001). The direct and total effects of the MAAS on SD were significant (c = -.41, p < .001; c' = -.23, p = .01). The total completely

standardized indirect effect of the MAAS on SD with all mediators was significant (indirect effect = -0.17, SE = -0.07, 95% CI [-0.31, -0.04]). Depressive rumination (indirect effect = -0.18, SE = 0.09, 95% CI [-0.36, -0.02]) and doubts about actions (indirect effect = -0.14, SE = 0.05, 95% CI [-0.25, -0.06]) mediated the relationship between the MAAS and SD (see Figure 4).

CHAPTER 4

DISCUSSION

The purpose of the present study was to examine if rumination and perfectionism mediated the relationship between mindfulness and burnout in collegiate athletes. It was hypothesized that both rumination and perfectionism would mediate the relationship between mindfulness and burnout. The hypothesis was partially supported, as subscales of the RRS and S-MPS-2 mediated mindfulness and all three subscales of burnout. Specifically, depressive rumination only mediated mindfulness and physical and emotional exhaustion while depressive rumination and doubts about actions significantly mediated mindfulness and two of the burnout subscales (i.e., reduced sense of accomplishment and sport devaluation).

The Effectiveness of Mediators on Mindfulness and Burnout

In terms of the direct effect between mindfulness and burnout, the results indicated that mindfulness negatively predicted all subscales of burnout. More specifically, athletes who exhibited higher levels of mindfulness were less likely to experience burnout. Previous research has consistently supported this claim with athletes (Moen et al., 2015; Moen & Wells, 2016; Walker, 2013; Zhang et al., 2016). For example, Walker (2013) found that higher levels of mindfulness were associated with lower levels of burnout, while Zhang and colleagues (2016) explained that mindfulness predicted all subscales of burnout. Further, Furrer and colleagues (2015) conducted a 12-week mindfulness program and found that athletes exhibited lower levels of burnout at the end of the program, which establishes the importance of mindfulness-based interventions (MBIs) for athletes. Along with the direct effect between mindfulness and burnout, there were several mediating variables that accounted for a large percentage of the variance.

Five mediating variables (i.e., depressive rumination, reflection, brooding, concern over mistakes, and doubts about actions) accounted for 57% and 31% of the variance between mindfulness and reduced sense of accomplishment, and mindfulness and physical and emotional exhaustion, respectively. This large variance explains how much these mediators affect the relationship between mindfulness and the two dimensions of burnout. The present study has expanded previous research by revealing the effectiveness of these specific mediators. Further, depressive rumination and doubts about actions were the only two variables to significantly mediate the relationship between mindfulness and reduced sense of accomplishment while depressive rumination was the only variable to mediate the relationship between mindfulness and physical and emotional exhaustion. Based on this information, these two mediators could be monitored when a student-athlete is susceptible to reduced sense of accomplishment and physical and emotional exhaustion. Specifically, sport psychologists working to improve student-athletes' mindfulness and diminish reduced sense of accomplishment should also continue to assess depressive rumination and doubts about actions. Additionally, sport psychologists should monitor, and lower, depressive rumination tendencies when a student-athlete is susceptible to physical and emotional exhaustion while improving mindfulness.

When examining mindfulness and sport devaluation, six mediating variables (i.e., depressive rumination, reflection, brooding, personal standards, concern over mistakes, and doubts about actions) accounted for 45% of the variance. Along with reduced sense of accomplishment, depressive rumination and doubts about actions were the only two variables to significantly mediate the relationship between mindfulness and sport devaluation. These two mediators should be assessed when improving mindfulness and decreasing sport devaluation with student-athletes.

The present study has added to the current literature in revealing five mediating variables that consistently accounted for the relationship between mindfulness and all three dimensions of burnout. These mediating variables influenced a significant variance between mindfulness and burnout. Sport psychologists who want to improve student-athletes' mindfulness and lower burnout should monitor these five mediating variables during that time. If this assessment is too time consuming, then depressive rumination and doubts about actions should specifically be monitored as these two variables accounted for the most variance between mindfulness and burnout.

While the current study found several variables that affect the relationship between mindfulness and dimensions of burnout, it also found variables that did not affect this relationship. For example, three dimensions of perfectionism (i.e., perceived parental pressure, perceived coach pressure, and organization) did not affect the relationship between mindfulness and burnout. These three dimensions were not considered mediators since they either did not correlate with mindfulness or one of the dimensions of burnout. Previous research has stated the inconsistency of measuring perfectionism as there are several scales for this construct (Dunn et al., 2016; Stoeber & Madigan, 2016). Specifically, literature continues to use organization as a perfectionistic striving while others question the relevance of organization (Dunn et al., 2016; Machida, Ward, & Vealey, 2012). Furthermore, measuring perfectionism is equivocal as there is a divide between using only personal standards and concern over mistakes, and the potential value of using all subscales of the S-MPS-2 (Dunn et al., 2016; Madigan, Stoeber, & Passfield, 2016; Stoeber & Madigan, 2016). In the current study, perceived parental pressure, perceived coach pressure, and organization were not as relevant as the other dimensions of perfectionism. This could be due to the values of the three dimensions whereby the participants did not feel

highly pressured by their coach or parents and also were not highly organized. Additionally, because the participants were in college, the pressure from the coach and parents may feel minimal and not as concerning. Moreover, the participants may not feel that being organized conflicts with their ability to stay in the present. These explanations highlight that measuring perfectionism continues to be a complex issue. As previously mentioned, depressive rumination, reflection, brooding, concern over mistakes, and doubts about actions may be more effective to monitor than perceived parental pressure, perceived coach pressure, and organization. It is important to further understand time constraints when assessing student-athletes to examine which variables would be most effective.

Mediators Between Mindfulness and Burnout

The present results explained that depressive rumination and doubts about actions have significant influence on the relationship between mindfulness and burnout in collegiate athletes. The results interpreted that the more mindful an athlete is, the less depressive rumination and doubts about actions he or she exhibits. Further, the less depressive rumination and doubts about actions an athlete exhibits, the less likely an athlete is to burnout. This was the first study to examine the mediation of depressive rumination and doubts about actions on mindfulness and burnout in athletes. These findings highlight that depressive rumination and doubts about actions are essential underlying mechanisms for how mindfulness affects burnout in athletes.

Limitations

There are some noteworthy limitations of the current study. First, two variables were not assessed in the demographics questionnaire (i.e., in and out of season, athletes' injury status). Previous research has found that athlete burnout may increase significantly throughout the season (Lai & Wiggins, 2003). Since these variables were not examined, the present study could

not control for them or their possible influence on the data. Another limitation was that the questionnaire contained 107 items, which could have skewed results on the questionnaires that were last. Further, since Qualtrics was used for many participants, counterbalancing was not used for the survey. Lastly, the participants were predominantly Caucasian, female, and from Division I universities, which could affect the generalizability of the results.

Practical Implications and Future Directions

Aside from the aforementioned limitations, there are several important practical implications based on the results of the current study. Because mindfulness has been shown to inversely predict athlete burnout, rumination, and certain dimensions of perfectionism, MBIs may be used to diminish the possibility of all of these constructs. More specifically, MBIs may be helpful for student-athletes who are exhibiting these three constructs. Sport psychologists and/or certified mental performance consultants (CMPCs) can improve student-athletes' mindfulness with athletes who especially have depressive rumination tendencies and doubts about their actions. For example, since depressive rumination and doubts about actions are underlying factors between mindfulness and burnout, athletes can use mindfulness to work on acknowledging and accepting flaws instead of negatively thinking about past imperfections (De Petrillo, Kaufman, Glass, & Arnkoff, 2009). Mindfulness practice can overall decrease susceptibility to burnout, rumination, and perfectionistic tendencies in athletes while also targeting depressive rumination and doubts about actions by teaching acceptance and acknowledgement of perceived imperfections.

