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Athletic trainers are often a significant source of support for athletes coping with psychosocial issues, both in terms of directly assisting the athlete through psychosocial interventions (e.g., goal setting, motivations) and offering access to other resources (i.e., mental health counseling referrals), as well as providing various types of social support (Barefield & McCallister, 1997; Robbins & Rosenfeld, 2001; Tracey, 2008). Moreover, athletic training education includes a specific content area, Psychosocial Strategies and Referral, to prepare students to meet the athletes' needs. Athletic trainers (ATs) have expressed an interest in, and increasing acceptance of, the use of psychological skills with athletes who are injured (Clement, Granquist & Arvenin-Barrow, 2013; Cramer Roh & Perna, 2000; Hamson-Utley, Martin & Walters, 2008; Larson, Starky & Zaichowsky, 1996). However, ATs often feel underprepared to assist athletes through the use of psychological skills (Stiller-Ostrowski & Ostrowski, 2009; Moulton, Molstad, & Turner, 1997; Misasi, Davis, Morin, & Stockman, 1996).

This study aims to further understand the gap between required athletic training education and feelings of lack of preparedness on behalf of athletic training students. To that end, athletic training Program Directors, Preceptors, and Students were surveyed regarding five specific psychosocial competencies. It was found that while there was no difference in how Program Directors value

the selected competencies, there was differentiation among both Preceptors and Students. Students value, feel prepared to use, and are more likely to use competencies PS6, PS7 and PS8, but not PS9 or PS10. Preceptors also valued PS9 and PS10 the least. For Preceptors, modeling the behavior was the strongest predictor of competency value. Multiple regressions were run to determine predictors of student values, preparedness, and likelihood of use. Results were inconsistent across competencies, however where the competency is taught and the value of the Program Director for that competency emerged the most often as significant predictors. Lastly, a regression was run to predict students' likelihood of using a competency from value and preparedness. Across all competencies, value and preparedness were significantly predictive of likelihood of use, and in only one competency was value the only predictor. Results indicate that more research is necessary to understand student values of competencies as well as the influence of clinical instructors on educational experiences. Implications of the results and directions for further research are discussed.

THE PSYCHOSOCIAL CONTENT AREA IN ATHLETIC TRAINING EDUCATION:
PERCEPTIONS OF ATHLETIC TRAINING EDUCATORS AND OUTCOMES IN
ATHLETIC TRAINING STUDENTS

by

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To my parents, your support throughout this long and arduous process has never wavered. To The Tim, for never asking too many questions. To Donna Duffy, for your constant encouragement. To my people: Devin, Jenny, Michele, Amanda, Monty, Matt, Steve, & Aaron: I am so lucky to know you. To Steven Seeberg, my VP of Hype. To Megan Granquist for your kindness and understanding. To Jennifer, Peter, Chelsi, & James for teaching me about Hula Hoops.

APPROVAL PAGE

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CHAPTER I

INTRODUCTION

There are approximately 460,000 athletes participating in 23 sports in the National Collegiate Athletic Association, and 60,000 athletes in the National Association of Intercollegiate Athletes (NCAA.org, 2016; NAIA.org, 2016). The National Federation of State High School Associations estimate about 7.8 million students participate in high school sports (NFSHSA, 2014). Agel and Schisel (2013) found that there was an average of 6.2 injuries per 1000 athlete exposures in collegiate athletics in the preseason and 2.3 injuries per 1000 athlete exposures in-season. This reflects a total of 97,148 injuries per 25.6 million exposures. High school athletes experienced 4,049 injuries for 1.8 million exposures, for an injury rate of 2.16 (Comstock, Collins, & Currie, 2013). These numbers do not include club teams, which are not surveyed to the same extent as affiliated school teams, so it is likely that these injury rates are lower than in actuality.

Given the risk of injury in sport and the number of participants at multiple levels, there is increased focus on injury recovery and return to play strategies. This physical rehabilitation from orthopedic injury is critical; increased emphasis

on the psychological recovery has also emerged at both the practitioner and researcher levels. Research exploring the psychological process of athletes recovering from injury has been guided by the Integrated Response Model (Wiese-Bjornstal et al, 1998). The central element of this model is referred to as the dynamic core and explains that there is a fundamental component of three interrelated factors: cognitive appraisal, emotional response, and behavioral response. Cognitive appraisal includes the athlete's self-perceptions, beliefs and attributions, and perceived recovery. This appraisal is influenced by personal factors of the athlete (e.g., personality, motivations, gender, ethnicity, general health status, injury history) and situational factors (e.g., sport, scholarship status, team/coach influences, rehabilitation environment). The athlete's appraisal of a situation will determine her emotional response (e.g., fear, frustration, depression) which will then result in a particular behavior (e.g., effort, risk-taking, and malingering). For example, if an athlete believes her rehabilitation is helpful, and she thinks she has the ability to succeed at it (cognitions), she will feel less frustration or anxiety (emotions), and be more likely to engage in her rehabilitation exercises (behavior). This model suggests that these three components can be facilitative or debilitating towards recovery and therefore positively or negatively predict injury outcomes.

With regards to helping athletes to recover from sport injuries, psychological interventions can influence any of the three components of the dynamic core. In Brewer's (2010) review of the literature surrounding mental

skills and rehabilitation outcomes, studies have shown correlational relationships between improving psychological factors and positive rehabilitation outcomes such as decreased recovery time, improved symptom reporting such as decreased pain, increased physical/daily/sport functioning, and patient satisfaction. Cognitive interventions have included increasing confidence (Magyar & Duda, 2000; Quinn & Fallon, 2000), improved attributions to injury causation (Brewer, Cornelius et al, 2000a; Laubach, Brewer, Van Raalte, & Petipas, 1996), and increasing internal locus of control (Nyland, Cottrell, Harreld, & Caborn, 2006; Nyland, Johnson, Carbon, & Brindle, 2002). Emotional interventions include facilitating emotional coping skills (Quinn & Fallon, 2000; Rosenberger, Ickovics, Epel, D'Entremont, & Jokl, 2004), decreasing anger and tension or increasing positive attitudes (Alzate Sáez de Heredia, Ramirez, & Lazaro, 2004; Brewer, Van Raalte, et al, 2000b; Johnson, 1997), and decreasing fear of re-injury (Kvist, Ek, Sporrstedt, & Good, 2005; Tripp, Stanish, Ebel-Lam, Brewer, & Birchard, 2007). Behavioral interventions include home exercise adherence (Pizzari, Taylor, McBurney, & Feller, 2005), increased use of imagery (Ivleva & Orlick, 1991; Law, Driediger, Hall, & Forwell, 2006), improved intensity of effort during rehabilitation (Quinn & Fallon, 2000), increased attendance at physiotherapy appointments (Brewer et al, 2004; Brewer, Van Raalte et al, 2000b; Derscheid & Feiring, 1987; Feller, Webster, Taylor, Payne, & Pizzari, 2004; Treacy, Barron, Brunet, & Barrack, 1997), and improved modality adherence (Brewer, Van Raalte, et al, 2000b). Other studies using an

experimental, rather than correlational, design have shown causal relationships between psychological interventions (e.g., goal setting, relaxation, imagery, stress management) and rehabilitation outcomes including a reduction in pain (Cupal & Brewer, 2001; Perna, Antoni, Baum, Gordon & Schneiderman, 2003; Ross & Berger, 1996), decreased anxiety and re-injury fears (Cupal & Brewer, 2001; Johnson, 2000; Ross & Berger, 1996), increased self-efficacy (Maddison, Prappavesis, & Clatworthy, 2006), and performance satisfaction (Theodorakis, Beneca, Malliou, & Goudas, 1997). These studies have also shown improvements in clinical injury recovery measures such as improved range of motion, muscular strength and endurance, functional stability and balance, increased muscle activity (as measured by electromyographic output), and decreased edema (Christakou, Zervas, & Lavallo, 2007; Christakou & Zervas, 2007; Cupal & Brewer, 2001; Draper, 1990; Levitt, Deisinger, Wall, Ford, & Cassisi, 1995; Newsom, Knight, & Balnave, 2003; Theodorakis, Beneca, Malliou, & Goudas, 1996; Theodorakis, Malliou, Papaioannou, Beneca, & Filactakidou, 1997). This small but growing body of work gives empirical support to the inclusion of psychological skills as a regular course of treatment in conjunction with therapeutic exercise and modality use.

Athletic trainers are often a significant source of support for athletes coping with psychosocial issues, both in terms of directly assisting the athlete through psychosocial interventions (e.g., goal setting, motivations) and providing other resources (i.e., mental health counseling referrals), as well as various types

of social support (Barefield & McCallister, 1997; Robbins & Rosenfeld, 2001; Tracey, 2008). The relationship between an athletic trainer and an athlete is such that there is a high level of rapport and care (Bone & Fry, 2006; Izzo, 1994), and the athlete is likely to accept a psychological intervention from his/her athletic trainer (Moulton, Molstad & Turner, 1997; Washington-Lofgren, et al, 2004). Additionally, the frequency with which the athletic trainer interacts with the athlete lends itself to consistent implementation of a psychological intervention intended to improve an athlete's recovery from an injury. Athletic trainers (ATs) have expressed an interest in, and increasing acceptance of, the use of psychological skills with athletes who are injured (Clement, Granquist & Arvenin-Barrow, 2013; Cramer Roh & Perna, 2000; Hamson-Utley, Martin & Walters, 2008; Larson, Starky & Zaichowsky, 1996). However, ATs often feel underprepared to assist athletes through the use of psychological skills (Misasi, Davis, Morin, & Stockman, 1996; Moulton, Molstad, & Turner, 1997; Stiller-Ostrowski & Ostrowski, 2009).

The majority of the research on ATs and psychosocial interventions has focused on the AT using psychological skills in his/her role as a clinician. That is, the ATs' perceptions toward an application of psychological skills have been researched from the perspective of ATs post-certification. From this research we know that ATs feel unprepared to assist their athletes and are only exposed to a small number of interventions during their classroom and clinical training (Stiller-Ostrowski & Ostrowski, 2009). This is surprising since psychosocial

competencies have been included in athletic training education since they were first published in 1986. Given that these competencies have been included in the didactic education for almost 30 years, it is disconcerting that newly certified clinicians continue to report deficits in their ability to include psychosocial interventions in their practice. It has been suggested that “learning goals of an accredited [athletic training] program (regarding the implementation of psychological skills within rehabilitation) seem to be disconnected from the outcome” (Hamson-Utley, Martin & Walters, 2008; Stiller-Ostrowski & Ostrowski, 2009). Thus, an important direction for research should focus on understanding the values of the athletic training educators regarding psychosocial interventions and the academic exposure to the interventions in order to better understand the ATs’ educational experiences with psychological skills prior to being a certified AT. Thus, we can begin to understand ATs’ value of these psychological skills, their confidence in using psychological skills when working with an injured athlete, and their likelihood of using the psychological skills.

Hence, the purpose of this study is to add to our understanding of possible influences on athletic training students’ value of, preparedness for using, and likeliness of using psychological skills. This understanding will be gained by evaluating the values of the educators (i.e., program directors and preceptors), the setting of the instruction, the extent of exposure to psychological skills via multiple instructional methods, and the depth of evaluation and assessment of psychological skills as predictors of ATs’ value of, preparedness for using, and

likelihood of using psychological skills. This information will help guide us in future directions of inquiry in athletic training education.

CHAPTER II

REVIEW OF LITERATURE

There is a substantial amount of empirical work on the psychological aspect of sport injury. The aim of this review is to present the predominant theoretical models explaining both psychological predictors (i.e., antecedents) of sport injury and post-injury psychological responses. Supporting evidence for the components of these theories will be presented. An undeveloped area of research is the use of this information by ATs in their clinical practice with injured athletes. This paper will discuss the use and perceptions of psychological skills by ATs, as well as the required educational psychosocial competencies in athletic training education.

Psychological Antecedents to Injury

The theoretical model describing the relationship between stress and sport injury and receiving the most empirical support is the Williams and Andersen Stress Injury Model (1998) (see Figure 1). This model is based on the significant amount of research done on the relationship between stress and injury, and is considered the most influential stress-injury model in the prediction of injury

(Johnson, 2007). However, there is some criticism that the model is purely psychological in nature and does not account for the social or cultural influence of sport (Wiese-Bjornstal, 2009). According to the model, the stress-injury connection ultimately begins with a potentially stressful athletic event, which leads to the athlete's stress response to the event (the center of the model). This response is illustrated (see Figure 1) with the bi-directional relationship between cognitive appraisals (primary and secondary) and physiological and attentional changes (muscle tension, increased distractibility, decreased peripheral vision). When an athlete encounters a stressful event (e.g., game day), she will appraise the situation to determine what is at stake (primary appraisal) and whether or not she has the resources to manage the demands (secondary appraisal). This will in turn influence her physiological response. If she perceives the situation to be stressful, she will have difficulty concentrating and staying focused, her muscles will tighten, and her peripheral vision will narrow. It is these physiological changes that are believed to be the mechanism behind the increased injury risk (Williams & Andersen, 1999). To put it simply, when a situation is appraised by the athlete as stressful and s/he does not have sufficient facilitative coping resources, there are resulting physiological and attentional changes; these changes place the athlete at greater risk of sport injury.

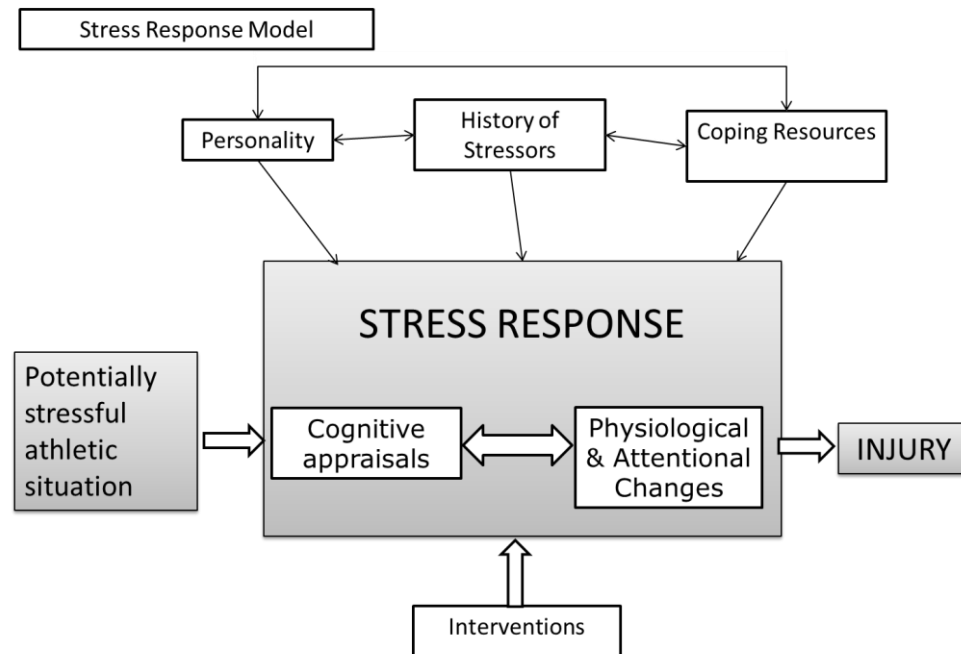


Figure 1. Stress and Injury Model

From: Williams, J. M. & Andersen, M. B. (1998). Psychosocial antecedents of sport injury: Review and critique of the stress and injury model. *Journal of Applied Sport Psychology*, 10(1), p. 5-25.

There are three factors that have the capacity to moderate this stress injury relationship: history of stressors, coping resources, and personality traits. Extensive research has been done on various components of each factor. These factors can also influence each other, as indicated by the bi-directional arrows in the model.