Future mindfulness research can include using MBIs to examine the effects overtime. Although past research has examined MBIs with different constructs, they have not specifically examined mindfulness with depressive rumination, perfectionism, and burnout (De Petrillo et al.,

2009; Mistretta et al., 2017). Future research can also examine the different MBIs that exist to evaluate which MBI is most effective for depressive rumination, perfectionism, and burnout (e.g., Mindful Sport Performance Enhancement, Acceptance Commitment Therapy, Mindfulness Meditation Training for Sport 2.0). Lastly, researchers can use different populations such as youth athletes to examine the effects of mindfulness and other variables.

The current study concluded that mindfulness can inversely predict burnout, rumination, and certain aspects of perfectionism. Mindfulness appeared to diminish the susceptibility of burnout and use of ruminative and perfectionistic tendencies. Athletes high in mindfulness reported significantly lower levels of burnout, rumination, and perfectionism. Further, depressive rumination and doubts about actions are underlying factors for the relationship between mindfulness and burnout in collegiate athletes. Coaches and sport psychologists or CMPCs might consider using MBIs to reduce susceptibility to burnout, rumination, and perfectionism in collegiate athletes. If athletes specifically exhibit a higher susceptibility to burnout, monitoring depressive rumination and doubts about actions while improving mindfulness can reduce the risk of burnout.

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APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

Age: _____

Current sport playing at your university: _____

Year in College:
- Freshman
- Sophomore
- Junior
- Senior
- Other: _____

Years of Experience in your sport: _____

Division of your university: _____

Race:
- Hispanic, Latino, or Spanish Origin
- Not of Hispanic, Latino, or Spanish Origin

Ethnicity:
- African American
- Caucasian
- Hispanic
- Native American
- Asian / Pacific Islander
- Other: _____

Please circle the gender you identify with most:
- Male
- Female
- Transgender MTF (Male to Female)
- Transgender FTM (Female to Male)
- Non-Binary/ Genderfluid/ Genderqueer
- Prefer to self-describe (please specify): _____
- Not Sure
- Prefer not to say

APPENDIX B

MINDFUL ATTENTION AWARENESS SCALE

INSTRUCTIONS: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

1.	I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
2.	I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
3.	I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
4.	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
5.	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
6.	I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
7.	It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	4	5	6
8.	I rush through activities without being really attentive to them.	1	2	3	4	5	6
9.	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	1	2	3	4	5	6
10.	I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
11.	I find myself listening to someone with one ear, doing something else at the same time.	1	2	3	4	5	6
12.	I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	6
13.	I find myself preoccupied with the future or the past.	1	2	3	4	5	6
14.	I find myself doing things without paying attention.	1	2	3	4	5	6
15.	I snack without being aware that I'm eating.	1	2	3	4	5	6

APPENDIX C

RUMINATIVE RESPONSE SCALE

INSTRUCTIONS: People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

	How often do you…	Almost Never	Sometimes	Often	Almost Always
1.	Think about how you feel.	1	2	3	4
2.	Think "I won't be able to do my job if I don't snap out of this."	1	2	3	4
3.	Think about your feelings of fatigue and achiness.	1	2	3	4
4.	Think about how hard it is to concentrate.	1	2	3	4
5.	Think "What am I doing to deserve this?"	1	2	3	4
6.	Think about how passive and unmotivated you feel.	1	2	3	4
7.	Analyze recent events to try to understand why you are depressed.	1	2	3	4
8.	Think about how you don't seem to feel anything anymore.	1	2	3	4
9.	Think "Why can't I get going?"	1	2	3	4
10.	Think "Why do I always react this way?"	1	2	3	4
11.	Go away by yourself and think about why you feel this way.	1	2	3	4
12.	Write down what you are thinking about and analyze it.	1	2	3	4
13.	Think about a recent situation, wishing it had gone better.	1	2	3	4
14.	Think "I won't be able to concentrate if I keep feeling this way."	1	2	3	4
15.	Think "Why do I have problems other people don't have?"	1	2	3	4
16.	Think "Why can't I handle things better?"	1	2	3	4
17.	Think about how sad you feel.	1	2	3	4
18.	Think about all your shortcomings, failing, faults, mistakes.	1	2	3	4

	How often do you…	Almost Never	Sometimes	Often	Almost Always
19.	Think about how you don't feel up to doing anything.	1	2	3	4
20.	Analyze your personality to try to understand why you are depressed.	1	2	3	4
21.	Go someplace alone to think about your feelings.	1	2	3	4
22.	Think about how angry you are with yourself.	1	2	3	4

APPENDIX D

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 answer that best describes how you view each statement.

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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
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

	To what extent do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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

APPENDIX E

ATHLETE BURNOUT QUESTIONNAIRE

INSTRUCTIONS: Please read each statement carefully and decide if you ever feel this way about your current sport participation. Your current sport participation includes all the training you have completed during this season. Please indicate how often you have had this feeling or thought this season by circling a number 1 to 5, where 1 means "I almost never feel this way" and 5 means "I feel that way most of the time." There are no right or wrong answers, so please answer each question as honestly as you can. Please make sure you answer all items. If you have any questions, feel free to ask.

	Almost never	Rarely	Some-times	Fre-quently	Almost always
1. I'm accomplishing many worthwhile things in my sport.	1	2	3	4	5
2. I feel so tired from my training that I have trouble finding energy to do other things.	1	2	3	4	5
3. The effort I spend in my sport would be better spent doing other things.	1	2	3	4	5
4. I feel overly tired from my sport participation.	1	2	3	4	5
5. I am not achieving much in my sport.	1	2	3	4	5
6. I don't care as much about my sport performance as much as I used to.	1	2	3	4	5
7. I am not performing up to my ability in my sport.	1	2	3	4	5
8. I feel "wiped out" from my sport.	1	2	3	4	5
9. I'm not into my sport like I used to be.	1	2	3	4	5
10. I feel physically worn out from my sport.	1	2	3	4	5
11. I feel less concerned about being successful in my sport than I used to.	1	2	3	4	5
12. I am exhausted by the mental and physical demands of my sport.	1	2	3	4	5
13. It seems that no matter what I do, I don't perform as well as I should.	1	2	3	4	5
14. I feel successful at my sport.	1	2	3	4	5
15. I have negative feelings towards my sport.	1	2	3	4	5

APPENDIX F

TABLES AND FIGURES

Table 1. Descriptive statistics and skewness values of the MAAS, RRS, S-MPS-2, and ABQ subscales

	Mean	SD	Skewness
MAAS	3.69	.95	2.05
Depressive Rumination	26.14	8.25	2.02
Brooding	11.07	4.1	1.96
Reflection	9.51	4.05	3.57
Personal Standards	26.09	4.39	-2.61
Concern Over Mistakes	24.74	6.89	-0.02
Perceived Parental Pressure	22.18	7.79	-0.72
Perceived Coach Pressure	20.26	5.34	2.68
Doubts About Actions	17.55	4.76	-1.55
Organization	21.78	4.41	-0.10
Reduced Sense of Accomplishment	2.79	0.89	-0.36
Exhaustion	3.26	1.03	0.46
Sport Devaluation	2.64	1.18	2.35

Table 2. Pearson correlations between the assessed variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. MAAS												
2. Depressive Rumination	-.49**											
3. Brooding	-.44**	.86**										
4. Reflection	-.29**	.78**	.73**									
5. Personal Standards	-.21*	.20*	.16	.25**								
6. Concern Over Mistakes	-.50**	.48**	.49**	.33**	.49**							
7. Perceived Parental Pressure	-.23*	.21*	.23*	.13	.13	.35**						
8. Perceived Coach Pressure	-.13	.07	.05	-.03	.14	.38**	.19					
9. Doubts About Actions	-.39**	.50**	.44**	.37**	.22*	.55**	.20*	.23*				
10. Organization	-.09	.03	-.04	.09	.45**	.06	.19*	-.06	-.06			
11. Reduced Sense of Accomplishment	-.44**	.51**	.43**	.31**	.13	.53**	.16	.31	.70**	-.22*		
12. Physical and Emotional Exhaustion	-.43**	.36**	.24*	.17	-.03	.39**	.15	.38**	.40**	-.08	.55**	
13. Sport Devaluation	-.41**	.39**	.33*	.15	-.21*	.24*	.09	.31**	.48**	-.27**	.63**	.74**

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

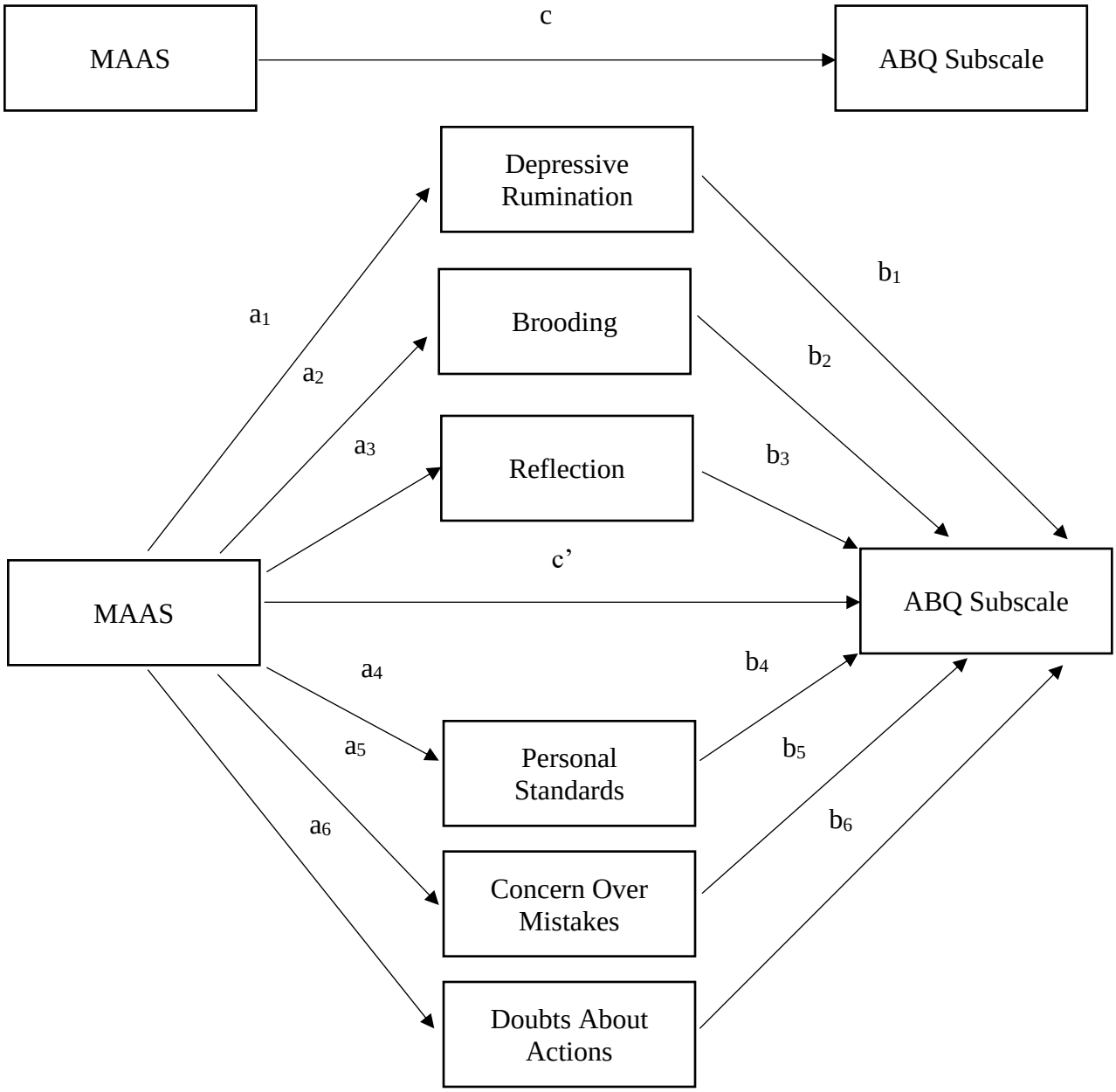

Figure 1. A sample mediation model showing paths a, b, c, and c'.

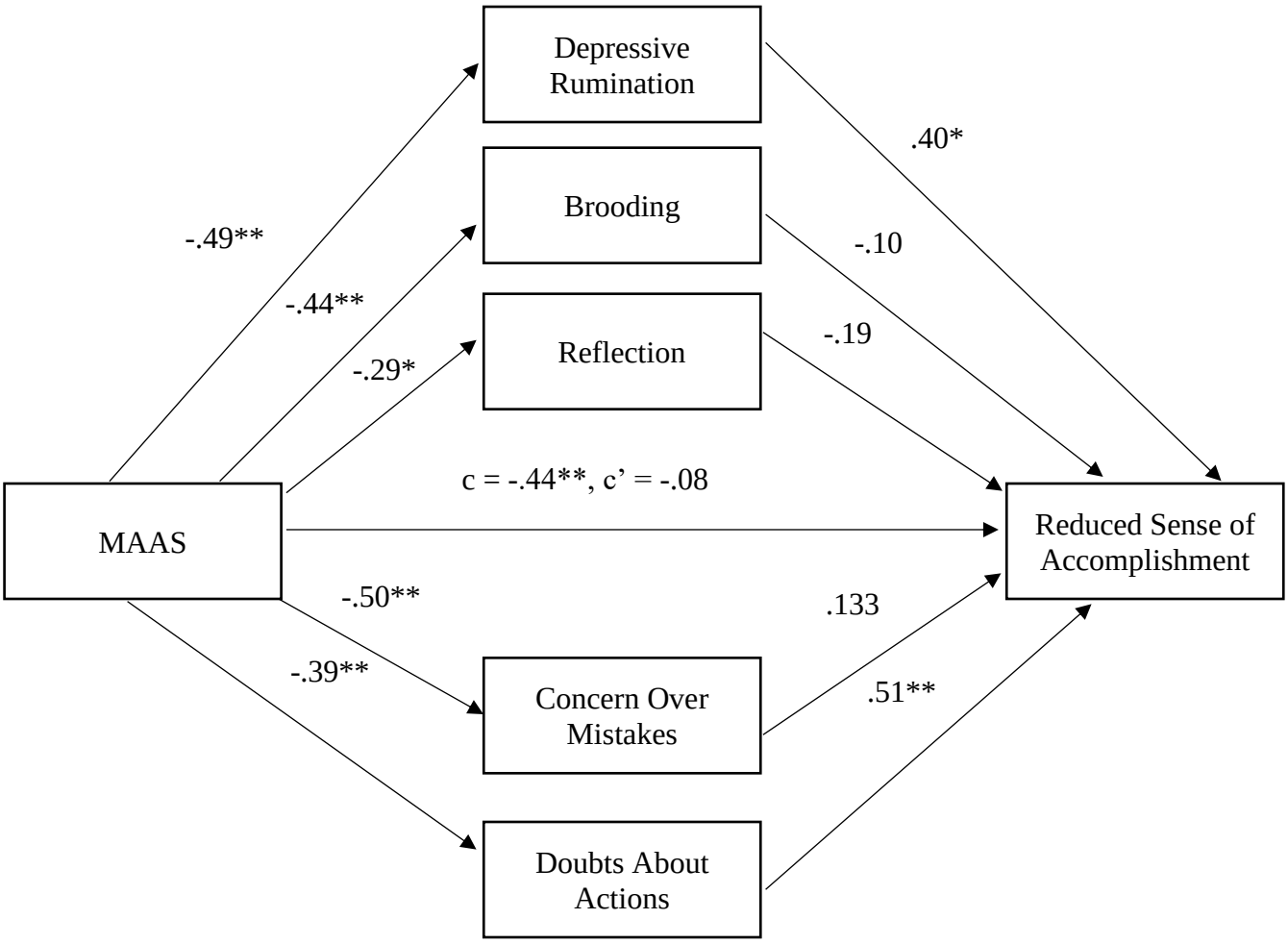

Figure 2. Beta coefficients representing the effect of the MAAS and mediating variables on reduced sense of accomplishment (RSA). Significant effects were found for the total effect of the MAAS on RSA (-.41), t = -5.07, SE = .08, $p < .001$, and the multiple mediator model, $F(6, 102) = 22.45$, $p < .001$, $R^2 = .57$. * $p < .01$, ** $p < .001$.