History of Stressors

The most widely researched factor that is predicted to moderate the stress injury relationship is history of stressors. According to the Stress Injury Model, history of stressors includes life event stress, daily hassles, and history of injury. Life event stress includes perceived negative stress, positive stress, and total

stress. Daily hassles are everyday irritations, such as getting stuck in traffic, losing your keys, or spilling something on yourself. Injury history typically includes injuries that have occurred within the past year.

The aspect of history of stressors that has been primarily looked at is life event stress (LES). The interest in this relationship to sport injury began in the 1970s and 80s. Holmes (1970), Bramwell and Masuda (1975), Cryan and Alles (1983), and Lysens et al (1984) conducted the first studies showing that life stress had a significant relationship to sport injury (i.e., the greater the stress the greater the risk for injury). Other authors have consistently found similar results (Blackwell & McCullagh, 1990; Dunn, Smith, & Smoll, 2001; Gunnoe et al, 2001, Hardy & Riehl, 1988).

Rogers and Landers (2005) looked at the relationship between LES and peripheral vision. This study builds on Williams, Tonymon, and Andersen (1991), which found a significant positive correlation between negative life events and peripheral narrowing in active college students. Rogers and Landers' results showed a significant positive relationship between LES and injury, and indicated that for a one-unit increase in total or negative LES, "there is more than 50% chance that a participant would be in the injury group (p. 279)." They also found that peripheral vision change was a separate and unique contributor to injury risk. This supports the Williams and Andersen model, which proposes attentional changes/peripheral vision narrowing as the mechanism by which athletes under stress are at an increased risk for injury.

Petrie (1993b) investigated another type of potential stress. He hypothesized that starting status might also be a source of life stress influencing injury risk. Non-starters had no significant relationship between life stress, social support, or injury status, however, starters (defined as those who played at least 50% of the time) showed a significant positive relationship between negative life stress and number of severe injuries (i.e., missing >21 days) as well as a significant life stress x social support interaction. Though Petrie operationally defined starting status, he did not account for exposure rates, so while being a “starter” might be a unique source of stress, the influence of this factor is still questionable. Most current studies do not distinguish “starters” from “non-starters” so this avenue has not been explored in any depth.

Most current studies on LES and injury have shifted from retrospective to prospective designs. This is an improvement in that we can have a much more clear understanding of the predictive value of stress. However, there is a limitation in that many studies today use the Life Event Survey for College Athletes (LESCA) (most research participants are collegiate athletes, neglecting other athletic populations, another limitation) which assesses potentially stressful events over the past year for positive, negative, and total life stress (Petrie, 1992). It has been suggested by Sibold and Zizzi (2012) that a retrospective assessment of stressors over the last year (such as in the LESCA) may not be sufficient for prospective research designs and recommends other LES instruments be investigated. They suggest using “a daily hassles scale or more

real-time measures of stress (p. 539).” For example, the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) asks respondents about the upsetting nature (in the form of intrusion and avoidance subscales) of a stressful event over the past 7 days. It is possible, once validated for an athletic population, this scale would discriminate more meaningful and/or disruptive events and their relationship to injury and injury prediction.

Because the history of stressors component of the Stress Response Model includes both life event stress and daily hassles, the singular use of the LESCA (or similar long-term retrospective scale) without assessing daily, low-grade stressors is inadequate. Furthermore, instruments are rarely administered at multiple time points; many researchers (out of convenience) administer surveys at preseason team meetings then track injuries across the season. This means that if an athlete were to have a significant life event during the season that did not show up on the pre-season screening, this data is lost and may confound results. There are also no injury-related studies that administered any scales specifically on game days. It is possible that games present a more stressful environment to an athlete than practice, and given that the Stress-Response Model is situation dependent, it is unusual that research has not addressed situational stress. Kleinert (2007) is a rare exception in that he followed Williams and Andersen’s (1998) suggestion that their model be applied to same day situations. Kleinert administered his questionnaire measurements to a large group of athletes who were attending a demanding audition for entrance

into a sport academy in Germany. They took the surveys in the morning, and injuries were reported for that day- the longest time between survey and injury was seven hours. Results showed an increased risk of injury with increased physical energy, sociableness, and sleepiness.

Other stressors that have been investigated are daily hassles and injury history. Daily hassles have been looked at in several studies. Blackwell and McCullagh (1990) assessed a group of collegiate football players on the antecedents to sport injury. The authors used a number of measurement tools to address the various components of the Williams and Andersen model but this study is notable in that it is the first to include testing of daily hassles in the history of stressors component, even though methodology was problematic. They administered the Daily Hassles Scale (Kanner, Coyne, Schaffer & Lazarus, 1981) only once at the end of the season as part of their prediction efforts and results were non-significant. Because the frequency of daily hassles has been found to be significantly correlated to somatic health (DeLongis Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner, Coyne, Schaffer & Lazarus, 1981), a one-time measurement of daily hassles would be insufficient to discern any impact on injury status. As DeLongis et al. (1982) states, "Thus, the key assumption that must be made is that stress and stress-related processes measured by the Hassles Scale are representative for any given subject over a considerable time period, otherwise they would not affect health outcomes. (p.133)"

Hanson, McCullagh, and Tonymon (1992), in a study of collegiate track and field athletes, included a survey of minor life events using the Everyday Problems Scale (Burks & Martin, 1985) modified for an athletic population. Again, this scale was only administered once during a preseason meeting, and researchers found no significant relationship between daily hassles and injury frequency or severity. The authors point out that the one-time assessment of daily hassles was a limitation in their study design. Fawkner, McMurray, and Summers (1999) used a better study design because they asked athletes to complete the Daily Hassles Scale at the end of each week. They found that athletes who sustained an injury showed a significant increase in the intensity of daily hassles the week before the injury occurred (as compared to week one). Ivarsson and Johnson (2010) also used the Daily Hassles Scale in a small group of 18 Swedish soccer players (administered weekly). Results indicated that athletes who were injured had experienced an increase in daily hassles prior to injury as compared to the non-injured group, though this result was not significant. Ivarsson, Johnson, Lindwell, Gustafsson and Altemyr (2013) administered the Hassles and Uplifts Scale (administered weekly over 10 weeks) to a group of 101 adolescent elite soccer players. They found that not only was injury occurrence significantly correlated with higher hassle levels, but also with less change in hassle levels (in that they did not decrease over time), and to a greater decrease in uplifts levels.

It should also be noted that of the three scales used to assess minor life stresses, none of them have been validated specifically for an athletic population. There is one hassles scale designed for athletes, the Athlete Daily Hassle Scale (Albinson & Pearce, 1998), however it is unpublished.

Injury history as a risk factor has had mixed results. Hanson, McCullagh and Tonyman (1992) found no significant relationship between injury history and current injury risk. On the other hand, Maddison and Prappavessis (2005) and Devantier (2011) both found a significant positive relationship. Maddison and Prappavessis found that previous history was correlated to both time loss and number of injuries. They also found that an increase in previous injuries “acts with [low] social support and [high avoidance-] coping in a conjunctive pattern to produce a maximum moderator effect” (p. 301) for time loss due to injury. Devantier suggests that because his population of professional soccer players (as opposed to college athletes in the Hanson et al. study) might feel more pressure to compete, they may be returning to play too soon and are insufficiently healed. Devantier also found that those athletes with a history of injury showed significantly higher levels of competitive trait somatic anxiety than athletes without a history of injury. Anxiety has also been shown to be predictive of injury (Kleinert, 2007); this could indicate a vicious cycle of anxiety and injury. The mixed results could also be due to research design. Most studies addressing injury history simply assess whether injury has or has not occurred in the past

year. In the Stress-Injury Model, Williams and Andersen (1998) make it clear they were referring to returning to sport too quickly:

Previous injuries, the third component under history of stressors, was included in the stress-injury model for a number of reasons. If the athlete has not recovered enough to return to the sport, but does anyway, the probability of re-injury is high. Also, if the athlete is physically, but not psychologically prepared to return to sport participation, problems may arise due to anxiety and negative cognitive appraisals.... In the future, any examination of prior injury as a risk factor should consider whether the athlete had fully recovered physically. If the athlete has not, then risk for re-injury probably constitutes more a physical vulnerability to injury factor than a psychological risk factor (p.11).

Studies have not addressed whether or not the participants perceived themselves to be fully recovered, either physically or psychologically. It is possible that differentiating between injuries that are perceived to be healed compared to injuries that are not perceived to be healed may clarify this component as a risk factor for future injuries. It is also unclear if there are discrepancies between ATs' and an athletes' perception of readiness to return.

Sibold and Zizzi (2012) conducted a study looking at stressors and when injury occurred and found that injury history was significantly correlated to injury onset; in other words for athletes who became injured, those with a history of injuries were injured earlier in the season than those without a history of injuries. This study indicates that history of injuries influences not just number of injuries or time loss due to injuries but also that these athletes may become injured sooner than other athletes.

Personality

The last component of the Stress Injury Model is personality, and this has taken several forms. The personality traits of optimism and hardiness were investigated by Wadey, Evans, Hanton and Neil (2012a) and Rozen and Horne (2007). The Wadey et al. study on the impact of hardiness on injury is one of the few that was prospective in design. This study occurred over the course of two years; the athletes were administered life stress and hardiness surveys pre-injury. As participants became injured, they then completed surveys on coping and psychological responses at several time-points throughout recovery. This allowed the researchers to look at the role of hardiness in injury risk and then, post injury, the role of hardiness on coping and psychological responses, so they were able to capture both pre-injury risk factors and post-injury responses from the perspective of the same variable. Results showed hardiness had a negative correlation to injury risk (as hardiness increased, injury risk decreased). The authors suggest that individuals who are harder may appraise a situation as less stressful, experiencing fewer associated physiological responses as compared to a less hardy athlete. Post injury, hardiness was found to be positively correlated to the coping subscale of reorganization and negatively correlated to the subscales of devastation and dispirited at all three time points (injury onset, rehabilitation, return to sport). Hardiness was also positively correlated to emotion-focused coping at injury onset and negatively correlated to avoidance coping at the rehabilitation time point.

They also conducted a follow-up study (Wadey, Evans, Hanton, & Neil, 2012b) of 10 of those same injured athletes and conducted semi-structured interviews with them. This allowed them to gain a richer understanding of hardiness as it related to the injury experience. They found that athletes who were low in hardiness tended to participate in denial and mental disengagement strategies to avoid stressful situations which led to difficulty adjusting/adapting to significant life events, thus exacerbating the stress response. By contrast, athletes high in hardiness reported reappraising negative life events by reframing the event as part of a broader picture, remembering long-term goals, and actively identifying possible positive aspects of the situation. These results expanded upon the outcomes of the previous study by providing meaningfulness and context as to how athletes of varying levels of hardiness experience injury recovery and how they may or may not facilitate their recovery. The responses give a fuller understanding of how hardiness plays out in the actual lived experiences of the participants. By using a combination of qualitative and quantitative methods over two years, these methods allowed for the emergence of valuable data by including the extended temporal component not often found in other studies. Looking at one factor pre- and post- injury in the same subjects gives us a more complete appreciation of this factor; this research design should be considered by future research groups.

Perfectionism was investigated by Krasnow, Mainwaring and Kerr (1999) and found to have a positive relationship to injury. Type A personality was found

to be related to stress fractures in distance runners (Ekenman, 2001) and increased injury risk (Fields, Delaney, & Hinkle, 1990). Plante and Boothe (1997) found that increased scores on the Narcissism Personality Inventory were positively correlated to increased injuries in baseball players.

Self-esteem has been looked at in several studies. Kolt and Roberts (1998), and Ford, Eklund, and Gordon (2000) found that increased self-esteem was negatively correlated with injury occurrence. Pargman and Lunt (1989) addressed self-concept as it related to injury. Self-concept is “self-worth or personal value placed upon the self by the individual” (p. 204). The authors found a significant negative correlation between self-concept and athletic injuries; in other words, lower self-concept was associated with injuries of increased severity (i.e., more days missed). Kleinert (2007) found that increased sociability and negative perceptions of physical health were positively associated with injury. Kontos (2004) found that for adolescents who perceived their soccer playing ability to be below average, they had a 4x greater risk of experiencing an injury.

Competitive trait anxiety (CTA) has also been looked at in three studies. Lavalee and Flint (1996) found that CTA was positively correlated with injury severity, and Petrie (1993a) found that it was correlated to time loss from injury. Sibold and Zizzi (2012) found that the component of disruption concentration, a subscale of the Sport Anxiety Scale (the other two subscales are worry and somatic anxiety), was positively correlated to injury occurrence.

Lastly mood state has been looked at as a component of personality. It is important to note that many studies use the terms “mood” and “emotion” interchangeably, when they are in fact different constructs (Walker, Thatcher, & Lavallee, 2007). Mood is persistent over time and emotions are highly changeable given the context. Rozen and Horne (2007) found that moderate vigor, as measured by the Profile of Mood States, is associated with injury (but not high or low levels of vigor). The POMS was administered during pre-season and again at 3-5 days post-injury, so it is difficult to determine if the researchers were actually measuring mood or emotion. This study again indicates the need for multiple measurement time points. In another study focused on personality constructs, Kleinert (2007) found that sociability, sleepiness, and perceived increased energy as measured by the EZ Scale, the short form of the *Eigenzustands-skala* (Nitsch, 1976), were positively correlated to injury.

Coping Resources

Less research has been done on coping skills and social support than the other two factors (history of stressors and personality). Social support has been found to have an inverse relationship with sport injury (Smith, Smoll & Ptacek, 1990). Although Petrie (1993b) found a non-significant result looking at injury occurrence, this study did find a significant correlation with time loss and games missed (again, an inverse relationship). Studies of coping skills have seen similar results (Blackwell & McCullagh, 1990; Hanson, McCullagh & Tonyman, 1992). Smith, Smoll, and Ptacek (1990) and Williams, Tonyman, and Wadsworth (1986)

found that as coping resources increased, injury risk decreased. Future research should elucidate the direct and indirect impact social support and coping skills have on injury.

Maddison and Prappavessis (2005) and Ford, Eklund, and Gordon (2002) have also found that social support can moderate the LES-injury risk relationship -- even when LES is high, athletes who have associated high levels of social support experience a protective quality against injury risk. Rogers and Landers (2005) also found a similar protective phenomenon with coping skills such that increased coping skills was negatively correlated to injury risk.

Other Variables

There have also been several studies looking at psychological factors as antecedents to injury that are not included in the Stress-Injury Model. These factors were either investigated before the model was published (i.e., Bergandi & Witting, 1988, who based their study on Nideffer's attentional style), were based on other models (Bouter, Knipschild, Feij, & Volovics, 1988, based on Wilde's theory of risk homeostasis and arousal) or were atheoretical (Dalhauser & Thomas, 1979; Kontos, 2004; Osborn, Blanton and Schwebel, 2009; Pargman & Lunt, 1989).

Bergandi and Witting (1988) looked at the relationship between attentional style and injury. This was an early study done in the field of injury prediction, and was based on the research done on "accident-proneness." Through multiple regression, they found that three predictor variables (attentional effectiveness,

overload to stimuli, and anxiety) as measured by the Test of Attentional and Interpersonal Style (Nideffer, 1976) accounted for 49% of the injury score variance, though this was found for only one (softball) of 17 sports assessed. Though softball was the only sport to show statistical significance, there was potentially clinical significance found in several other sports (men's basketball, women's volleyball, and women's gymnastics). The authors assert that while statistical significance was not reached in most sports, there was still credence to screening for attentional style, as the authors state, "We feel that if 28% of the 70 injuries sustained in men's basketball could be predicted and subsequently averted, this would have relative significance far beyond any accepted statistical significance level (p.231)." It should also be noted that the authors mentioned as a limitation of the study that several of the sports assessed had low incidence of injury which may have negatively influenced the power of the analysis.