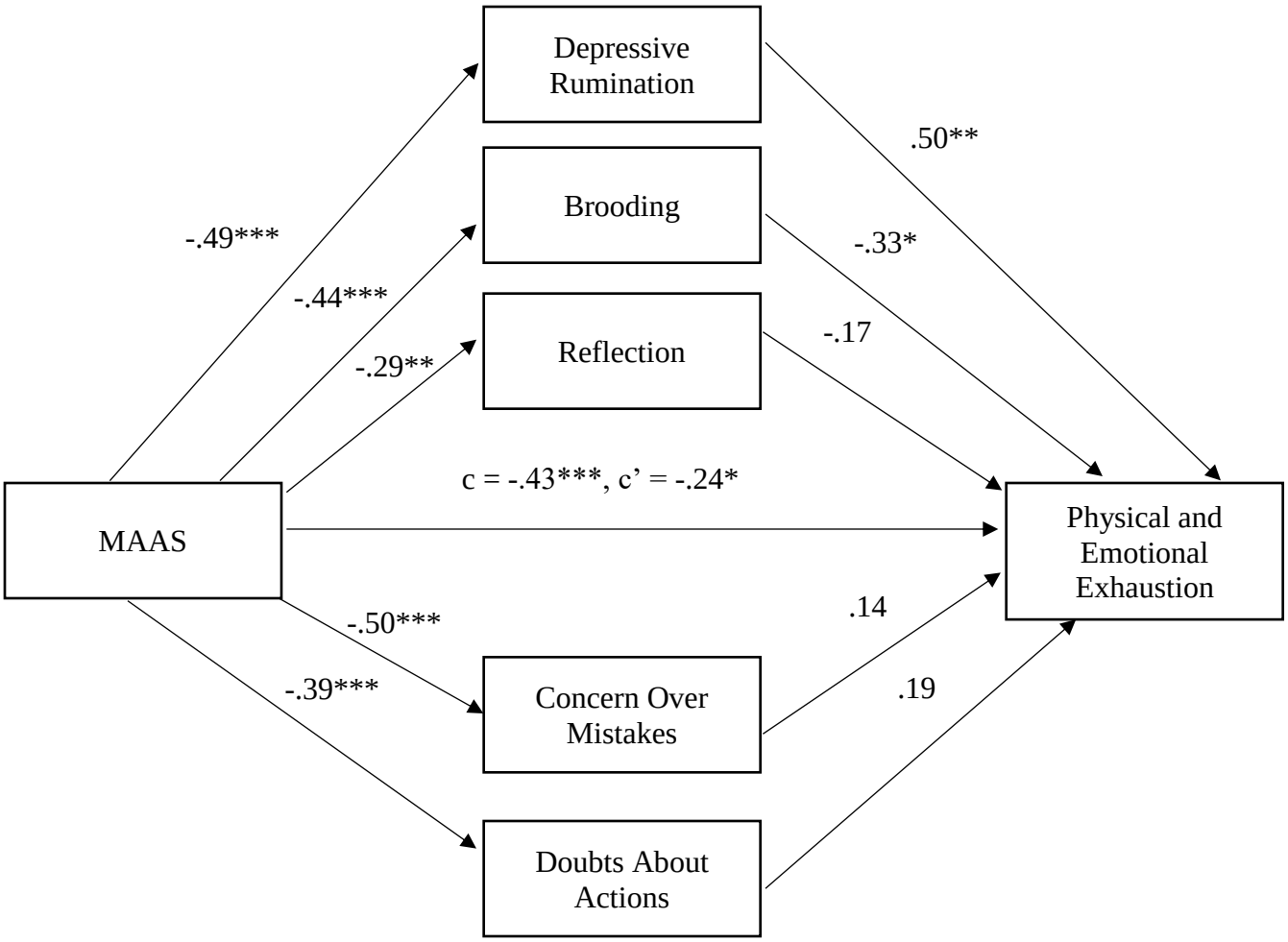

Figure 3. Beta coefficients representing the effect of the MAAS and mediating variables on physical and emotional exhaustion (E). Significant effects were found for the total effect of the MAAS on E (-.46), t = -4.91, SE = .09, $p < .001$, and the multiple mediator model, $F(6, 102) = 7.59$, $p < .001$, $R^2 = .31$. * $p < .05$, ** $p < .01$, *** $p < .001$.

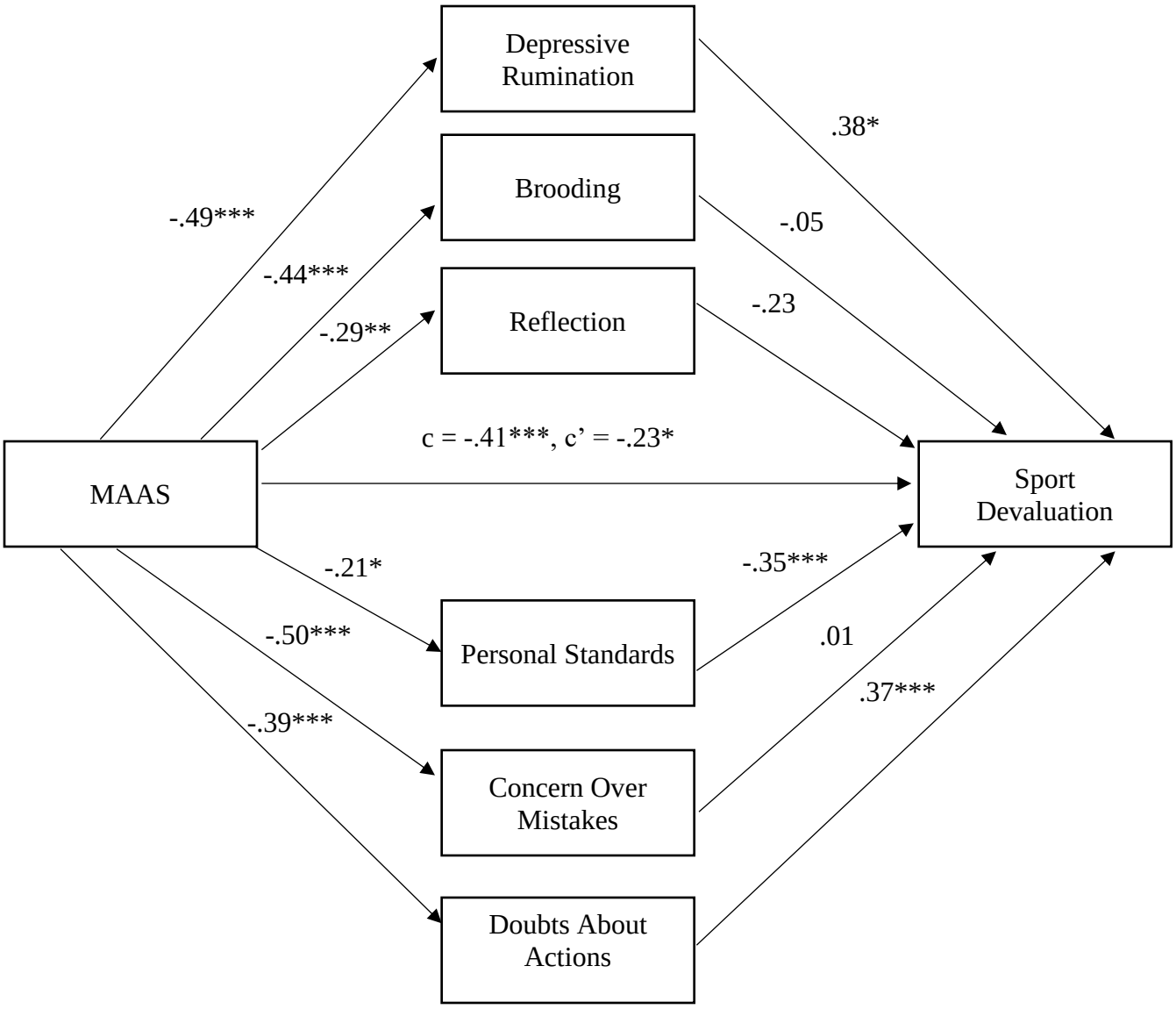

Figure 4. Beta coefficients representing the effect of the MAAS and mediating variables on sport devaluation (SD). Significant effects were found for the total effect of the MAAS on SD (-.50), t = -4.58, SE = .11, $p < .001$, and the multiple mediator model, $F(7, 101) = 11.60$, $p < .001$, R^2 = .45. * $p < .05$, ** $p < .01$, *** $p < .001$.

APPENDIX G

LITERATURE REVIEW

Several positive and negative sport-related experiences can occur throughout an athlete's career, which can affect the continuation or termination of said career. For example, positive sport-related experiences have been noted to include increases in social support, motivation, autonomy, and learning life skills **(**Garcia, 2015). Although research has associated sport participation with positive outcomes, there are also negative sport-related experiences that have been suggested to include injury and can lead to burnout (Akhrem & Gazdowska, 2016). More specifically, as one type of negative sport outcome, burnout has been identified as a multidimensional construct that includes three dimensions, physical/emotional exhaustion, sport devaluation, and reduced athletic accomplishment (Raedeke & Smith, 2001).

Burnout has been studied extensively over the past several decades and although difficult to ascertain, estimates have suggested that between 1-9% of female and 2-6% male athletes may burn out of their sport (Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007). It is important to understand that these percentages show athletes who scored high in all three dimensions of burnout suggested by Maslach, exhaustion, cynicism, and lack of accomplishment, which means a larger percentage of athletes had high scores in one or two of the dimensions (Gustafsson et al., 2007). Many athletes who do not score high on certain aspects of a multidimensional framework of burnout can still be susceptible to burnout in the future if these negative aspects continue to increase. Though Maslach's theory of burnout has been used in previous literature to show ranges in athletic burnout, there are other theories to understand and explain in order to obtain ample knowledge about the concept of burnout. These theoretical frameworks can explain

different aspects of burnout, either unidimensional or multidimensional, and also explain correlations between burnout and other psychological constructs.

Theoretical Frameworks

There are several theoretical frameworks for burnout that encapsulate the multidimensionality of the construct. Each framework also coincides with a specific operational definition that explains how burnout is defined. For burnout, there are three different models that have multiple frameworks within each model, which are stress-based, sociological, and motivation models.

The stress-based model consists of two separate theoretical frameworks, which are the cognitive-affective stress model and the negative training stress model (Smith, 1986; Silva, 1990).

Cognitive-affective stress model. Smith (1986) states that burnout is a reaction to chronic stress and that burnout syndrome has several different components, such as physical, mental, and behavioral aspects (Cherniss, 1980; Freudenberger, 1980). Consequently, for the cognitive-affective stress model, Smith (1986) explains that burnout is a process that contains four stages: situational demands, cognitive appraisal, physiological responses, and behavioral responses (Gould & Whitley, 2009).

The first stage explains that athletes face situational demands that make them evaluate said demands (Smith, 1986). Some examples of situational demands are heavy workload from practices, high expectations from self, parents, and coaches, and outside stressors that affect practices or competitions (Gould & Whitley, 2009). Once the situational demands occur, the athletes then fall into stage two, or cognitive appraisal, where they determine if the demands are too much or too little, often resulting in either high stress or boredom (Gould & Whitley, 2009;

Smith, 1986). The result of this phase can be determined by personality factors, such as perfectionism, depression, and anxiety (Gould & Whitley, 2009). If the athletes think the situational demands are too much for them, the third stage ensues, physiological responses. The athletes begin to exhibit symptoms, such as fatigue, muscle tension, insomnia, and even injury, that lead into the last stage. The athletes begin behavioral responses, such as decreased performance and motivation, which have stemmed from the previous stages. The examples listed in this model are not an exhaustive list as many other symptoms can occur before, and on, the last stage. Past research has generally supported this model for burnout in competitive junior tennis players (Gould, Tuffey, Udry, & Loehr, 1996, 1996, 1997). The cognitive-affective stress model is just one viewpoint on stress-based burnout while the negative training stress model is another model that examines psychological responses to physiological antecedents.

Negative training stress model. Unlike the cognitive-affective stress model, the negative training stress model looks at how physical stress turns into positive adaptation or negative response depending on the psychophysiological reaction to training stress (Silva, 1990). Silva defines training stress by deriving a definition of stress proposed by Selye (1980), who states that stress is created when an individual responds to a demand. This stress can produce eustress, distress, or both reactions; eustress is a positive reaction of stress while distress is a negative reaction of stress. This model states that training can give positive stress by carefully overloading athletes during practices and competitions to continually improve performance (Silva, 1990). In order to achieve positive reactions to stress, the athletes may need effective coping strategies to continuously receive training overload. However, if the athletes do not react positively, a negative reaction can come from training stress such as injury.

According to this model, training stress is specific to athletes that results from a negative adaptation response to physical stress (e.g., from intense practices). There are several factors that create a negative reaction from stress, such as too much training stress, sporadic work/rest patterns, boredom, and inefficient problem solving strategies (Silva, 1990). Silva explains this negative reaction as a continuum where the athletes continue to regress into the training stress syndrome until burnout occurs. There are three phases of the training stress syndrome; staleness, overtraining, and burnout.

Silva (1990) defines staleness as an initial point when positive adaptive mechanisms fail to cope with psychophysiological stress created by training. This construct is expected to occur in an athlete's career during a competitive season because practice overload can happen. During this time, training lag periods occur, which are when the body and mind try to acclimate to the demands of the training. Coaches often continue to push the athlete with more overload, allowing for even more negative psychophysiological reactions to occur if the athlete cannot adapt to the training. If the athletes cannot cope with the overload, they will consequently fall into phase 2 of training stress syndrome.

Overtraining is commonly confused with overload because it has physiological aspects (Silva, 1990). It occurs after several instances of ineffective coping experiences with training stress. Unlike staleness, overtraining is not a desirable state of training because of the negative psychophysiological implications (Stamford, 1983). These implications, abnormal mental orientation and decreased physical performance, occur from psychophysiological resistance because training loads are too excessive for the athletes (Silva, 1990). Previous research has stated that coaches continue to increase training stress with discrepancies of perceived training load between coach and athlete, which increases exhaustion even more (Barron, Noakes, Levy,

Smith, & Millar, 1985; Brink, Frencken, Jordet, & Lemmink, 2014; Gofton, Graham, McGrath, & Cleghorn, 1953). As the stress and exhaustion escalates, the final stage, burnout, occurs.

Silva (1990) defines burnout as an exhaustive psychophysiological response created by frequent, ineffective efforts to meet training stress. He also states that burnout has negative implications on self-esteem, personal accomplishment, and affect. Other research has also suggested that burnout is distinguished from other stages because of the inevitability of withdrawal (Freudenberger, 1977; Hamberger & Stone, 1983; Maslach, 1982; Smith, 1986). Further, previous research has also supported this model as a way to explain burnout and its stages, but has also suggested that there is more to burnout than physiological issues (Kentta & Hassmen, 1998; Gould & Whitley, 2009**).**

The two stress-based models for burnout explain that burnout occurs from multiple forms of chronic stress, whether it is from psychological or physical aspects. The cognitive-affective stress model states that burnout occurs after athletes negatively react to certain situational demands that later diminish physical capacities and ultimately lead to multiple negative behavioral responses. In contrast, the negative training stress model states that physical training stress can negatively impact athletes' psychophysiological reactions that eventually regress from staleness to overtraining to burnout. Due to the cognitive-affective stress model being so broad and the negative training stress model solely focused on physical overtraining as an antecedent to burnout, they are not utilized in current research (Gould & Whitley, 2009; Kentta & Hassmen, 1998; Kentta, Hassmen, & Raglin, 2001). However, it is important to note these models to understand the different perspectives of burnout. Though these are some of the first theoretical models for burnout and the only models from a stress-based perspective, there are different

burnout frameworks such as a sociological model, the unidimensional identity development and external control model (Coakley, 1992).