Two studies have looked at the relationship between locus of control and injury risk. Dalhauser and Thomas (1979) looked at football players, and found that athletes with an internal locus of control experienced fewer injuries. Pargman and Lunt (1989) found similar conclusions in that an external locus of control was positively correlated to injury severity in football players. These authors also found an interaction between locus of control and self-concept, in that "low self-concept in combination with an external locus of control" (p.207) was correlated with an increase in injury severity.

Risk taking has also been investigated for possible predictive value related to sport injury. Kontos (2004) used the Risk-Taking Behaviors Scale with a group of adolescent soccer players and found no relationship between risk-taking and perceived risk, risk-taking and injury, or risk-taking and previous injury. Bouter, Knipschild, Feij, and Volovics (1988) investigated sensation-seeking in 507 downhill skiers. Sensation seeking is defined as “the need for varied, novel and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience (p. 10, Zuckerman, 1979).” The results showed that skiers tend to have higher “Thrill and Adventure Seeking” (TAS) subscale scores than the general population, and these scores were significantly different between skiers who were injured (cases) compared to skiers who were not injured (controls). However, it was the control group who had the higher TAS scores. The authors speculated that even though the skiers engaged in sensation-seeking behavior (i.e. skiing) TAS might actually be protective, since the controls had higher TAS score but also had fewer injuries. The authors further speculate that those with higher TAS scores might be “better at handling the risk...and therefore less prone to accidents and injury, compared to those with a relatively low TAS score who may be less skilled in estimating and handling the risks of downhill skiing (p.672).” In other words, the controls might take more calculated, rather than reckless, risks. Osborn, Blanton, and Schwebel (2009) studied a team of professional hockey players also using sensation-seeking and temperament to assess risk-taking. The results showed

that number of injuries was significantly correlated with the sensation-seeking subscale of “boredom-susceptibility” and the total sensation seeking score. The authors speculate that those individuals who are more susceptible to boredom will more readily seek more exciting (i.e., risky) situations. Injury severity was significantly correlated with the temperament subscale of neutral perceptual sensitivity. They also suggest that these types of individuals might return from injury too soon though this was not measured. The trait of neutral perceptual sensitivity relates to an individual’s sensitivity to changes in the environment (external) and the body (internal). The authors suggest that individuals with neutral perceptual sensitivity might perceive pain more readily and therefore report greater severity.

Psychological Responses to Injury

Even though an athlete may have very few psychological risk factors which predispose her to injury, an injury is not all together unavoidable. For example, using the National Collegiate Athletic Association- Injury Surveillance System, Agel and Schisel (2013) report pre-season injury rates of 6.3 per 1000 athlete exposures, in-season practice injury rates of 2.3 per 1000 athlete exposures, and a post-season practice injury rate of 1.3 per 1000 athlete exposures. The Centers for Disease Control report 2.9 million children (ages 0-19) were treated for sports and recreations-related injuries in 2009. Given the popularity of sport participation and the inevitable associated risks, there is great interest in helping athletes recover from their injury. Historically, this recovery has

focused on the physical recovery, yet research has shown that an athlete's associated psychological recovery is also critical. Athletes have a wide range of psychological responses to injury, as the following section will discuss.

Research on the link between psychological factors and responses to injury began in the late 1970s and early 80's when researchers began to investigate stage-based models (i.e., Kübler-Ross, 1969). Uemukai (1993) provided partial support for application of the Kübler-Ross model (denial, anger, bargaining, depression, and acceptance) to an athletic population. Using a longitudinal design, the author used the sport specific Affect Recovery Process Scale (based on Kübler-Ross) and found elevated depression, anger, and bargaining scores one month after injury. The stage of denial was only elevated for those with a "light" injury (injured for 1-3 weeks) and acceptance was not expressed, particularly in severely injured athletes (injured for 8 or more weeks). Smith, Scott, O'Fallon and Young (1990), using the Profile of Mood States and the Emotional Responses of Athletes to Injury Questionnaire, were unable to identify discrete stages of emotional response. The authors looked at 72 participants over the course of their recovery (e.g., return to play) and found increased levels of tension, depression, and anger in the most severely injured group. Using an inductive grounded theory approach, Rose and Jevne (1993) developed a four phase model to explain the psychological steps an athlete experiences when recovering from injury, based on in-depth interviews from athletes of various sports and nationalities. Through the participant interviews,

four phases of injury recovery emerged: 1. Getting injured, 2. Acknowledging the injury, 3. Dealing with the impact, and 4. Achieving physical and psychosocial outcomes. This methodology was novel in that instead of adapting a theory from other areas (e.g., bereavement/grief responses) to sport injury research, the authors attempted to develop a new theory developed specifically from the experiences of injured athletes.

It has become clear that while athletes may appear to go through certain stages when recovering from injury, the overwhelming consensus is that cognitive appraisal models are the best fit for psychology of sport injury research (Walker, Thatcher, & Lavalley, 2007). The model currently receiving the most support is Weise-Bjornstal's Integrated Response Model (see Figure 2). This model takes into consideration the Stress-Injury Model (Williams & Andersen, 1998) in that the factors of personality, coping resources, and history of stressors may also influence post injury psychological response. This conceptual model organizes the affective, behavioral and cognitive responses to injury, the moderating factors, as well as sociocultural factors that may influence the athletes' responses.

The Integrated Response Model (see Figure 2) has at its center, also known as the dynamic core, a representation of the related factors of cognitive appraisals, affective/emotional response, and behavior response. More specifically, the model proposes that cognitive appraisal leads to an emotional response which then results in a behavioral response. These three concepts

(cognitive appraisal, emotions, and behavior) should be viewed as a spiral moving upwards to physical and psychological recovery or downwards towards lack of recovery.

Cognitive Appraisal includes goal adjustment, rate of perceived recovery, self-perceptions, beliefs and attributions, sense of loss or relief, and cognitive coping. Emotional, or affective, responses include fear of the unknown, tension/anger/depression, frustration/boredom, positive outlooks/attitude, grief, and emotional coping. Behavioral responses include adherence to rehabilitation, use of psychological skills, use of social support, risk-taking behaviors, effort and intensity, malingering, and behavioral coping. The three primary components act in a circular, and thus repeating, pattern. For example, if an athlete appraises her rehabilitation as being productive, she believes the process will lead to recovery, and that she is recovering on schedule, her emotional response is most likely to be a positive attitude and decreased tension/anger/depression. This will lead to her behavior of showing up and completing her rehabilitation, expending appropriate effort, decreased malingering, and seeking out social support as she sees necessary. These behaviors will reinforce her belief in her rehabilitation, her recovery, etc. and the cycle will continue in a positive manner.

According to the model, the two main factors that influence the initial cognitive appraisal are personal factors (e.g., personality, athletic identity, motivations, coping skills) and situational factors (e.g., sport ethic, team/coach influences, access to rehab, the rehab environment, sport type/level). Personal

factors are seen as stable, while situational factors are seen as unstable, or outside of the athlete's control.

Cognitive Appraisal

The Integrated Response Model proposes that certain thoughts or beliefs (i.e. cognitive appraisal) can lead to a change in emotions and behaviors. For example, in a prospective, repeated measures study in football players, Albinson and Petrie (2003) found that negative cognitive appraisals (perceiving injury as more stressful) predicted the emotional response of greater mood disturbance. It has also been shown in other studies that positive cognitions and appraisals can lead to more facilitative coping behaviors such as problem solving (i.e. instrumental coping) (Wadey, 2012a; 2013) rather than avoidance or substance abuse. Newcomer and Perna (2003) surveyed adolescent athletes looking at intrusive thoughts (involuntary, unwanted thoughts) and avoidance behaviors using the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979). Results showed a significant increase in intrusive thoughts and avoidance coping in athletes who had experienced injury. The authors suggest that the distress caused by the injury (appraisal) is strongly related to the maladaptive coping behavior of avoidance.

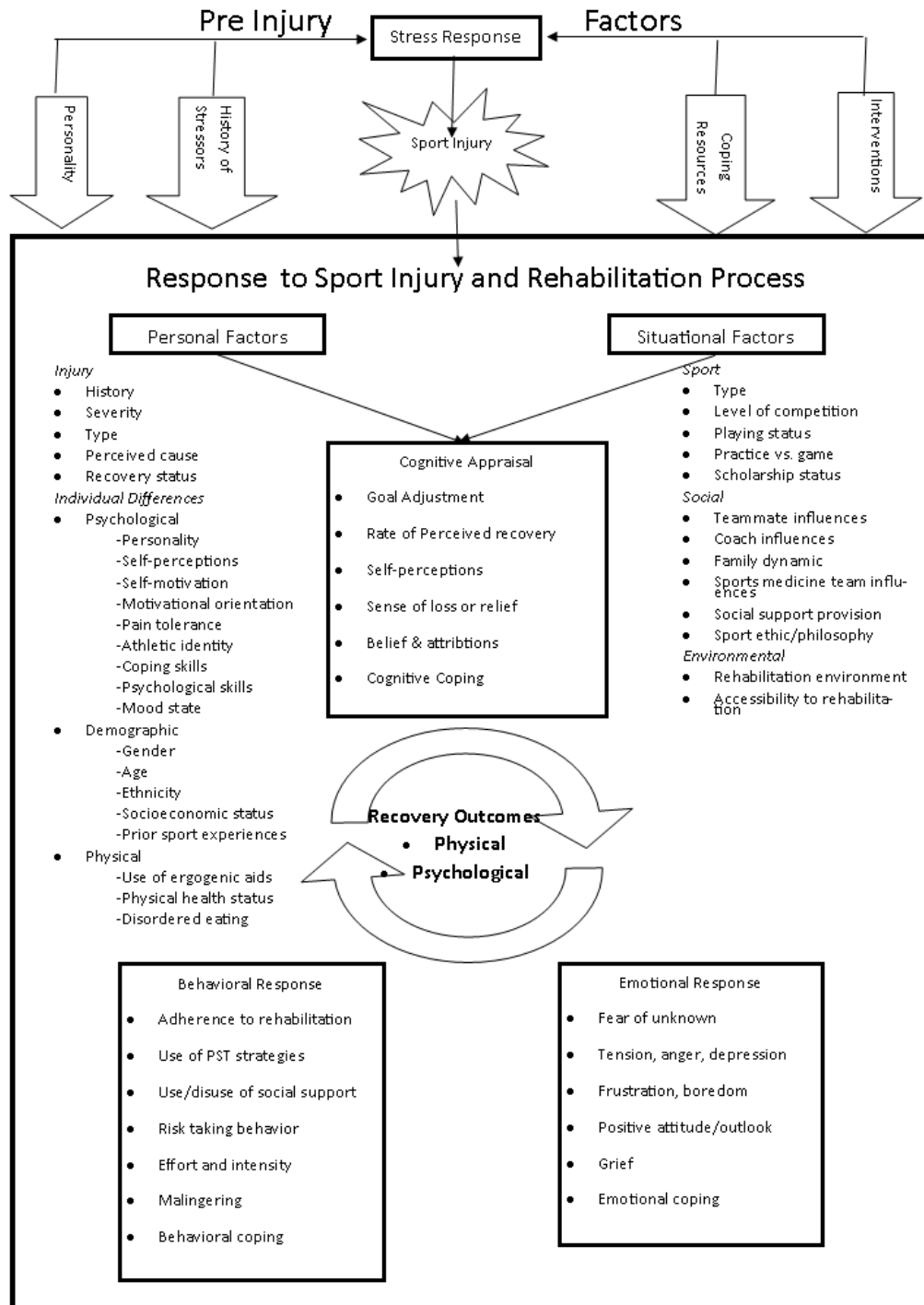


Figure 2. Integrated Model of Response to Sport Injury.
 From: Wiese-bjornstal, Diane M., Smith, Aynsley M., Shaffer, Shelly M. and Morrey, Michael A.(1998). An integrated model of response to sport injury: Psychological and sociological dynamics. *Journal of Applied Sport Psychology*, 10(1),46-69

It has also been shown that self-perception (within the cognitive appraisal factor) can influence rehabilitation. Manuel et al. (2002) and Morrey, Stuart, Smith, and Wiese-Bjornstal (1999) showed that injured athletes who had a stronger athletic identity prior to injury had greater mood disturbance (i.e. increased depressive symptoms) associated with their injury when compared to those who did not have as strong of an athletic identity. Manuel et al. (2002) looked at injured adolescents and found that increased stress and athletic identity significantly predicted feelings of depression. Though athletic identity is not directly under the cognitive appraisal factor, it is considered by the Integrated Response Model to be a personal factor that influences cognitive appraisal. The disruption of identity by an injury can be perceived as stressful and can negatively impact the appraisal of one's self-perception. Morrey, Stuart, Smith, and Wiese-Bjornstal (1999) investigated athletes recovering from ACL surgery over a six month period. The participants were classified as recreational athletes or competitive athletes. Though competitive athletes recovered more quickly physically than recreational athletes (as measured by range of motion and functional ability), competitive athletes experienced greater mood disturbance at return to play than recreational athletes. Podlog et al. (2013) also looked at how athletic identity and self-presentation might result in inappropriate behaviors by athletes. These researchers found that athletes with an increased athletic identity and concerns over self-presentation are significantly more likely to engage in over-adherence behaviors. In other words, athletes will ignore ATs' treatment

recommendations and risk a premature return to sport, as measured by the Rehabilitation Over-adherence Questionnaire.

Taylor and May (1996) looked at 62 athletes of various levels of competition being treated at a physiotherapy clinic. They used the Sports Injury Rehabilitation Beliefs Scale (SIRBS) and a compliance scale developed for the study. Results showed that patients who were not compliant with rehabilitation protocols scored significantly lower on perceived susceptibility to re-injury and on treatment efficacy. Athletes' beliefs (within the cognitive appraisal component) about their risk of re-injury and if their treatment was going to help them significantly impacted their rehabilitation behaviors. Brewer et al. (2003) demonstrated that positive cognitive appraisals about treatment efficacy and self-efficacy correlated with improved behavioral response (i.e., increased rehabilitation adherence). The researchers looked at the relationship between beliefs about recovery (using the Sports Injury Rehabilitation Beliefs Scale) and adherence (using the Sport Injury Rehabilitation Adherence Scale). Susceptibility to re-injury, treatment efficacy, and self-efficacy were positively correlated with beliefs about recovery, home exercise completion, and home cryotherapy completion. The more athletes thought they were susceptible to a health threat, the more they believed the treatment to be effective, and the more they believed in their ability to complete the treatment, the more likely they were to engage in treatment behaviors (exercise and modality compliance). Though Taylor and May

(1996) and Brewer et al (2003) framed their studies using Protection Motivation Theory, their results also support the Integrated Response Model.

Attributions of cause of injury can also impact the recovery process. Athletes who accepted injury as a predictable consequence of their decision to train/over-train have an easier time adjusting to their injury (Bianco, Malo, & Orlick, 1999; Brewer, 1999). Conversely, Tedder and Bindle (1997) found that attributing cause of injury to internal factors led to an increase in emotional disturbance.

Emotional Response

An athlete's emotions, or affect, can influence both behavioral and cognitive responses. In addition, the "spiral" representation of the dynamic core (i.e., cognitive appraisals, emotional and behavioral responses) demonstrates their recursive relationship. For example, increased levels of activity restriction (behavior) as a result of an injury can lead to increased depression scores (emotion) (Newcomer, et al, 2009), and increased stress (emotion) can lead to increased negative cognitive appraisal (Albinson & Petrie, 2003). Furthermore, the emotional response of a fear of re-injury can predict increased recovery time and time until medical clearance (DeHeredia, Muñoz, & Artaza, 2004). It should be noted that pre-injury emotional states may not relate to post injury emotional responses. Mainwaring et al. (2004), in a study investigating emotional responses to mild traumatic brain injuries, found no relationship between pre-injury mood disturbance and post-injury mood disturbance. This would indicate

that researchers/clinicians should not have an expectation of a particular emotional response solely based on an athlete's pre-injury emotions.

Behavioral Response

Most of the studies addressing behavior outcomes operationalize behavior as "adherence." Adherence is typically demonstrated by the athletes showing up to rehabilitation sessions, completing their home exercises, not/participating in their sport appropriately, and/or wearing any required taping or bracing as prescribed. Most of the research looking at rehabilitation and/or sport injury behaviors identifies the behaviors as the outcome/dependent variable, rather than the predictor/independent variable. This represents a significant lapse in the research surrounding the Integrated Response Model, given that the central core (cognitive appraisal, emotional response, behavioral response) is depicted as a cyclical process. There is very little research that investigates the influence of athletes' behavior on subsequent appraisals, particularly during the initial injury and early rehabilitation phases. Many studies are framed from the point of view of self-efficacy (an appraisal of one's self) in activity rather than participation in a particular activity in and of itself. For example, there are no prospective studies using adherence during rehabilitation as a predictor of anxiety/fear of re-injury during return to play.

One area that has looked at behavior as a determinant variable is during the process of returning to play. In interviews with elite skiers, though the study was primarily addressing social support, Bianco (2001) found that many study

participants had unrealistic expectations based on their efforts in rehabilitation. In other words, because they had successful rehabilitation behaviors (e.g., adherence, effort), their appraisal of returning to play was overstated. Kvist, Ek, Sporrstedt and Good (2005) investigated kinesiophobia (a fear of movement due to fear of injury or re-injury) in patients three years post-ACL reconstruction. The participants were not athletes, but their responses indicated that those patients who had not returned to their previous level of activity had higher levels of kinesiophobia and decreased “knee-related quality of life” when compared to patients who had returned to pre-injury levels of activity. This study is not clear as to which came first- decreased movement abilities due to fear or fear as a result of decreased movement ability- the results only indicate a correlation; it could also be a recursive relationship, with the fear and movement limitations reinforcing each other. Podlog and Eklund (2006) interviewed twelve elite athletes about the experience of returning to play. The athletes discussed much anticipation in returning to their sport due to the amount of time and energy they invested in their recovery. Nine of the twelve participants expressed concern in returning relative to their efforts- that it would be “all for nothing” if they became reinjured. Only three participants reported that re-injury fears had diminished due to rehabilitation activities and functional training. This study illustrates the difficulty in separating the behaviors from the emotions surrounding the behaviors.

Limitations in Conducting Injury Research

One of the reasons for the disparity in findings is that there is no commonly accepted definition of injury in sport psychology research (Flint, 1998; Petrie & Falkstein, 1998). Many authors use time loss as a signifier of injury, though not all account for rates of exposure. For example, Kleinert (2007) used the terms “light, medium, and serious injuries” and described them as follows: “Serious injuries were defined as causing withdrawal from the entire tournament, in case of medium injuries withdrawal from only the current match (participation in the next match was possible). Light injuries were defined as injury incidences with no break-off from the current match.” Some have used the National Athletic Injury/Illness Reporting System (NAIRS) which is also based on time loss (Coddington & Troxell, 1980; Cryan & Alles, 1983; Williams, Tonymon & Wadsworth, 1986). Blackwell and McCullagh (1990) developed the Colorado Injury Reporting System, which does account for injuries without time loss. Others have used the NCAA Injury Surveillance System (Albanson & Petrie, 2003). Many studies do not include injuries that athletes have but that do not limit participation, nor do they account for recurring injuries. Some studies have looked at injury severity which is itself difficult to operationalize as severity can be described several ways and is also not universal. Dvorak, et al. (2000) classified injuries as “severe” if they lasted for more than four weeks, or “if the tissue damage was severe like a fracture or dislocation.” It is clear that for the field of

sport injury research some consensus will have to be reached in order to be able to adequately compare outcomes.

ATs and Their Role in Psychological Interventions

In a review of the available literature, Brewer (2010) discusses the correlational and experimental studies that have been done thus far on effects of psychological factors and interventions on sport injury rehabilitation outcomes. Outcomes were operationally defined by each study and for correlational studies included subjective symptom improvement, confidence, functional performance, recovery rate/time, joint laxity, patient satisfaction, return to sport, and pain levels. Experimental studies included outcomes such as strength, recovery time, self-efficacy, re-injury anxiety, patellar alignment, edema, and range of motion. Brewer's review shows evidence of a substantial variety of psychological factors that may (causally) influence rehabilitation outcomes. Brewer suggests four pathways for psychological factors to influence sport injury rehabilitation outcomes: (a) psychological factors directly influence cognitive/affective outcomes, (b) behaviorally-mediated paths through cognitive/affective outcomes to functional/physical outcomes, (c) behaviorally-mediated paths to functional/physical outcomes, and (d) biologically-mediated paths to functional/physical outcomes (see Figure 3).

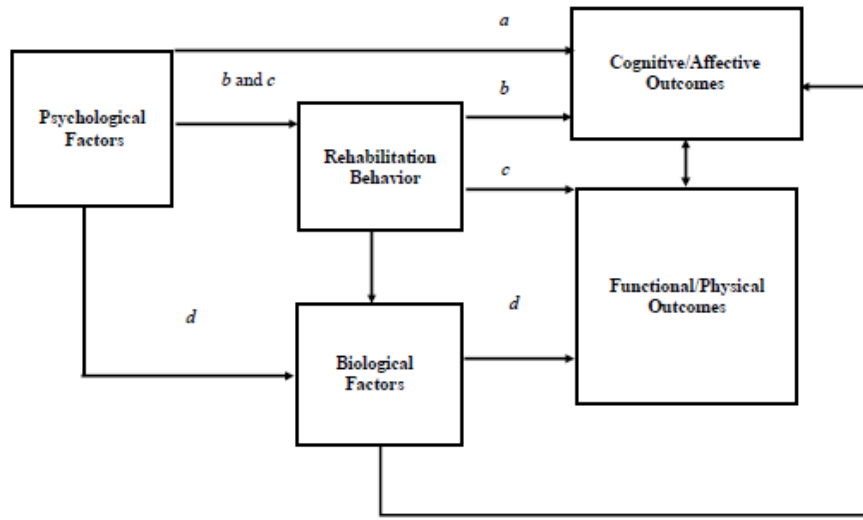


Figure 3. Potential Pathways Between Psychological Factors and Sport Injury Rehabilitation Outcomes. From: Brewer, B. W. (2010). The role of psychological factors in sport injury rehabilitation outcomes. *International Review of Sport and Exercise Psychology*, 3(1), 40-61.

Moulton, Molstad and Turner (1997) surveyed 14 ATs on their role in counseling collegiate athletes using an open-ended questionnaire of 47 items (the questionnaire was not validated). In ranking their various roles, participants ranked “counselor” only behind “educator” and “nutritionist”. Participants consistently felt that counseling was a significant component of being an AT, though only five respondents felt they received adequate training in counseling techniques. Eleven of the fourteen participants expressed a desire for the NATA to provide continuing education on counseling strategies. Hamson-Utley, Martin, and Walters (2008) surveyed ATs and physical therapists (PTs) on their attitudes towards psychological strategies using the Attitudes About Imagery (AAI) survey. The AAI includes items on the efficacy of imagery, positive self-talk, goal setting, and pain tolerance. Results indicated that ATs and PTs who reported formal

training in psychological skills viewed these skills as more effective than those who had not received formal training. The results also showed that PTs and ATs who stated an interest in learning about imagery reported significantly more favorable attitudes to all 15 items on the AAI. ATs showed more positive attitudes towards using goal setting, positive self-talk, and pain tolerance with athletes than PTs. The authors hypothesize that this may be due to the inclusion of psychosocial competencies in athletic training education, which is not a requirement for PTs (at the time this study was published).

Tracy (2008) used semi-structured interviews with 17 PTs and an AT to investigate sports medicine professionals' perceptions on their role in the "psychological rehabilitation" of their patients. The participants stressed the importance of establishing rapport, building trust, and spending time with their patients. The idea of treating a patient "holistically", or "physically, psychologically, and emotionally", was particularly salient to participants. The researcher also notes the participants discussed education, communication, and relationships with their patients; however none of the participants identified their behaviors as social support. The participants also expressed interest in learning more about the application of psychological skills in practice, and felt they lacked this knowledge. The results showed that participants believed they played a significant role in the psychological recovery of their patients, though they may lack formalized training in counseling skills and practical application of psychological interventions.

Biviano (unpublished master's thesis, 2010) used a 32-item survey adapted from Mann, et al. (2007) to assess the attitudes and comfort level of ATs addressing psychological issues. Participants indicated that they often discussed "emotional and behavioral problems" (e.g., fear about surgery or re-injury, decreased confidence, stress, rehabilitation adherence, etc.) and often felt they were the only person in whom the athlete could confide. The respondents also reported feeling more comfortable than competent in discussing psychological issues- in other words, ATs were willing to discuss psychological issues with athletes but they did not always feel proficient or adequate in assisting athletes with respect to these issues. Over half of the participants reported never having referred an athlete to a sport psychologist for injury-related issues, and over 75% reported "rarely" or "never" referring athletes for non-injury related issues. Results also showed a significant positive correlation between referring an athlete to a sport psychologist and ATs' perceived comfort and competence in discussing psychological issues. An overwhelming majority of participants (almost 92%) indicated that they were at least "somewhat interested" in continuing education on psychological techniques.

These studies further illustrate the acceptance by ATs of their role in addressing psychological concerns of athletes. Similar to other findings, ATs acknowledge a significant part of their responsibility as a clinician is the psychological and emotional well-being of their athletes. Yet ATs' comfort-level in

using psychological skills remains less than ideal, and many clinicians would like more formal training in the application of these skills.

Athletes' Attitudes towards Psychosocial Interventions and Athletic Trainers

Barefield and McCallister (1997) investigated the types of social support received by injured athletes, their expectations of social support from certified ATs and athletic training students, as well as their satisfaction with the social support received by ATs and students. The authors found that injured athletes primarily expected listening support and task appreciation (i.e., appreciation for their work during rehabilitation sessions). Athletes reported receiving listening support and task appreciation most frequently, and their satisfaction was highest for these two categories as well. A limitation to this study is that it is unclear whether athletes are genuinely satisfied with the support they are receiving, or have adjusted their expectations to the support being offered. Regardless, this study supports the idea that athletes not only need certain types of social support, but they have specific expectations of their sports medicine staff to provide it.

Bone and Fry (2006) also investigated social support in the athletic training setting. Specifically, they investigated the relationship between social support and the athletes' belief in the rehabilitation process. The researchers found that for athletes with severe injuries (as perceived by the athlete), social support from their AT explained a significant amount of the athletes' beliefs in

their rehabilitation. Taken together, these two studies indicate that not only do athletes have expectations of their ATs regarding the type of support they receive, but this support has a direct influence on their perceived rehabilitation process.

Fisher and Hoisington (1993) investigated athletes' attitudes towards rehabilitation adherence. This study also supports athletes' need for a positive relationship with their ATs- 89% of respondents reported that "good rapport" between the athlete and AT was essential for adherence to rehabilitation. All participants indicated a need for education about the process of rehabilitation (rather than the injury specifics), as well as information on effort needed on part of the athlete. The participants also indicated a need to be challenged by their AT (incidentally, the importance of "task challenge" was also indicated in the Barefield and McAllister study). While there are other factors addressed by this study (e.g., self-motivation, athlete personality), these results certainly indicate that the athlete-AT relationship is perceived to be critical to the level of adherence at which the athlete is willing to contribute.

Clement et al. (2012) looked at the expectations of male and female athletes and their expectations of the "working relationship" with the AT. The researchers used the Expectations About Athletic Training survey which has subscales assessing personal commitment, facilitative conditions, athletic training expertise, and realism. The results indicated that male athletes who had no prior experience with ATs had lower expectations of their ATs and female

athletes with prior experience with ATs had less realistic expectations. The study also indicated that females expected a more trusting, facilitative environment.

Washington-Lofgren, Westerman, Sullivan and Nashman (2004) investigated injured athletes' expectations of their ATs regarding their "psychological recovery". Information was gathered via both a survey and focus groups. The results indicated that athletes clearly expected the AT to provide emotional support, particularly regarding negative feelings about the injury. They also stressed the importance of the athlete/AT relationship, and indicated their preference for working with an AT over sport psychologist regarding psychosocial issues. This finding supports Robbins and Rosenfeld (2001) which indicates that post injury, athletes prefer receiving social support from their AT over other members of the athletic staff (in this case, their head or assistant coaches). Similar to the Barefield and McAllister study, Robbins and Rosenfeld also found that listening support and task appreciation were most valued by injured athletes.

Though there are no studies investigating athletes' expectations of ATs abilities to use specific techniques such as imagery or cognitive restructuring, it is clear that athletes do have expectations of a strong relationship with their AT during the rehabilitation process. This relationship can enhance the rehabilitation process, and further it can lay the groundwork for the introduction of psychological skills. Athletes may not be aware of psychological skills that might help them through the recovery phase and therefore may be unable to ask for them specifically, but they do indicate a need for various types of support.

“Psychosocial Strategies and Referral” Content Area in Educational Competencies in Athletic Training

Review of Psychosocial Content Area in ATPs

There are two documents that primarily guide the development of education of ATs: the Role Delineation Study/Practice Analysis and the Athletic Training Education Competencies. The National Athletic Trainers’ Association Board of Certification (BOC) publishes the Board of Certification Role Delineation Study/Practice Analysis (BOC RD/PA), now on its 6th edition (Board of Certification, 2010b). This document establishes the “knowledge and skills necessary to perform tasks critical for the safe and competent practice as an entry level athletic trainer” (<http://www.bocatc.org/resources/role-delineation-study-practice-analysis>). The BOC Role Delineation Study/Practice Analysis is responsible for determining what the essential standards are to the practice of athletic training and serves as the foundation for the ATs’ national certification exam. The RD/PA is organized into five Domains:

1. Injury/Illness Prevention and Wellness Protection
2. Clinical Evaluation and Diagnosis
3. Immediate and Emergency Care
4. Treatment and Rehabilitation, and
5. Organizational and Professional Health and Well-being

The National Athletic Trainers’ Association Professional Education Committee develops the Athletic Training Education Competencies which is now in its 5th edition (2011). The Commission on Accreditation of Athletic Training

Education (CAATE) requires Athletic Training Programs (ATPs) to instruct and evaluate students on these competencies, and is used as a blueprint for entry-level athletic training curricula. The competencies serve as the minimum requirements for athletic training education, and programs are often encouraged to exceed these guidelines (NATA, 2011). The competencies are divided into eight Content Areas: Evidence Based Practice, Prevention and Health Promotion, Clinical Examination and Diagnosis, Acute Care of Injury and Illness, Therapeutic Interventions, Psychosocial Strategies and Referral, Healthcare Administration, and Professional Development and Responsibility. The Competencies also include Clinical Integration Proficiencies which are the practical skills used during patient care and are assessed during the clinical component of the students' education. These two documents, the Role Delineation Study/Practice Analysis and the Educational Competencies, are used in tandem by athletic training educators when designing the educational experiences of athletic training students (BOC, 2010b). ATP directors can also refer to the Crosswalk Analysis (BOC, 2011a), which summarizes the overlap between the RD/PA and Educational Competencies.

Athletic training education has long reflected an appreciation of the value of understanding human behavior and cognitions. The very first curriculum model for athletic training education in 1959 included a psychology requirement, and in the 1970's, the nascent National Athletic Trainers' Association Professional Education Committee required course work in psychology (Delforge & Behnke,

1999). When the Professional Education Committee published the first set of competencies for athletic training education, they were divided into “major tasks” (now known as Content Areas), which included “Major Task #6: Counseling and Guidance (NATA, 1983).”