Unidimensional identity development and external control model. Coakley (1992) created the unidimensional identity development and external control model to display a different perspective of burnout. This model states that athletes suffer from burnout because society has created athletes to have a unidimensional self-concept, and athletes have less control over their lives (Coakley, 1992). It also explains that the athletes are highly accomplished and have multiple aspects of their lives tied into sport, such as communication with friends and family, goal-setting, and skill development. As their lives continue, the athletes start to think that competence in sport does not mean competence in every aspect of their lives. Eventually, the athletes begin to doubt themselves because they value independence and autonomy over athletic identity. These inconsistencies between sport participation and need for independence negatively affect performance because of insecurities. Previous research has also explained that athletes with a unidimensional identity and low self-complexity have larger variations in mood, affect, and self-evaluation after a success or failure (Linville, 1985; Thoits, 1983). Black and Smith (2007) found partial support for Coakley's model in swimmers, but did not find moderation of athletic identity between perceived stress and burnout. This model looks at stress as a symptom of burnout rather than a cause, and explains that sociological changes need to occur more than just a treatment for stress (Coakley, 1992). These theoretical frameworks explain different reasons for burnout, but are not the only frameworks in research. Several motivation theories explain different perspectives on the cause of burnout rather than sociological or stress-based, and will be described.

Motivation models. There are numerous motivation models that offer viewpoints on burnout, which include the entrapment view, self-determination theory, achievement goal theory, and engagement approach (Deci & Ryan, 1985; Lonsdale, Hodge, & Raedeke, 2007; Nicholls, 1984; Raedeke, 1997). Though these models all revolve around motivation as a concept for a cause of burnout, they have different perspectives for motivation.

The entrapment view. Raedeke (1997) created this model to explain burnout from a commitment perspective. He used the multidimensional, general burnout theory created by Maslach and Jackson (1984) to explain sport-specific burnout. Maslach and Jackson (1984) define burnout as a psychological syndrome of depersonalization, emotional exhaustion, and reduced personal accomplishment. Though Maslach and Jackson (1984) explain burnout from a human service provider perspective, Raedeke (1997) adopts their definition for his sport-specific burnout theory. He explains that burnout has three different dimensions, physical/emotional exhaustion, sport devaluation, and reduced athletic accomplishment. This model states that athletes' involvement in sport stems from athletes wanting to (sport attraction), athletes believing that they have to (sport entrapment), or a combination of both reasons.

Athletes are more likely to exhibit burnout if they are in a sport for entrapment purposes rather than attraction purposes. There are several reasons that athletes maintain sport participation even when they are participating for entrapment-related purposes. Athletes might have limited, or no, options for participating in alternative sports. They also continue to participate since they have invested too much in the sport so they do not want to quit. For example, they have put too much time and effort into the sport over several years. Raedeke (1997) provided support for this model by studying 236 swimmers' burnout levels. Past research has also supported the link between athlete burnout and feelings of exhaustion, reduced sense of

accomplishment, and sport devaluation (Cohn, 1990; Eades, 1990; Gould et al., 1996; Silva, 1990). Though there is support for this model, there are other motivation models that explain different perspectives of motivation on burnout.

Self-determination theory. Deci and Ryan (1985) state that motivation is optimized when three basic psychological needs, autonomy, competence, and relatedness, are met (Gould & Whitley, 2009). This model explains that motivation is on a continuum from amotivation to intrinsic motivation with extrinsic motivation between the two (Deci & Ryan, 1985). Though these three are the main components on the continuum, there are several components in between that range from non-self-determined to self-determined (i.e., Non-regulation, external regulation, introjected regulation, identified regulation, integrated regulating, and intrinsic regulation). Amotivation is a lack of motivation while intrinsic motivation is motivation that comes from pure enjoyment. Conversely, extrinsic motivation is motivation that comes from external rewards. For example, intrinsic motivation is exhibited when an athlete enjoys what he or she does while extrinsic motivation is enhanced when given a reward such as a first place medal. While these are not mutually exclusive, previous research has supported that intrinsically motivated athletes experience lower levels of burnout (Cresswell & Eklund, 2005a, 2005b, 2005c; Lemyre, Roberts, & Stray-Gundersen, 2007). For example, Lemyre et al. (2007) sampled 141 elite winter sport athletes and found that low self-determined motivation predicted higher levels of burnout. While several studies have supported the merit of self-determination theory, there has been a paucity of research regarding how it affects certain psychological constructs and burnout, so there are more to consider.

Achievement goal theory. Achievement goal theory, conceptualized by Nicholls (1984), explains two different aspects for motivation, task- and ego-orientation, to demonstrate

competence and avoid incompetence. Task, or mastery, oriented individuals gauge efforts and success by task-difficulty, or demand. These individuals are motivated by the task they are performing, and will base their competence and success on how well they do the task. For example, a swimmer wants to work on his or her technique to become as competent as possible. However, ego, or performance, oriented individuals gauge their performance with interpersonal comparisons. Specifically, they will evaluate their performance versus people around them. For example, a swimmer is racing someone in the lane next to him or her and wants to beat his or her opponent. The swimmer will base his or her competence and performance on winning or losing against the opponent. There has not been consistent support for this theory in accordance to burnout (Appleton, Hall, & Hill, 2009; Lemyre, Hall, & Roberts, 2008). For example, Appleton et al. (2009) stated that neither orientation was a significant predictor of burnout. Conversely, Lemyre et al. (2008) found two motivational profiles based on achievement goal theory, adaptive and maladaptive. They supported that a maladaptive profile of motivation could lead to burnout. Furthermore, Harris and Smith (2009) found support for achievement goal theory by examining burnout with motivational climate and gender differences with burnout. Lastly, the engagement approach explains a different perspective of how motivation influences burnout.

Engagement approach. Lonsdale, Hodge, and Raedeke (2007a) proposed athlete engagement (AE) as an effective way to prevent burnout. They operationally defined AE as a positive, persistent, cognitive-affective experience in sport encompassing three dimensions, confidence, dedication, and vigor. They also created operational definitions for the three dimensions: Confidence is the belief that an athlete has the ability to reach a high level of performance and achieve relevant goals; dedication is the desire to invest effort and time into specific, important goals; and vigor is mental, emotional, and physical energy or liveliness.

Lonsdale et al. (2007a) interviewed 15 elite New Zealand athletes to inquire about their experiences with engagement in sport. They found that AE was relevant to elite athletes and that confidence, dedication, and vigor influenced a positive sport environment. Further, Lonsdale, Hodge, and Jackson (2007b) found that enjoyment was strongly related to AE, and created another dimension, enthusiasm, to encompass enjoyment and excitement. In the study, they created the Athlete Engagement Questionnaire (AEQ) with four subscales to measure confidence, dedication, vigor, and enthusiasm. These four dimensions of AE negatively related to burnout.

These theoretical frameworks contain different viewpoints to explain the concept of burnout. Previous research has supported that burnout comes from stress-related environments, sociological issues, and motivation-related aspects. Consequently, there are also multiple scales created for burnout that use these different theoretical frameworks.

Burnout Assessment

Athlete burnout questionnaire (ABQ). The ABQ, developed by Raedeke and Smith (2001), takes a multidimensional approach with burnout using three subscales, emotional/physical exhaustion, reduced sense of accomplishment, and devaluation, adopted from the entrapment view (Raedeke, 1997). Raedeke and Smith (2001) presented three studies to examine the psychometric properties, construct validity, and cross-validate the ABQ with different sports. They first created the study with swimming-specific questions, and ended with a five-point Likert-type (1 = almost never, 5 = most of the time), 15-item scale with five items in each subscale. After changing their scale from swimming-specific questions to general sport questions, they found strong internal consistency and test-retest reliability for emotional/physical exhaustion, reduced sense of accomplishment, and devaluation (α= .91, .85, .90, respectively; r=

.92, .86, .92, respectively). They also stated that the measure supported construct validity by finding that burnout was positively related to competitive trait anxiety and amotivation, while being negatively related to commitment, enjoyment, and intrinsic motivation. Previous research has used the ABQ to further the explanation of burnout while supporting reliability, construct validity, and discriminant validity (Cresswell & Eklund, 2005c; Cresswell & Eklund, 2006; Judge, Bell, Theodore, Simon, & Bellar, 2012; Lemyre et al., 2007; Lonsdale & Hodge, 2011; Madigan, Stoeber, & Passfield, 2016). Though the ABQ is the most supported scale to date, there are other burnout scales to consider.

Eades athlete burnout inventory (EABI). The creation of the EABI was a good starting point for a sport-specific burnout inventory, but had conceptual and measurement limitations (Eades, 1990; Raedeke, 1997). This 36-item, seven-point, Likert-type (0=almost never, 6=everyday) scale measures six dimensions based off of the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter,1997). The six subscales include the negative self-concept of athletic ability (8 items), emotional and physical exhaustion (9 items), psychological withdrawal (7 items), devaluation by coach and teammates (6 items), congruent athlete-coach expectations (3 items), and personal and athletic accomplishment (3 items; Eades, 1990). Though internal consistency has been acceptable (α = .57-.89) and validity has been supported among various dimensions of sport behavior, certain subscales suffer from psychometric problems, has weak theoretical foundation, and is not currently being used (Akhrem & Gazdowska, 2016; Gould et al., 1996; Gustafsson et al., 2007; Raedeke, 1997; Vealey, Armstrong, Comar, & Greenleaf). A more popular, but not sport-specific scale, is the Maslach Burnout Inventory- General Survey (MBI-GS) and has more reliability and validity support.

Maslach burnout inventory- general survey (MBI-GS). Though the MBI-GS is not a sport-specific scale, it is important for consideration to understand the different perspectives of multidimensional burnout (Maslach et al., 1997). They define burnout as a crisis in a relationship with work relating to an engagement-burnout continuum, and also focus primarily on the performance of work. The MBI-GS is a 16-item Likert-type scale (0=never, 6=everyday) with three subscales, exhaustion (5 items), cynicism (5 items), and professional efficacy (6 items). Exhaustion reflects emotional and physical fatigue, cynicism is defined as indifference or a distant attitude towards work, and professional efficacy focuses on expectations and effectiveness at work. Maslach et al. (1997) found adequate reliability with stability coefficients of .65, .60, and .67 for exhaustion, cynicism, and professional efficacy, respectively. They also found construct validity by associating exhaustion and cynicism with mental and physical strain, work overload, and role of conflict at work while associating professional efficacy with satisfaction, organizational commitment, and job involvement. Cresswell and Eklund (2006) used word substitution to make the inventory more sport-specific, and found support with convergent and discriminant validity within athlete populations. They also stated that the MBI-GS gave weaker results than the ABQ, and found that the cynicism subscale displayed psychometric problems. Other than the research done by Cresswell and Eklund (2006), there is little research done on the MBI-GS with athletes.

Athlete engagement questionnaire (AEQ). The AEQ contains four subscales for burnout, confidence, dedication, vigor, and enthusiasm (Lonsdale et al., 2007b). This 16-item Likert-type scale (1 = almost never, 5 = almost always) contains four items from each subscale that follows the engagement approach. They found strong reliability for each subscale with alpha coefficients ranging from .84 to .89 (Lonsdale et al., 2007b). Previous research has supported

that engagement might be on the opposite from burnout on a continuum (González-Romá, Schaufeli, Bakker, & Lloret, 2006). Though this study was based on organizational psychology, Lonsdale et al. (2007b) used the AEQ to support the same for sport. They found strong support for a reduced sense of accomplishment-confidence and devaluation-dedication continuum, and weak, but significant, support for an exhaustion-vigor/enthusiasm continuum. They further discussed the possibility of engagement and burnout being bipolar opposites, but explained that more research was needed. Research has supported the AEQ with regards to motivation and strength-based perspectives, but there has been little research linking it with burnout (Jowett, Hill, Hall, & Curran, 2016; Podlog et al., 2015; Stander, De Beer, Stander, Mostert, & Coxen, 2017). Previous research has also questioned the concept of engagement and burnout belonging on the same continuum, and did not provide support for this continuum even though they did provide support for inverse correlation between the two constructs (Defreese & Smith, 2013).

Correlates of Burnout

Athletic burnout is influenced by several psychological constructs. Since burnout can be thought of as an outcome of an athlete's career, it is important to explain these psychological constructs that can influence burnout. Specifically, mindfulness and perfectionism are psychological factors that research has supported to impact burnout (Chen, Kee, Chen, & Tsai, 2008; Moen & Wells, 2016). Furthermore, little research has looked at the impact of rumination on burnout in athletic settings, but has been looked at in other settings (Košir, Tement, Licardo, & Habe, 2015). These three constructs will be explained further as to how they relate to burnout.

Mindfulness. Although mindfulness has been a familiar concept for several decades, it has only received empirical attention over the last three or four decades. Furthermore, there have been scales examining mindfulness only in the past ten to fifteen years. Mindfulness can be

defined as the awareness that occurs by paying attention on purpose, presently, and nonjudgmentally to experience each moment (Kabat-Zinn, 2003). Kabat-Zinn (1990) has stated that mindfulness training can contribute to several different outcomes of well-being.

Although there are several different scales for mindfulness, one of the most cited is the Mindful Attention Awareness Scale (MAAS) created by Brown and Ryan (2003; Qu, Dasborough, & Todorova, 2015). The MAAS examines consciousness as a construct and states that it encompasses both awareness and attention (Brown & Ryan, 2003). Awareness is defined as the background of consciousness that monitors the environment, both internally and externally. Attention is defined as a process of focusing on awareness consciously. Both of these concepts are stated in their operational definition that states that mindfulness is a "state of being attentive to and aware of what is taking place in the present", which also overlaps with the operational definition created by Kabat-Zinn (2003; Brown & Ryan, 2003, p. 822). The MAAS is a 15-item, six-point Likert-type scale (1 = almost always, 6 = almost never) that has strong reliability ($\alpha = .82$) and support of convergent, discriminant, and incremental validity (Brown & Ryan, 2003). As stated above, previous research has supported this scale in relation with burnout (Gustafsson, Davis, Skoog, Kenttä, & Haberl, 2015; Moen, Abrahamsen, & Furrer, 2015a; Moen, Federici, & Abrahamsen, 2015b; Moen & Wells, 2016; Zhang, Si, Chung, & Gucciardi, 2016). Further, research has also supported the impact of mindfulness on burnout.

Relationship to burnout. Recently, there have been multiple studies that have supported the positive effects of mindfulness on burnout (Furrer, Moen, & Firing, 2015; Gustafsson et al., 2015; Moen et al., 2015a; Moen et al., 2015b; Moen & Wells, 2016; Walker, 2013; Zhang et al., 2016). These studies were both descriptive and experimental, and most supported that mindfulness was negatively related with all dimensions of burnout. For example, Gustafsson and

colleagues (2015) sampled 233 elite junior athletes and found that mindfulness was significantly and negatively related to all three dimensions of burnout: emotional/physical exhaustion, reduced sense of sport accomplishment, and sport devaluation. Also, Furrer and colleagues (2015) qualitatively examined junior elite athletes by administering a 12-week mindfulness program consisting of sitting meditations with a focus on the breath and body scans. They found that mindfulness has the potential to prevent athlete burnout. Further, Walker (2013) stated that mindfulness was associated with lower levels of burnout in adolescent tennis players. This research has supported the positive effects of mindfulness on burnout, but there are also psychological constructs that can negatively impact burnout, such as perfectionism and rumination.