Currently, ATs’ psychosocial education falls under the Psychosocial Content Area (NATA, 2011). It is well known that athletes experience psychological disturbance in addition to their physical injury and that there is a resulting negative impact on rehabilitation adherence and recovery (Newcomer, Levine, Perna & Roh, 2009; Roh & Perna, 2000); ATs are ideally situated to assist in the delivery of psychosocial skills and techniques to facilitate treatment and healing. Though role delineation studies have indicated the need for education in the psychosocial realm, and the resulting Athletic Training Educational Competencies (NATA, 1999, 2006, 2011) have specific psychosocial knowledge and skill areas, ATs still do not report high levels of confidence in this area.

Sports Medicine Professionals’ Use of Psychological Skills

Larson, Starkey and Zaichhowsky (1996) surveyed 482 certified ATs on their perceptions of psychological strategies used in their every-day practice treating athletes. The authors developed the Athletic Training and Sport Psychology Questionnaire (ATSPQ) for the purpose of the study. The first question asks how often ATs had encountered “specific conditions associated with athletic injuries (p.39)” using a 5-point Likert scale. The conditions listed are:

stress/anxiety, anger, treatment compliance problems, depression, problems with attention/concentration, and exercise addiction. The second question is actually two open-ended questions regarding behaviors present in athletes who do or do not cope successfully with an injury. The third question asks about frequency of referrals to mental health counseling related to an injury. The fourth question asks about written procedures for referrals. Question 5 asks the ATs to rate (on a 5-point Likert scale) how often they have used the listed psychological skills/techniques (13 in total). Question 6 asked how often an AT thought athletes to be psychologically impacted by an injury (5-point Likert scale), and question 7 asked which skills or techniques they would like to learn more about. Questions 8 and 9 refer to the importance of addressing the psychological component of injury and the importance of education of ATs in the psychology of injury.

The authors found that almost half of respondents believed injuries had a psychological effect on an athlete (though it is unclear if this is the same half who had also taken a formal sport psychology course). The primary responses ATs saw in athletes were stress/anxiety, anger, treatment compliance problems, and depression. Only 24% of ATs reported referring an athlete for injury-related mental health counseling. With as often as ATs listed stress and anxiety (71% of ATs), one might expect that referral rates would be much higher. Another interesting result is that the ATs listed traits such as treatment compliance, positive attitude, motivation/dedication, asking questions, goal setting, and confidence as the top characteristics in athletes who coped well with injury, yet of

the top five skills and techniques used by ATs (athlete involvement with team, short term goals, variety in rehab, positive self-talk, effective communication skills) only one of these techniques would be expected to directly impact one of the positive qualities (positive self-talk is likely to influence positive attitude). Even though ATs listed the emotional responses of anxiety, anger, and depression as frequently seen, the techniques of reducing anxiety and reducing depression are reported to be used less often, and the technique of “teaching emotional control strategies” was reported as being used the least often. It is possible that this discrepancy between what ATs see and skills they use is due to unfamiliarity in how to apply the more appropriate skills to their athletes. Team involvement is reported as the most often used technique by ATs when working with injured athletes, and while this can certainly help maintain social support, the athlete’s specific emotional needs do not appear to have been met. The authors also suggest that the ATs surveyed may believe that by focusing on treating the injury, they are indirectly treating the observed emotional disturbance; however this view could be short sighted- by also addressing the emotional needs of the athlete the ATs could enhance the physical recovery. The authors also recommend that “[a]ppplied sport psychology courses designed specifically for athletic trainers should be integrated into all athletic training education programs (p.45).”

Hemmings and Povey (2002) also used the ATSPQ (Larson, Starkey & Zaichkowsky, 1996), however they modified the instrument to reflect the

professional title of “physiotherapist” used in the United Kingdom. Hence, the instrument in this study was known as Physiotherapist and Sport Psychology Questionnaire (PSPQ). Interestingly, this study had very similar findings to those reported by Larson, Starkey, and Zaichkowsky (1996). Physiotherapists (n=90) also listed anxiety, depression, and anger as the top emotional responses, as well as difficulties with treatment compliance. Different from their American counterparts, physiotherapists also listed “exercise addiction” as a common response. Nine percent of the physiotherapists reported having referred an athlete for mental health counseling related to an injury. Again, there is a gap between what the physiotherapists see in athletes and the techniques they report having used. Quite similar to the ATs in the Larson, Starkey, and Zaichkowsky study, variety in rehabilitation, short-term goals, positive self-talk, effective communication, and enhancing self-confidence were the top techniques used, and “reducing depression” and “teaching emotional control strategies” were the techniques least used. In both studies, compliance with rehabilitation was considered the most important characteristic of coping well with an injury and non-compliance was listed as the number one characteristic of not coping well with an injury. Neither of the studies addressed the issue that, often, non-compliance is a symptom of poor emotional/psychological adjustment; hence, by influencing the affective response of athletes, it is possible that one can improve the behavior of adherence to rehabilitation.

Heaney (2006) used the PSPQ (Hemmings & Povey, 2002) specifically with physiotherapists in professional/premier football (i.e., soccer) clubs in England and Wales (n=39). Ten of the respondents then participated in follow-up interviews to gather a deeper-level understanding of their responses, education, and beliefs. Consistent with previous studies stress/anxiety, anger, and depression were included in the top five responses seen with injury. This study also included “problems with concentration” and “exercise addiction” in the top responses. This study differed from the others, however, in that the top characteristic of an athlete who copes well with injury is focus/concentration, and compliance (which was the top of the list in previous studies) is ranked 5th. It is possible that compliance is less of an issue in this professional population. Over half of the physiotherapists had referred athletes to counseling related to their injury, though this is most likely due to the fact that these physiotherapists have significantly better access to an accredited sport psychologist than the physiotherapists and ATs as described in the previous two studies. It is worth noting that even given the high percentage of referrals, and that the physiotherapists reported positive outcomes from referring athletes, the physiotherapists also reported during interviews that there was a strong stigma against seeing a sport psychologist and that created a significant barrier to seeking help. In line with Larson, Starkey, and Zaichowsky (1996) and Hemmings and Povey (2002), the techniques most commonly used by the physiotherapists include variety in rehabilitation, positive self-talk, short term

goals, effective communication, and enhancing self-confidence. Consistent with previous studies, “Teaching emotional control strategies” was used the least often.

Arvenin-Barrow et al. (2007) surveyed 361 physiotherapists in the UK on their views of psychosocial content of their practice. They also used the PSPQ, modified from the ATSPQ. This study differed from previous studies in the UK in that the subjects worked across multiple levels of sport rather than only the highest level. Parallel to previous studies, the results showed that primary responses encountered by physiotherapists are stress/anxiety, exercise addiction, compliance problems, anger, and depression. Physiotherapists reported on characteristics of athletes who do and do not cope well with injury, with positive attitude and compliance as the most commonly reported characteristics (in athletes who cope well), and poor compliance and depression as the most commonly reported characteristics (in athletes who do not cope well). Much like previous studies, physiotherapists reported using short-term goal setting, rehabilitation variety, and positive self-talk as their primary psychological techniques employed. Similar to Larson, Starkey, and Zaichowsky (1996) and Hemmings and Povey (2002), the physiotherapists surveyed in this study also had limited access to an accredited sport psychologist and the scant percentage of referrals reflected this. Of the 90 (25.3%) participants who had access to a sport psychologist, 87 made referrals. Though this is a low percentage of

physiotherapists with access, it may also indicate that when physios do have access they will readily make referrals.

Lafferty, Kenyon, and Wright (2008) also used the PSPQ (Hemmings & Povey, 2002) to investigate the use of psychological skills in non-club based physiotherapists (e.g., hospital-based or in private practice) as compared to physiotherapists associated with a professional sport club or national sport organization. This is one of the few studies that employed a comparative research design, as opposed to other descriptive studies. While both groups had similar rankings of psychological skill usage, it was shown that non-club based physiotherapists used a greater number of psychological skills and used them more frequently, and ranked a wider range of skills as important compared to club-based physiotherapists. The researchers found that club-based physiotherapists, similar to other studies, primarily use “variety in rehabilitation” and “short-term goals”. Of all the psychological skills listed, only the use of short-term goals was employed significantly more often by the club-based physiotherapists than non-club-based physiotherapists. The non-club-based physiotherapists used “reducing stress/anxiety”, “improving social support”, “reducing depression”, “teaching muscular relaxation techniques”, and “using mental rehearsal/visualization” statistically more often than club-based physiotherapists. When asked about the importance of psychological skills knowledge, while non-significant, the only two skills club-based physiotherapists ranked higher than non-club-based physiotherapists were setting realistic goals

and creating variety in rehabilitation. This is consistent with findings in other studies of sports medicine professionals associated with an athletic club or university. Non-club-based physiotherapists' mean score rankings of importance were significantly higher than club-based physiotherapists for every other skill presented except for effective communication, which was higher than club-based physiotherapists but did not reach significance. There were only 87 participants in this study (45 non-club-based, and 42 club based physiotherapists) so it is possible that with a larger sample size this finding might reach the level of significance. These differences are striking; they may be due to the difference in seeing patients every day, different external pressures, or due to a more patient-centered approach by non-club based physiotherapists as the authors suggest. It is important to also consider that there may be less of a stigma against using psychological skills in a clinic environment as opposed to a sports organization in a competitive league. What is clear however; is that the differences between different populations of sports medicine professionals should be explored.

Clement, Granquist and Arvinen-Barrow (2013) sought to replicate the study by Larson, Starkey and Zaichhowsky (1996) as all of the subsequent work had been conducted with physiotherapists in the UK rather than ATs in the US. This study improved upon the methods of the other studies by conducting a comprehensive analysis of the open-ended questions in addition to the ranking questions. They also asked about the educational background of the participants ("previous experiences with sport psychology courses"), but an ANOVA revealed

no differences between those who had or had not taken a sport psychology course. Parallel to other data, athlete responses of stress/anxiety, anger, and adherence problems were reported by ATs. Their rankings of strategies such as keeping the athlete involved in the team, short-term goals, variety in rehabilitation, effective communication, and positive self-thoughts were also reported in other studies. Similar to previous work, what the ATs report as problems are not matched with appropriate interventions. Attitude and adherence were the top two themes in responses to both of the questions regarding successful and unsuccessful coping behaviors by athletes; i.e., having a positive attitude and adhering to their rehabilitation were listed as characteristics of athletes who coped well with injury. Athletes perceived as having a poor attitude and not adhering were seen by respondents as not coping well with injury. The ATs also showed great interest in learning more about psychosocial strategies, though an interesting pattern bore out. Of all the strategies listed the items starting with the word “teaching” (i.e., teaching emotional control strategies, teaching concentration strategies, teaching imagery, teaching muscular relaxation strategies) were all ranked at the bottom of the list, even though these could be used to enhance other strategies (e.g., reducing stress and anxiety, enhancing self-confidence). This may be due to a lack of familiarity with the benefits of these techniques or a perception that they will take a long time to teach. The authors report that the ATs are most likely taking advantage of strategies with which they are more familiar, and that with education ATs might

choose psychosocial strategies that better matched with the athlete behaviors they are seeing in their practice. They also recommend that qualitative methods might give a more clear understanding as to the rationale behind ATs choices of psychological skills.

Based on these studies using the PSPQ/ATSPQ there are consistent findings. Primarily, sport psychology is viewed as an important aspect of injury recovery, and ATs/physiotherapists encounter common responses from athletes. Consistently, however, there seems to be a reliance on certain techniques, such as goal setting and incorporating variety in rehabilitation tasks that do not match appropriately with the emotional responses of the athletes. It is unclear as to why certain techniques are more pervasive, though it is possible that this phenomenon is due to a lack of familiarity with the other techniques (e.g., imagery, emotional regulation, reducing stress/anxiety) and a lack of applied education on how and when to use these techniques. It appears that the strategies viewed as useful by ATs/physiotherapists are useful primarily because they know how to use them; if other strategies were more familiar, the sports medicine professionals might have ranked them higher (e.g., rather than having used them and ranked them lower because they found them to be ineffective). Clement, Granquist and Arvinn-Barrow (2013) state that, AT's "may be using psychosocial strategies they are more confident in using, instead of those that are most effective and appropriate (p.518)." For instance, it would appear that sports medicine professionals are able to recognize depressive symptoms, yet

using strategies to mitigate these symptoms is a deficit in their education. Moreover, access to sport psychologists or sport psychology consultants is limited, so referrals may not be occurring as often as warranted. Larson, Starkey, and Zaichkowsky (1996) recommend a stronger relationship between the professional organizations of athletic training (i.e., NATA) and sport psychology (i.e., AASP) to facilitate building referral networks, though not much has changed in the interim. Clement, Granquist, and Arvinen-Barrow (2013) also give suggestions for setting up referral procedures.

Another important point to consider is the common identification of adherence/non-adherence as critical to recovery. Most ATs and physiotherapists listed these as behaviors which are indicative of good or poor coping. Given the circular relationship between cognitive appraisal, affective/emotional response, and behavior (including adherence, effort, and malingering), in the Integrated Response to Injury Model (Wiese-Bjornstal et al., 1998) and the importance of appropriate adhering behaviors, one would expect more psychological strategies to be used (especially teaching emotional control strategies, relaxation strategies, reducing stress and anxiety) to manage the emotional response. This consistent identification of desirable behaviors and lack of diversity in psychological skills used is striking, particularly since so many ATs/physiotherapists reported their athletes responding with stress/anxiety, anger, and depression.

Arvenin-Barrow, Penny, Hemmings and Corr (2010) furthered the investigation of physiotherapists' experiences by conducting a phenomenological investigation into the lived practices of these professionals. Using a semi-structured interview, the researchers asked participants (n=7) broad questions regarding the use of psychological interventions. A key component emerged: the participants had little if any formal training in the psychology of injury though they appeared to have adequate understanding of the psychological process athletes may experience during injury. Reflecting previous research, the participants all indicated that goal setting was important, however the process remained unidirectional, i.e. the physiotherapist set the goals without input from the athlete. Other areas such as imagery and relaxation are less well understood, and in the case of imagery there seemed to be little knowledge of what it entailed. A particularly interesting point came through the question regarding positive self-talk. As noted in earlier studies the physiotherapists reported using positive self-talk often with their athletes, but they were clearly referring to how they speak to the athletes, rather than encouraging and modifying an athlete's intrapersonal verbalizations. The physiotherapists seem to be confusing "positive self-talk" with "motivational encouragement;" this should call previous data into question. The physiotherapists also reported that they continually felt short on time when planning rehabilitation protocols. Because they felt they needed to prioritize certain aspects of rehabilitation, the psychological component often went unaddressed. This is an important finding, as psychological interventions have

the potential to facilitate rehabilitation exercises and allow for a more efficient and effective use of time. These findings support the notion that sports medicine professionals have a fair amount of, albeit limited, knowledge regarding certain aspects of psychological interventions, yet lack the ability to effectively apply the techniques to maximize their treatments.

Athletic Training Education

Much of the data suggest that recognition of psychological distress is not the issue, but rather the practical application of psychological strategies in everyday clinical practice is of greatest concern to ATs. As Weidner and Henning (2002) suggest, clinical practice is critical to a student as they progress from “novice to competent practitioner.” ATs consistently report a desire for increased knowledge in this content area (Arvenin-Barrow et al, 2010). To this end, Roh and Perna (2000) recommend “formal instruction in the psychology of injury or medical psychology within the athletic training curriculum (p.463).” Previously, Moulton et al (1997) also recommended formal instruction in counseling skills, crisis identification, and crisis intervention. Heaney (2006) also suggests that in addition to lack of knowledge, lack of access, and a remaining stigma towards psychological services may also play a role in decreased use of psychological skills and services. This would further support the necessity of didactic and clinical education as well as support in building referral networks.