Perfectionism. Flett and Hewitt (2005) described perfectionism as an individual's desire to perform flawlessly. Previous research has explained perfectionism as a multidimensional psychological trait that contains adaptive and maladaptive components (Dunn, Causgrove Dunn, & Syrotuik, 2002; Flett & Hewitt, 2005). Recently, the adaptive and maladaptive components have been termed as perfectionistic strivings and perfectionistic concerns, respectively (Gotwals, Stoeber, Dunn, & Stoll, 2012; Stoeber, 2012). Stoeber (2012) defined perfectionistic strivings as striving for perfection and setting extremely high performance standards, and defines perfectionistic concerns as fearing negative evaluation from others, having concerns over mistakes, and feeling inconsistency between performance and expectations. Different scales have been created to measure perfectionism, but the most prominent sport-specific measure is the Sport-Multidimensional Perfectionism Scale-2 (S-MPS-2; Gotwals & Dunn, 2009).

Gotwals and Dunn (2009) revised the four subscale Sport-MPS by adding two subscales. This new six subscale questionnaire contains: personal standards (PS; seven items), concern over

mistakes (COM; eight items), perceived parental pressure (PPP; nine items), perceived coach pressure (PCP; six items), doubts about actions (DAA; six items), and organization (Org; six items). These are similar dimensions of the Frost Multidimensional Perfectionism Scale (Frost-MPS), but sport-specific because former research has supported that perfectionism is domain-specific (Dunn, Gotwals, & Causgrove Dunn, 2005; Frost, Marten, Lahart, & Rosenblate, 1990). The Sport-MPS-2 is a 42-item, 5-point, Likert-type scale (1 = strongly disagree, 5 = strongly agree) that has acceptable reliability for PS, COM, PPP, PCP, DAA, and Org (α = .74, .79, .89, .75, .75, .87, respectively) and validity (e.g., internal, convergent, discriminant; Dunn et al., 2016; Gotwals & Dunn, 2009; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010). Recently, this has been the most popular scale to use based on the results and the multidimensionality of the scale. Using this scale, these aspects of perfectionism are important in understanding the impact they have on burnout.

Relationship to burnout and mindfulness. Since perfectionistic concerns are considered maladaptive, it is seen as important to understand it in relation to burnout. Extensive research has supported that perfectionistic concerns are positively related with athlete burnout while perfectionistic strivings are inversely related (Appleton et al., 2009; Hill, Hall, & Appleton, 2010; Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010). For example, Jowett and colleagues (2016) found that perfectionistic concerns promoted burnout while detracting from engagement when sampling 222 junior athletes. Appleton and colleagues (2009) also found that adaptive perfectionism was inversely associated with all three burnout dimensions while maladaptive perfectionism was positively associated with them. These results are important for further exploring the perfectionism and burnout relationship along with mindfulness.

Though there is little research on mindfulness and perfectionism, there are relevant findings between the two constructs. Wimberley, Mintz, and Suh (2016) stated that a mindfulness-based intervention helped decrease maladaptive perfectionism. Furthermore, Short and Mazmanian (2013) found that mindfulness was a protective factor with perfectionism and that participants high in mindfulness had lower levels of maladaptive perfectionism. These results explain the link between mindfulness, perfectionism, and burnout.

The multidimensional perspective of perfectionism has supported the relationship between perfectionistic concerns and burnout, and an inverse relation with perfectionistic concerns and mindfulness. Furthermore, there has been little research regarding the relation between rumination, perfectionism, and burnout. The relationship between these constructs could potentially be important for future research to examine more constructs that can influence the onset of burnout.

Rumination. Rumination, according to the response styles theory, is a repetitive and negative response to stressful events and the event's symptoms (Nolen-Hoeksema, 1991). For example, an athlete throws a bad pitch, hits a runner, and constantly thinks about his or her problems and continues to throw bad pitches rather than moving forward with the game. Rumination is considered a multidimensional construct with the three dimensions; reflection, brooding, and depressive rumination. The reflection, or pondering, dimension is considered a possible adaptive form of rumination that involves a problem-solving and self-reflective orientation. The brooding dimension is considered maladaptive because it encompasses negative thoughts of self-reflection and focuses on obstacles to overcoming problems. The depressive rumination dimension is very similar to depression measured by the Beck Depression Inventory (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961; Egan, Hattaway, & Kane, 2014). Nolen-

Hoeksema (1991) has also stated that rumination exacerbates distress by increasing a depressed mood state, interfering with problem solving, and instrumental behavior. Rumination has consistently been measured by using the Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991). The RRS is a multidimensional scale that uses brooding, reflection, and depressive rumination as the three subscales (Nolen-Hoeksema & Morrow, 1991). This 22-item, four-point, Likert-type (1=almost never, 4=almost always) scale has shown strong internal consistency and test-retest reliability (α = .89, r = .67; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The RRS has been supported and used by multiple studies (e.g., Bennett, Rotheram, Hays, Olusoga, Maynard, & Lindsay, 2016; de Bruin, Topper, Muskens, Bögels, & Kamphuis, 2012; Egan et al., 2014; Im & Follette, 2016; Selby, Fehling, Panza, & Kranzler, 2016). This scale has helped show these ruminative effects to see the relation with mindfulness and perfectionism.

Relationship to mindfulness, perfectionism, and burnout. The idea of constant negative thoughts about the past is actually in opposition to the idea of mindfulness, which is paying attention to the present, on purpose (Kabat-Zinn, 1994). Im and Follette (2016) found that mindfulness was negatively correlated with rumination in a sample of 164 college students, which further means that participants higher in levels of mindfulness are less likely to begin ruminative thinking. Also, Selby and colleagues(2016) found that low mindfulness and rumination are positively related. Lastly, de Bruin and colleagues (2012) found that mindfulness was negatively related to rumination in both meditators and non-meditators. Though there is not much, if any, research on mindfulness and rumination with athletes, it is important to notice the relationship between the two constructs in different populations since these are two conflicting thought processes.

Though there is not much research on mindfulness and rumination, there is a body of evidence on the significant, positive relationship and interaction between rumination and perfectionism (Bennett, Rotheram, Hays, Olusoga, Maynard, & Lindsay, 2016; Egan et al., 2014; Flett & Hewitt, 2008; Flett, Madorsky, Hewitt, & Heisel, 2002). Furthermore, Short and Mazmanian (2013) found a link between perfectionism, rumination, and mindfulness. They stated that maladaptive perfectionism was positively related with maladaptive rumination, and found mindfulness as a protective factor. Specifically, individuals higher in mindfulness had significantly lower levels of maladaptive perfectionism and rumination. This research provides support for the idea of relationships between rumination, mindfulness, and perfectionism. Lastly, there is not much research on rumination and burnout, however, Košir and colleagues (2015) found that rumination, but not reflection, was a significant predictor of burnout in a sample of 439 elementary school teachers. Though there is little research, and possibly none with athletes, it is important to see the interaction between rumination and burnout to further understand possible factors that affect burnout.

There are several theoretical frameworks regarding burnout, with the most empirical support examining it as a multidimensional perspective. Though there are several ways to measure it, the most popular currently is the ABQ. Furthermore, previous research has also supported the relationship between burnout and mindfulness, perfectionism, and rumination. However, there is more research explaining the relationship between burnout, mindfulness, and perfectionism than rumination. This research becomes more sparse when specifically looking at athletes. The relationship between rumination and burnout could affect an athlete's career depending on how ruminative the athlete is. Furthermore, maladaptive perfectionism could exacerbate the onset of burnout even more. It is possible that mindfulness can be used to delay

the onset of burnout, or even diminish burnout altogether by helping unhealthy perfectionists and ruminators.

Investigating the interaction between these constructs can help athletes, coaches, and sport psychology consultants by incorporating mindfulness-based interventions (MBIs; e.g., Mindful Sport Performance Enhancement, Acceptance Commitment Therapy) to improve mindfulness. Utilizing MBIs with athletes could lessen the likelihood of burning out, and reduce ruminative and perfectionistic qualities. It is expected that if an athlete is more mindful, he or she will use less maladaptive perfectionism and rumination responses, and he or she will less likely burnout.