Stiller-Osterowski and Osterowski (2009) interviewed 11 recently certified ATs on their feelings of preparedness to handle “topic areas related to

[psychosocial content and referral]”. Participants experienced a wide range of educational opportunities, from highly supportive experiential learning opportunities to having extremely limited exposure. On the topic of motivation, participants recalled learning (to varying degrees) primarily about goal setting, varying rehabilitation exercises, and sport specificity. This concurs with the studies previously discussed in that these were the skills they learned with little exposure on other ways to enhance adherence. Participants all supported the concept of social support, yet no participants remembered learning about social support constructs or how to apply social support principals in practice. Similarly, the participants felt comfortable knowing when to refer an athlete to mental health counseling, yet lacked the practical experience on how to do so. Moreover, no participant recalled learning about cognitive appraisal models, the predominant theoretical models in injury psychology, or the emotional response to injury and inactivity. Only four of the 11 participants reported having taken a sport psychology or related class in their ATP, and of those four, only two of them took the class because it was required by their program.

This study is particularly distressing, as these participants have graduated from accredited programs, without having, in some cases, been exposed to stated competencies or demonstrated stated proficiencies. This begs the question, how are these programs delivering this content? Part of the issue may be a lack of course requirements, or lack of a content expert to instruct the course. It is also worth noting that some of what these participants recalled being

taught, specifically in regards to goal setting, is in direct contrast to current research (Stiller-Ostrowski & Ostrowski, 2009). This is certainly in conflict with the emphasis on evidence-based practice in athletic training.

Views of Program Directors

In his master's thesis, Seiler (2010) investigated ATP directors on their perceptions of the Psychosocial Intervention and Referral content area. Fifty-three program directors participated in the survey process. The program directors (PDs) ranked the twelve content areas in importance, criticality, and preparedness. The Psychosocial content area was ranked 9th relative to importance (ahead of Pharmacology, Healthcare Administration and Professional Development and Responsibility). For the factor of criticality, Psychosocial referral was also ranked 9th (ahead of Nutritional Aspects, Healthcare Administration and Professional Development). In terms of preparedness, the Psychosocial content area was ranked 12th out of 12. These rankings were not significantly different from the ranking provided by ATs, though ATs did rank the psychosocial content area slightly higher (10th out of the 12 content areas). This data gives us some insight as to why ATs report feeling unprepared in clinical practice. Programs are less likely to emphasize a content area when it is not perceived to be important, or when clinical instructors feel unprepared to teach it.

Gordon, Potter and Ford (1998) suggest that sports medicine staff be familiar with the personal, situational, and mediating factors of injury as well as common affective responses. They emphasize the importance of educating

athletes about their injury and the “consequences of their emotions and behavior.” The authors also discuss the importance of the interpersonal skills of the clinicians. In their review article, they propose an intensive curriculum across the sports medicine professionals’ education. This curriculum is based on Australian programs in nursing, occupational therapy and physiotherapy. While their curriculum has some issues (i.e., it was developed while stage-based theoretical models were still supported) and is quite extensive (and thus unlikely to be adopted by ATPs with little room for curricular additions), the concept of learning over time and in multiple formats (lecture, peer learning, group learning, observations, etc.) is emphasized. Learning over time is “a documented, continuous process of skill acquisition, progression, and student reflection (p. S-236, Amato, Konin, & Brader, 2002).” This is generally how athletic training has approached the combination of lectures and practical application of other skills like orthopedic evaluations. Program delivery requirements by CAATE (2012) stipulate that “clinical education must follow a logical progression that allows for increasing amounts of clinical supervised responsibility leading to autonomous practice upon graduation (p.6).”

Since many ATPs are limited in their ability to offer or require new courses, Stiller-Ostrowski, Gould and Covassin (2009) designed a six-week educational intervention, “Applied Sport Psychology for Athletic Trainers.” The program was designed to give content, while also allowing for practice of skills and feedback from peers and instructors. Participants received course materials

including relevant research and a “toolbox of in-class activities.” There were associated assignments and participants were asked to keep a journal of their experiences. This intervention significantly improved injury psychology knowledge and use of psychological skills in the participants. The authors also conducted knowledge retention testing and found that 8 weeks after the intervention the participants had lost about 39% of their knowledge; however their scores were still above baseline. This study indicates that a six-week unit is a potential method of content delivery for programs that are unable to commit resources to a complete course.

Summary

Sports medicine personnel have felt they are lacking in the area of psychosocial skills for over two decades (Ford & Gordon 1997; Gordon, Milios & Grove, 1991; Moulton et al, 1997; Wiese, Weiss & Yukelson, 1991). That this feeling has persisted for so long is concerning, and should be a priority for athletic training educators. However, this feeling of unpreparedness is contrasted with the fact that the psychosocial content area may not be valued at the PD level. It is understandable that ATPs have many requirements that need to be met, and certainly some will be prioritized over others. Unfortunately, it appears that by relegating psychosocial competencies lower on the proverbial totem pole, programs are doing a disservice to their students, and in some cases presenting outdated evidence leaving students with incorrect or incomplete information with which to treat their patients.

This study will seek to further the work done by Clement, Granquist, and Arvinen-Barrow (2013) and Larson, Starkey and Zaichkowsky (1996), by exploring the perceptions of PDs towards the psychosocial content area and related skills. Thus far, research had focused entirely on the perceptions of practicing ATs. Stiller-Ostrowski and Ostrowski (2009) have begun exploring student outcomes, however, an a priori understanding of ATPs is still lacking. Because ATs continue to express a discomfort in using psychosocial skills in practice, and there appears to be a disparity among integration of the Psychosocial Content Area within athletic training education, it is critical to investigate the perceptions of those tasked with shaping the educational programs.

CHAPTER III

METHODS AND PROCEDURE

Methods

Participants

Participants were selected by their identification as a PD via the listing of Athletic Training Education Programs on the Commission on Accreditation of Athletic Training Education (CAATE) website, and/or the individual program's university website. All athletic training education programs and their accreditation status are maintained on the CAATE website. PDs of all entry-level (graduate and undergraduate) programs were invited to participate in the study. Through the PDs, program preceptors, and students in their final year of clinical education were identified as possible participants.

Procedures

This study was approved by the Human Subjects Review Board. All subjects read an informed consent form prior to participation and indicated their willingness to participate by selecting a "button" on the electronic survey. Surveys were disseminated via a web-based survey platform (i.e., Qualtrics) for ease of distribution. All responses were kept confidential and stored on a password

protected computer and identifying information will be kept separate from responses.

Psychosocial Competencies

All participants were asked questions relative to the Psychosocial content area identified in the AT Education Competencies (NATA, 2011). This study's survey is based on the survey developed by CAATE as to the instructional and evaluation methods used to teach and assess the required competencies. These specific competencies address the areas of: patient education, motivational strategies, psychological interventions, pain management, and sociocultural issues. Because PDs complete CAATE's survey as part of their self-study for (re-)accreditation purposes, they should already be familiar with the structure of the survey, thereby reducing the time needed to complete the survey and hopefully increasing return rates. For each participant (PD, preceptor, student), the questions were specifically reworded to make sense from their point of view.

Demographic Survey

All survey participants completed a demographic survey. All respondents were asked basic questions about age, education, gender, and race/ethnicity. PDs were asked questions regarding length of time certified, length of time as a PD, and information about their program (e.g., number of enrolled students, home department, academic alignment). Preceptors were asked about length of time certified, length of time as a preceptor, type of clinical setting, and job title (e.g. head/associate/assistant), number of students typically assigned per

semester, and any other teaching responsibilities within their affiliated institution. Students were asked about their current clinical assignment (e.g., high school, college, clinic etc.).

PD Survey

For each of the five competencies, PDs reported the setting in which the competency is taught, the type of instructional method(s) used, and the evaluation method(s) used. Where the competency is taught (i.e., “setting”) was assessed as classroom/lab only (scored as a 1) or both (scored as a 3). The number and type of instructional method(s) (i.e., exposure) used was assessed by asking the PD to identify which of the methods are used from a list of 27 activities including case studies, lecture, cooperative learning, and role-playing. Participants were not limited as to the number of activities they might choose. This continuous variable was coded as one, two, three, or four or more methods used.

The number and type of evaluation method(s) used was assessed by asking participants to identify which of the methods are used to evaluate each competency from a list of 16 options, including portfolios, skills demonstration, written exam, and discussion. Participants were not limited to the number of methods they might choose. Similar to instructional methods, this continuous variable was coded as one, two, three, or four or more methods used.

PDs were asked a final question regarding how much they value each of the five competencies. They were asked to rate each competency on a scale from 0 (no value) to 100 (the most value).

Results from the PD surveys provided the following independent variables: LoT (where the competency is taught), MeT_{PD} (number of instructional methods used), ME_{PD} (number of assessments of the competency) and $Value_{PD}$ (how much the competencies are valued).

Preceptor Survey

A similar survey was completed by preceptors affiliated with an ATP. Questions regarding their value placed on the competencies ($Value_{PRE}$), the extent to which they model the competencies in their own clinical practice ($Model_{PRE}$), and their methods of assessment of the competencies (ME_{PRE}) will be included in the survey. Preceptors were asked the extent to which they value each of the five competencies on a scale of 0 (no value) to 100 (the most value). Preceptors were also asked the extent to which they model, in their own clinical practice, each of the five competencies. They scored themselves on a scale of 0 (never model this behavior) to 100 (consistently model this behavior). Finally, Preceptors were asked about the type of evaluation method(s) used to assess their student(s). Participants were asked to identify which of the methods are used from the same list of 16 options, including portfolios, skills demonstration, written exam, discussion, etc. as the program directors. Participants were not limited to the number of activities they might choose. Preceptors were also

asked about the number of students they work with each semester, if they have any other academic responsibilities (e.g., adjunct instructor), number of years they have served as a preceptor, and number of years they have been certified.

Student Survey

Finally a survey was completed by athletic training students. Questions included how prepared they feel, what value they place on the competencies, and how likely they are to use these skills in the future. This resulted in the dependent variables: Value_{ATS}, Prep_{ATS}, and Likely_{ATS}. Students were asked the extent to which they value each of the five competencies on a scale of 0 (no value) to 100 (the most value). To determine how prepared students feel in applying the competencies, students scored themselves on each competency on a scale of 0 (not prepared at all) to 100 (extremely prepared). Lastly, the students were asked to rate how likely they are to use each of the competencies in their future clinical practice. They rated each competency from 0 (not at all likely) to 100 (extremely likely).

Procedure

Surveys were first sent to PDs via the email distribution feature of Qualtrics, and a follow up email reminder was also sent two weeks later. Once a survey was returned, a follow-up email was sent to the PD to request contact information for the program's preceptors and students. A phone call was also placed to PDs if follow up information was not received. Once this contact information was gathered, preceptor and student surveys were distributed. At

least two reminder emails were sent to preceptor and students to complete the survey.

Research Questions

1. Is there a difference in value for each competency exhibited by PDs, Preceptors, and Students?
2. Does preceptor modeling of a competency, experience, and evaluation methods predict preceptor value of the competency?
3. Do methods taught, methods evaluated, location taught, location evaluated, total years as a PD, and clinical responsibilities predict PD value of the competency?
4. Do values of PD and their ATP instructional practices (i.e. multiple educational settings, increased exposure in didactic methods and evaluations):
 - a. predict values of AT students for psychosocial competencies?
 - b. predict feelings of preparedness for using psychological skills in students?
 - c. predict likelihood of using for psychological skills in students?
5. Is there a difference in how students feel about their
 - a. Preparedness to use psychological skills?
 - b. Likelihood of using psychological skills in future clinical practice?
6. Does student preparedness and value predict likelihood of using the competency in clinical practice?

CHAPTER IV

RESULTS, ANALYSIS, AND DISCUSSION

The overall goal of this project is to further understand how athletic training education (via measures of PDs and preceptors) predict students' values, preparedness and likelihood of using five psychosocial competencies in future clinical practice, as well as how student values and preparedness predicts their likelihood of use. It is therefore necessary to understand whether or not there is a difference in the value placed on the particular competencies by PDs and Preceptors, and how that value is demonstrated with respect to instructional practices. A further goal is to assess the degree to which that value is transferred to the student by examining the extent to which value, locations, instructional methods, and evaluation methods used by the PD for each competency are related to student preparedness, value, and likelihood. Lastly, it is important to understand if there are differences in the value placed on the competencies by the students, and if value and preparedness translates into the likelihood the student will use the competency in clinical practice. All ANOVAs were completed using the full set of all completed responses. Regressions were performed using only data from matched persons (i.e., data where PDs and Students were from the same program).

Response Rate

Of the 363 athletic training education programs initially contacted, 70 responded for a 19% response rate. These initial program responses generated 153 preceptor and 238 student contacts. Of these, 51 preceptors (33.3%) and 85 students (35.7%) responded. Complete surveys were recorded for 43 PDs, 33 preceptors, and 57 students (see Table 1). This resulted in complete matching data from all three groups for seven schools.

Table 1. Survey Responses

Group	Sent	Received	Completed (matched)
Program Directors	364	70	43 (7)
Preceptors	153	51	33 (27)
Students	238	85	57 (32)

Demographics

Program Directors

PDs were an average of 43.55 ($SD= 9.55$) years old, mostly white (95.5%), non-Hispanic/Latino (97.7%), with an average of 9.99 ($SD=7.69$) years of experience as a PD (range: 1-34 years). Twenty respondents identified as male (45.5%) and 24 identified as female (54.4%). Most had a PhD (59.1%), and the remainder reported their highest level of education as a master's degree (40.9%). Their programs were primarily undergraduate (90.9%) and ranged in student size: 6-10 (2.3%) 11-15 (11.4%), 16-20 (20.5%), 21-25 (15.9%), 25+ (50%). Programs were located in departments of Athletic Training (29.5%),

Kinesiology (27.3%), Exercise Science (9.1%), or “other” (34.1%). The programs also fell into all athletic divisions: 4.5% in NAIA, 15.9% in D-III, 20.5% in D-II, and 59.1% in D-I. University size was as follows: 2.3% had <1000 students, 6.8% had 10,001-15,000 students, 9.1% had 15,001-20,000, 25% had 5,001-10,000 students, and 38.6% had 1,000-5,000 students.

Preceptors

Preceptors were an average of 33.07 ($SD=9.41$) years, primarily white (89.7%), non-Hispanic/Latino (100%) with some Asian (6.9%) or Multi-racial (3.4%). They identified as 44.8% male and 55.2% female. Most worked in a collegiate clinical setting (62.1%) or secondary school (24.1%). Others worked in a hospital/clinic (6.9%), professional sport (3.4%), or “other” (3.4%). The majority reported their highest level of education as a master’s degree (58.6%), 37.9% a bachelor’s degree, and 3.4% a PhD. The majority (48.3%) did not have any other academic responsibilities, though 31% reported giving guest lectures. Graduate Assistants/Interns made up 20.7% of respondents, 27.6% reported their job title as Assistant Athletic Trainer, 6.9% as Associate Athletic Trainer, 27.6% as Head Athletic Trainer, and 17.2% as “other”. The average experience as a preceptor was 7.48 ($SD=7.11$) years, with a range of 1-28 years.

Students

Students were an average of 22.93 ($SD= 4.88$) years (range: 18-49 years). Respondents were mostly female (73.7%), white (73.7%), and non-Hispanic/Latino (82.5%) with the remaining respondents identified as

Black/African American (8.8%) or Multi-racial (1.8%). They reported being assigned to clinical settings in a college/university (61.4%), secondary school (19.3%), hospital/clinic (10.5%), military (1.8%), performing arts (1.8%), physician extender (1.8%), professional sport (1.8%), or “other” (1.8%).

Table 2. Operational Definitions of Variables

Variable	Definition
Value _{PD}	How much does the Program Director value the competency (1-100)
Value _{PRE}	How much does the Preceptor value the competency (1-100)
Value _{ATS}	How much does the Athletic Training Student value the competency (1-100)
MeT _{PD}	Number of methods used to teach a competency
ME _{PD}	Number of methods used to evaluate a competency in didactic education
ME _{PRE}	Number of methods used to evaluate a competency in clinical education
LoT	Location taught: one location (class or lab) or two locations (both class and lab)
LoE	Location evaluated: one location (class or lab) or two locations (both class and lab)
Model _{PRE}	How often a preceptor perceives s/he models a competency
Prep _{ATS}	How prepared a student is to use a competency (1-100)
Likely _{ATS}	How likely a student is to use a competency in future clinical practice

Location Taught (LoT) and Location Evaluated (LoE) were assessed by asking PDs if they taught or evaluated the competency in one location (class or lab) or both locations (Table 3). Methods of Evaluation for PDs (ME_{PD}) and Preceptors (ME_{PRE}) was assessed by counting the number of types of assessment methods used and was then categorized into groups (1 method, 2

methods, 3 methods, or 4 or more methods). The breakdown of these groups per competency is in Table 4.

Table 3. Number of Schools Teaching (LoT) or Evaluating (LoE) in Class/Lab Only or In Both

	PS6 Educ LoT	PS6 Educ LoE	PS7 Motiv LoT	PS7 Motiv LoE	PS8 _I nterv LoT	PS8 _I nterv LoE	PS9 Pain LoT	PS9 Pain LoE	PS10 _C ulture LoT	PS10 _C ulture LoE
Class/ Lab	15	15	21	20	17	15	27	24	24	20
Both	29	29	23	24	26	28	16	19	19	23

Table 4. Number of Schools Using 1, 2, 3, or ≥4 Methods of Evaluation as Reported by Program Directors (ME_{PD}) and Preceptors (ME_{PRE}).

Meth ods	PS6 Educ ME _P D	PS6 Educ ME _P RE	PS7 Motiv ME _P D	PS7 Motiv ME _P RE	PS8 _I nterv ME _P D	PS8 _I nterv ME _P RE	PS9 Pain ME _P D	PS9 Pain ME _P RE	PS10 _C ulture ME _{PD}	PS10 _C ulture ME _{PRE}
1	11	3	8	5	5	5	5	6	9	8
2	10	5	7	8	10	9	10	4	12	5
3	10	8	6	3	11	15	11	7	9	1
4+	13	13	23	13	17	29	17	8	13	11

Statistical Analysis

Repeated measures ANOVAs were first conducted to assess the similarity in rating of Value_{PD}, Value_{PRE} and Value_{ATS}, as well as the Prep_{ATS} and the Likely_{ATS} for each of the 5 competencies (see Table 3 for list of competencies). These analyses were conducted using all PDs, preceptors, and students for whom data was available. A Bonferroni correction was used to protect from Type-I error, and where Mauchly's Test of sphericity indicated that the

assumption of sphericity was violated, the Greenhouse-Geisser correction was applied.

Preceptors

In order to identify how a Preceptor's valuing of a given competency was a reflection of teaching behaviors and experience, a multiple regression analysis was run to predict the Value_{PRE} from Model_{PRE}, ME_{PRE}, and their total years as a preceptor. It was predicted that the more a preceptor modeled the competency, the more methods they used to evaluate the competency, and the more experience they had, the more the Preceptor would value the competency. These analyses were conducted using all preceptors for whom data was available.

Program Directors

Next, in order to determine whether PDs influence Value_{ATS}, Prep_{ATS} and Likely_{ATS}, a series of multiple regressions were performed. A multiple regression was first run to predict Value_{ATS} based on MeT_{PD}, LoT, LoE, ME_{PD}, and Value_{PD}. Next, multiple regressions were run to predict Prep_{ATS} and Likely_{ATS}, based on the same predictor variables. For each non-significant regression, a stepwise regression was also performed to determine any additional variance. Variables were included in the regression model if they increased F by at least .05 and excluded if they increased F by less than 0.1. By entering predictors in order of significance, we get an understanding of the relative contribution of each

predictor. Importantly, this analysis was conducted only including PDs for whom there were matching students.

Students

To understand what will predict Likely_{ATS}, multiple linear regressions were run using Value_{ATS} and Prep_{ATS}. It was predicted that increased value and increased preparedness would result in an increase in Likelihood. These analyses were conducted using all students for whom data was available.

Table 5. Psychosocial Competencies Examined

PS6_{Educ}	PS-6. Explain the importance of educating patients, parents/guardians, and others regarding the condition in order to enhance the psychological and emotional well-being of the patient.
PS7_{Motiv}	PS-7. Describe the psychological techniques (e.g., goal-setting, imagery, positive self-talk, relaxation/anxiety reduction) that the athletic trainer can use to motivate the patient during injury rehabilitation and return to activity processes.
PS8_{Interv}	PS-8. Describe the psychological interventions (e.g., goal setting, motivational techniques) that are used to facilitate a patient's physical, psychological, and return to activity needs.
PS9_{Pain}	PS-9. Describe the psychosocial factors that affect persistent pain sensation and perception (e.g., emotional state, locus of control, psychodynamic issues, sociocultural factors, personal values and beliefs) and identify multidisciplinary approaches for assisting patients with persistent pain.
PS10_{Culture}	PS-10. Explain the impact of sociocultural issues that influence the nature and quality of healthcare received (e.g., cultural competence, access to appropriate healthcare providers, uninsured/underinsured patients, insurance) and formulate and implement strategies to maximize client/patient outcomes.

Value of Each Competency by Group

Descriptive statistics are presented in Table 6. A repeated measures ANOVA found that for the PDs, the Values_{PD} of the competencies were not statistically different ($F(2.214, 89.204) = 1.318, p = 0.273$). A repeated measures ANOVA found that for the preceptors, the Values_{PRE} of the psychosocial competencies were statistically different ($F(4, 96) = 5.586, p < .001$). Post hoc tests revealed a significant difference between the values of competency PS9_{Pain} and both PS6_{Educ} ($p = .007$) and PS8_{Interv} ($p = .021$). A repeated measures ANOVA found that for the students, Values_{ATS} of the psychosocial competencies were statistically different ($F(3.028, 145.323) = 7.533, p < .001$). A post hoc test revealed a significant difference between competencies PS9_{Pain} and PS6_{Educ} ($p = .03$), PS7_{Motiv} ($p = .007$), and PS8_{Interv} ($p = .001$).

Table 6. Mean Values of Psychosocial Competencies

Group (n)	Value PS6 _{Educ} (M ± SD)	Value PS7 _{Motiv} (M ± SD)	Value PS8 _{Interv} (M ± SD)	Value PS9 _{Pain} (M ± SD)	Value PS10 _{Culture} (M ± SD)
Program Directors (43)	70.42 ^a (23.699)	72.63 ^a (21.856)	73.56 ^a (20.775)	73.88 ^a (19.627)	71.26 ^a (22.094)
Preceptors (25)	86.48 ^a (12.132)	79.20 ^{a,b} (20.351)	82.04 ^a (19.299)	67.32 ^b (22.741)	77.88 ^{a,b} (20.296)
Students (49)	87.24 ^a (15.536)	87.92 ^a (13.834)	89.29 ^a (11.742)	78.14 ^b (19.179)	82.92 ^{a,b} (17.550)

Note: Means that share a superscript are not significantly different from one another based on Bonferoni post-hoc pairwise comparisons ($p < .05$).

A One-Way ANOVA was also conducted to compare values for each competency between groups. An assumption of equal variance was violated for

PS6_{Educ}, PS7_{Motiv}, and PS8_{Interv} so the adjusted Welch statistic was used for these three conditions. A post-hoc Bonferroni test was conducted to determine differences between groups. Significant differences were found for PS6_{Educ} ($F(2, 75.927)= 8.849, p < .01$), PS7_{Motiv} ($F(2, 60.376)= 9.546, p < .01$), and PS8_{Interv} ($F(2, 60.649)= 9.162, p < .01$). Table 7 below shows the post hoc mean differences between groups. PDs valued PS6_{Educ} significantly less than Preceptors ($p=.001$) and Students ($p=.000$). PDs ($p=.000$) and Preceptors ($p=.024$) valued PS7_{Motiv} significantly less than Students. PDs valued PS8_{Interv} significantly less than students ($p=.000$). PDs valued PS10_{Culture} significantly less than students ($p=.018$).

Table 7. Between Group Comparison of Means of Values

Competency	Group	Group	Mean Difference	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
PS6 _{Educ}	Value _{PD}	Value _{PRE}	-15.757**	4.283	-26.148	-5.365
		Value _{ATS}	-16.628**	3.594	-25.346	-7.909
	Value _{PRE}	Value _{PD}	15.757**	4.283	5.366	26.148
		Value _{ATS}	-0.871	4.084	-10.779	9.039
	Value _{ATS}	Value _{PD}	16.628**	3.594	7.909	25.346
		Value _{PRE}	0.871	4.084	-9.039	10.779
PS7 _{Motiv}	Value _{PD}	Value _{PRE}	-3.343	4.482	-14.217	7.531
		Value _{ATS}	-14.891**	3.760	-24.014	-5.768
	Value _{PRE}	Value _{PD}	3.343	4.482	-7.531	14.217
		Value _{ATS}	-11.547*	4.274	-21.917	-1.178
	Value _{ATS}	Value _{PD}	14.891**	3.760	5.768	24.014
		Value _{PRE}	11.547*	4.274	1.178	21.917
PS8 _{Interv}	Value _{PD}	Value _{PRE}	-7.752	4.025	-17.517	2.013
		Value _{ATS}	-14.740**	3.383	-22.949	-6.531

	Value _{PRE}	Value _{PD}	7.752	4.024	-2.013	17.517
		Value _{ATS}	-6.987	3.820	-16.258	2.282
	Value _{ATS}	Value _{PD}	14.740**	3.383	6.531	22.949
		Value _{PRE}	6.987	3.820	-2.281	16.257
PS9 _{Pain}	Value _{PD}	Value _{PRE}	6.845	4.983	-5.254	18.945
		Value _{ATS}	-4.153	4.099	-14.108	5.801
	Value _{PRE}	Value _{PD}	-6.845	4.983	-18.945	5.254
		Value _{ATS}	-10.998	4.788	-22.624	0.627
	Value _{ATS}	Value _{PD}	4.153	4.099	-5.801	14.108
		Value _{PRE}	10.998	4.788	-0.627	22.624
PS10 _{Culture}	Value _{PD}	Value _{PRE}	-6.624	5.007	-18.789	5.541
		Value _{ATS}	-11.663*	4.159	-21.769	-1.556
	Value _{PRE}	Value _{PD}	6.624	5.007	-5.541	18.789
		Value _{ATS}	-5.038	4.892	-16.926	6.849
	Value _{ATS}	Value _{PD}	11.663*	4.159	1.556	21.769
		Value _{PRE}	5.038	4.893	-6.849	16.926

*sig. at $p < .05$

**sig. at $p < .01$

Predicting Program Directors' Value

A multiple regression was run to predict Value_{PD} from MeT_{PD}, LoT, ME_{PD}, LoE, number of years as a PD and if they had any clinical responsibilities (see Table 8). The data showed that for PS6_{Educ}, PS9_{Pain}, and PS10_{Culture} there were no significant predictors. The competencies PS7_{Motiv} and PS8_{Interv} both showed ME_{PD} as contributing significantly to predicting Value_{PD}.

Table 8. Summary of Regression Analyses for Variables Predicting Value_{PD}

Competency	F	df	R ²	β (MeT _{PD})	β (LoT)	β (ME _{PD})	β (LoE)	β (Yrs)	β (Clin)
PS6 _{Educ}	0.724	6,37	0.105	0.089	-0.013	0.217	-0.266	-0.159	-0.129
PS7 _{Motiv}	3.585	6,37	0.368	0.256	-0.276	0.468**	-0.219	-0.016	-0.215
PS8 _{Interv}	3.688	6,36	0.381	0.203	-0.272	0.540**	-0.288	-0.037	-0.232
PS9 _{Pain}	1.212	6,36	0.168	0.327	-0.169	0.098	-0.155	-0.106	-0.141

PS10 _{Cult} ure	1.417	6,36	0.191	0.253	-0.058	0.351	-0.366	0.010	-0.081
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*sig. at $p < .05$

**sig. at $p < .01$

Predicting Preceptors Value

The regression equation assessed modeling, years as a preceptor, and method of evaluation for their prediction of competency value. This data showed that for all five competencies, modeling a competency is statistically significant in predicting how much a preceptor values that competency. See Table 9 for results for each competency.

Table 9. Summary of Regression Analyses for Variables Predicting Value_{PRE}

Competency	<i>F</i>	df	R ²	β (Model _{PRE})	β (Years)	β (ME _{PRE})
PS6 _{Educ}	11.314	3, 25	0.576	0.767**	-0.064	0.083
PS7 _{Motiv}	59.474	3, 25	0.877	0.840**	-0.108	0.165
PS8 _{Interv}	11.589	3, 25	0.582	0.783**	-0.046	-0.057
PS9 _{Pain}	29.156	3, 22	0.799	0.883**	0.120	-0.038
PS10 _{Culture}	27.889	3, 21	0.799	0.983**	0.014	-0.168

*sig. at $p < .05$

**sig. at $p < .01$

Predicting Student Values

For PS6_{Educ}, the regression was not found to be significant, and no predictors emerged when entered in a stepwise fashion. For PS7_{Motiv}, the regression was statistically significant, $F(5,51) = 3.67$, $p < .01$, $R^2 = .265$. LoT ($\beta = 0.362$, $p = .011$) and Value_{PD} ($\beta = -0.279$, $p = .044$) contributed significantly to the prediction. In PS8_{Interv}, the regression significantly predicted Value_{ATS}, $F(5,49) =$

3.114, $p < .05$, $R^2 = .241$. However, no individual variables reached significance, so a stepwise regression was run ($F(2,52) = 7.146$, $p < .01$, $R^2 = .216$). In this equation, LoT was a significant predictor ($\beta = 0.366$, $p = .004$) as well as ME_{PD} ($\beta = -.274$, $p = .03$). The PD variables were significant predictors of $Value_{ATS}$ for $PS9_{Pain}$, $F(5,47) = 3.052$, $p < .05$, $R^2 = .245$. $Value_{PD}$ contributed significantly to the equation ($\beta = -0.339$, $p = .019$). For $PS10_{Culture}$, the regression was significant, $F(5,24) = 3.665$, $p < .01$, $R^2 = .304$. LoT ($\beta = 0.358$, $p = .018$), MeT_{PD} ($\beta = -0.985$, $p = .026$), and LoE ($\beta = 0.968$, $p = .028$) all contributed significantly to the prediction. See Table 10 for results of each competency.

Table 10. Summary of Regression Analyses for Variables Predicting $Value_{ATS}$

Competency	F	df	R ²	β (MeT_{PD})	β (LoT)	β (LoE)	ME_{PD}	$Value_{PD}$
$PS6_{Educ}$	0.406 [†]	5,51	0.038	0.145	-0.020	-0.028	-0.222	-0.098
$PS7_{Motiv}$	3.670 [‡]	5,51	0.265	-0.241	0.362*	-0.212	-0.185	-0.279*
$PS8_{Interv}$	7.146 [†]	2,52	0.216	-0.131	0.366**	0.140	-0.274*	0.030
$PS9_{Pain}$	3.052 [‡]	5,47	0.245	-0.192	0.048	0.159	0.229	-0.339*
$PS10_{Culture}$	3.665 [‡]	5,42	0.304	-0.985*	0.358*	0.968*	0.249	0.175

† results presented for regression using stepwise method

‡ results presented for regression using enter method

*sig. at $p < .05$

**sig. at $p < .01$

Student Preparedness

A repeated measures ANOVA found that $Prep_{ATS}$ of the psychosocial competencies were statistically different ($F(3.359, 167.961) = 14.112$, $p < .005$) (see Table 11). A post hoc test revealed a significant difference between competencies $PS9_{Pain}$ and $PS6_{Educ}$ ($p = .001$), $PS7_{Motiv}$ ($p = .004s$), and $PS8_{Interv}$

($p=.000$). Post hoc testing also showed differences between PS10_{Culture} and PS6_{Educ} ($p=.002$), PS7_{Motiv} ($p=.001$), and PS8_{Interv} ($p=.000$).

Table 11. Mean Student Preparedness of Psychosocial Competencies

	Prepared PS6 _{Educ} (M ± SD)	Prepared PS7 _{Motiv} (M ± SD)	Prepared PS8 _{Interv} (M ± SD)	Prepared PS9 _{Pain} (M ± SD)	Prepared PS10 _{Culture} (M ± SD)
Students (51)	76.27 ^a (17.022)	74.65 ^a (18.679)	77.59 ^a (14.457)	63.27 ^b (21.516)	63.16 ^b (23.004)

Note: Means that share a superscript are not significantly different from one another based on Bonferoni post-hoc pairwise comparisons ($p<.05$).

Predicting Student Preparedness

A multiple regression was run to predict Prep_{ATS} from MeT_{PD}, LoT, LoE, ME_{PD}, and Value_{PD} (see Table 12). The regression was only significant for PS9_{Pain}, $F(5,48)= 2.629$, $p<.05$, $R^2=.215$. For this prediction, Value_{PD} contributed significantly to the Prep_{ATS} for that competency ($\beta= -0.376$, $p=.011$). For the remaining 4 competencies, a stepwise regression was completed. For PS6_{Educ} and PS10_{Culture}, no variables were found to be predictors with a stepwise regression. For PS7_{Motiv}, only LoE was entered into the equation, $F(1, 53)=9.957$, $p<.005$, $R^2=.158$, $\beta= -0.398$, $p= .003$. This result was similar for PS8_{Interv}, where only LoE was entered into the predictor equation, $F(1,53)= 5.267$, $p<.05$, $R^2=.090$, $\beta=-5.58$, $p=.026$.

Table 12. Summary of Regression Analyses for Variables Predicting Prep_{ATS}

Competency	F	df	R ²	β (MeT _{PD})	β (LoT)	β (LoE)	ME _{PD}	Value _{PD}
PS6 _{Educ}	0.843 [‡]	5,51	0.076	-0.155	-0.049	0.075	-0.055	0.197
PS7 _{Motiv}	9.957 [†]	1,53	0.158	-0.055	-0.049	-0.398**	-0.005	-0.025
PS8 _{Interv}	5.267 [†]	1,53	0.090	0.147	-0.092	-0.301*	0.078	0.049
PS9 _{Pain}	2.629 [‡]	5,48	0.215	-0.083	-0.279	-0.176	0.246	-0.376*
PS10 _{Culture}	0.759 [‡]	5,46	0.076	-0.020	0.004	0.284	-0.024	0.083

† results presented for regression using stepwise method

‡ results presented for regression using enter method

*sig. at $p < .05$

**sig. at $p < .01$

Student Likelihood

A repeated measures ANOVA found that Likely_{ATS} of the psychosocial competencies were statistically different ($F(2.820, 132.531)=8.135, p < .001$) (see Table 13). A post hoc test revealed a significant difference between competencies PS9_{Pain} and PS6_{Educ} ($p=.021$), PS7_{Motiv} ($p=.003s$), and PS8_{Interv} ($p=.000$), as well as competencies PS8_{Interv} and PS10_{Culture} ($p=.021$).

Table 13. Mean Student Likelihood of Using Psychosocial Competencies

	Likely PS6 _{Educ} (M ± SD)	Likely PS7 _{Motiv} (M ± SD)	Likely PS8 _{Interv} (M ± SD)	Likely PS9 _{Pain} (M ± SD)	Likely PS10 _{Culture} (M ± SD)
Students (48)	84.96 ^{a,d} (18.106)	85.52 ^{a,d} (15.038)	87.83 ^{a,c} (12.080)	74.63 ^{b,e} (21.414)	78.75 ^{d,e} (21.482)

Note: Means that share a superscript are not significantly different from one another based on Bonferoni post-hoc pairwise comparisons ($p < .05$).

Predicting Student Likelihood

For PS6_{Educ}, PS7_{Motiv}, and PS8_{Interv}, no predictors were significant, and no predictors emerged when a stepwise method was used. For PS9_{Pain}, a stepwise regression resulted in a significant prediction, $F(1,51)=7.672, p < .01, R^2=1.31$;

Value_{PD} was the only predictor entered into the equation ($\beta=-0.362$, $p=.008$). For PS10_{Culture}, the regression was not found to be significantly predictive, $F(5,42)$, $p=.051$, $R^2=.224$, so a stepwise regression was run. The stepwise regression revealed LoT ($\beta=0.382$, $p=.007$) as the only variable entered into the equation ($F(1,46)=7.867$, $p<.01$, $R^2=.146$). See Table 14 for results of each competency.

Table 14. Summary of Regression Analyses for Variables Predicting Likely_{ATS}

Competency	F	df	R ²	β (MeT _{PD})	β (LoT)	β (LoE)	ME _{PD}	Value _{PD}
PS6 _{Educ}	0.486 [†]	5,50	0.046	0.126	-0.096	0.057	-0.267	-0.030
PS7 _{Motiv}	0.608 [‡]	5,51	0.056	-0.211	0.162	-0.086	0.015	-0.040
PS8 _{Interv}	1.115 [‡]	5,49	0.102	-0.153	0.232	0.052	-0.077	0.009
PS9 _{Pain}	7.672 [†]	1,51	0.131	-0.029	0.146	-0.039	0.075	-0.362**
PS10 _{Culture}	7.7867 [†]	1,46	0.146	0.158	0.382**	-0.223	0.123	-0.116

† results presented for regression using stepwise method

‡ results presented for regression using enter method

*sig. at $p<.05$

**sig. at $p<.01$

A regression predicting Likely_{ATS} from Prep_{ATS} and Value_{ATS} was conducted (see Table 15). For all competencies, the variables significantly predicted Likely_{ATS}. For all competencies, both Prep_{ATS} and Value_{ATS} significantly contributed, except for PS10_{Culture}, in which only Value_{ATS} contributed significantly.

Table 15. Summary of Regression Analyses for Variables Predicting Likely_{ATS}

Competency	<i>F</i>	df	R ²	β (Prep _{ATS})	β (Value _{ATS})
PS6 _{Educ}	78.918	2, 53	0.749	0.176*	0.774**
PS7 _{Motiv}	45.648	2, 52	0.637	0.287**	0.670**
PS8 _{Interv}	56.557	2, 54	0.677	0.166*	0.759**
PS9 _{Pain}	82.136	2, 51	0.763	0.205**	0.763**
PS10 _{Culture}	68.236	2, 46	0.748	0.131	0.796**

*sig. at $p < .05$

**sig. $p < .01$

Discussion

Although psychosocial competencies have been a part of athletic training education since it was formally organized, it has been shown that ATs still report feeling unprepared to use these skills in clinical practice (Stiller-Ostrowski & Ostrowski, 2009). It has also been previously shown that the Psychosocial Content Area as a whole is ranked lowest by PDs out of all eight required curricular content areas (Siler, 2010). This study was undertaken in an effort to further understand athletic training education of psychosocial competencies via PDs', preceptors', and students' values of these competencies as well as predictors of these values. We also aimed to understand how prepared students felt to use these competencies and ultimately their likelihood of using them in the future.

Values

PDs did not significantly value one competency over any other. This is encouraging in that it suggests that programs are not biased or prioritizing one piece of knowledge over the other. However, there were differences in both

Preceptor and Student groups. Generally, both preceptors and students valued patient education, motivations, and psychological interventions over pain perception and sociocultural issues. PDs valued all of the competencies lower than students.

Preceptors ranked the competency focusing on patient education higher than the competency emphasizing the psychosocial component of pain perception. This is not surprising as patient education is a common responsibility throughout clinical practice. This would be a familiar construct and easily recognizable as part of one's role as an AT. Interestingly, the skill of patient education per se is generally not listed in surveys such as the Athletic Training and Sport Psychology Questionnaire, upon which much of the psychosocial use in athletic training research is based. This may be a reflection of the ubiquity of the concept or an area for further review.

The competency focused on psychological techniques used for motivation during rehabilitation was generally valued by students more than it was valued by PDs and Preceptors. Additionally, students valued this competency significantly more than pain perception. Similar to patient education, motivation is another familiar concept in athletic training and in athletics in general. The concepts included in the motivation competency (e.g., imagery, relaxation, positive self-talk, etc.) may be more relatable to students than other more abstract ideas included in pain perception (e.g., psychodynamics, cultural competence). ATs have long reported using techniques like goal setting, variety in rehabilitation,

positive self-talk, and relaxation to improve injury outcomes (Arvenin-Barrow et al., 2007; Hemmings & Povey, 2002; Larson, Starkey, & Zaichowsky, 1996). That these skills would perpetuate in value from practitioner to practitioner is unsurprising.

Students valued the competency of psychological interventions aimed at facilitating physical, psychological, and return to play needs higher than all other competencies, and it was found to have significantly higher levels of value than sociocultural issues in healthcare. Preceptors valued this competency second to patient education, and it differed significantly from pain perceptions. This competency is similar to patient education and motivation in that skills like goal setting or relaxation are familiar concepts in other fields and may be discussed in multiple contexts. Comparable to patient education and motivation, this competency has discrete outcomes similar to other skills learned by athletic training students. This is consistent with past research showing skills such as goal setting and self-talk as commonly used by ATs and physiotherapists (Clement, Granquist, & Arvenin-Barrow, 2013; Hemmings & Povey, 2002; Laffery, Kenyon, & Wright, 2008).

The pain perception competency was ranked significantly lower in value by both preceptors and students. In particular, there were differences in students' values between this competency and patient education, motivation, or interventions. Preceptors valued this competency less than patient education and

psychological interventions. This competency covers topics such as pain perception, emotional state, and psychodynamic issues.

This finding is concerning in that ATs work almost exclusively with athletes experiencing some type of pain. This may be because the first three competencies are more tangible in their nature. Pain perception is quite abstract and might be a more difficult concept for students to appreciate. Certainly, pain perception is a complex and multifaceted experience; it would not be entirely surprising if students (or even practitioners) do not fully *understand* it, but not *valuing* it is perplexing, given how integral pain perception is to an athlete's rehabilitation and their recovery process. This low value may also be due to students' possible discomfort in addressing emotional reactions as opposed to physical injuries. This was also the lowest ranked competency by preceptors and may be reflective of ATs often undervaluing patients' reports of pain (Crossman & Jamieson, 1985), or a professionalized acceptance of the culture of pain and risk in an athletic population (Safai, 2003; Theberge, 2007). Athletic training students have also previously reported feeling a tension in this culture between "health" and "performance" and the normalization of pain in an athletic population (Walk, 1997). Past research has also shown that ATs report stress/anxiety, anger, and depression in athletes (Arevenin-Barrow, et al., 2007, Heaney, 2006) and this is further supported by athletes' reported responses to injury (Albinson & Petrie, 2003; Newcomer & Perna, 2003; Newcomer, et al., 2009). Given the significance and consistency of the emotional response to injury, as reported

independently by both ATs and athletes, the fact that the primary competency focused on pain and emotional response is valued so low is disconcerting.

The competency of sociocultural issues influencing healthcare was not valued the lowest by students, but it was found to be significantly lower than psychological interventions. Analogous to pain perceptions, this competency is more experiential, rather than skill-based, and may be influenced by the student's actual lived experiences or be related to personal exposures to different cultures (e.g., Eastern medicine), or backgrounds (e.g., low socioeconomic status).

Similar to pain perception, this competency is much more abstract in nature, and sociocultural issues can be challenging for students with privileged status through race, class, or other sociocultural marker. For example, the overwhelming majority of student respondents were white and they may or may not be aware of how that places them in relation to their athletes, and therefore may not feel this competency is as relevant as the others. This has been found previously by Marra et al. (2010) where ATs, regardless of experience, who identify as multi-racial or black/African American scored higher on cultural competence than white/Caucasian ATs. This decrease in value of sociocultural issues might also be due to exposure (or lack thereof) to various athletic populations at clinical sites. Nynas (2015) found through a focus group that athletic training students felt cultural competence was important and requested more instruction on the topic; they also indicated that the majority of their cultural competence education came through clinical experiences.

It is unclear why PDs value all of the competencies lower than the students. It may be that the PDs are subconsciously comparing the competencies to those of other Content Areas. It is also possible that this is representative of emotional or mental strain that students experience as a result of differences between their didactic and clinical experiences.

Value Predictors

Modeling was shown to be the only significant predictor in the value of a competency by a preceptor. This behavior may be a reflection of their valuing of a competency, but this may also be a recursive relationship, that is, the more one values a behavior, the more one might engage in that behavior, and find positive reinforcement of that behavior leading a person to value the behavior. This feedback loop is similar to cognitive-behavioral interventions, where it has been shown that thoughts and behaviors can positively influence each other. It has also been shown that vicarious experiences are a way for a person to increase self-efficacy (Bandura, 1977), so when a student sees a behavior modeled by a preceptor the student may emulate that behavior and derive similar value.

Program director values were similarly inconsistent in their predictors. There were no predictors for patient education, pain perceptions, or sociocultural issues. Only methods of evaluation were significant for motivation and psychological interventions. Again, there is no literature to investigate underlying mechanisms of program directors' values toward competencies. The only study done on this topic limits the investigation to the psychosocial content area as a

whole and how PDs rank it against other content areas (Seiler, 2010). While it is encouraging that PDs value competencies consistently, it remains unclear as to what drives these values and how these values are reflected in terms of instructional techniques.

Student values for motivation and pain perceptions were predicted by PD value. Student values for psychological interventions were predicted by location the competency was taught, and location taught and location evaluated were predictors for sociocultural issues. There was no pattern or consistency in what predicts student values of a given competency. There is no literature investigating athletic training student values of competencies, so these results cannot be quantified. It is unclear what might be the underlying beliefs associated with these values given the disparity of predictors. PDs ranked the pain perception competency subjectively more valuable than any others. This could explain why PD value was a significant predictor of Student Value and Likelihood of use for pain perceptions even though student value scores are similarly low to preceptor values.

Preparedness

There were significant differences in levels of student preparedness. The pain perception competency was rated lower than patient education, motivation, or psychological interventions. Sociocultural issues was found to be rated lower than psychological interventions. This is unsurprising, as these results follow a similar pattern to student values. As discussed with the pain perception

competency, sociocultural issues can impact care given, considering an often highly diverse athlete population. Similar to Marra et al. (2010), Volberding (2013) has shown that athletic training students are aware of cultural differences, but “were not adequately prepared to provide culturally appropriate treatments (p.68).” This is echoed in the findings here. It should also be noted that sociocultural issues are not limited to race and ethnicity, but also encompass issues of gender and sexual diversity. Questions were asked about race and ethnicity, and as noted earlier, the participants were overwhelmingly white. Questions were also asked regarding gender identity, including non-binary choices (i.e., trans male, trans female, intersex, gender fluid, and non-identification), however all participants identified as either male or female.

Preparedness Predictors

Similar to predictors of student value, preparedness predictors were few and inconsistent. The predictor Location of Evaluation was a predictor for motivation and psychological interventions, and Value of PD was a predictor for pain perceptions. It is not understood why this is the case. There is a lack of research done on athletic training students’ general preparedness to use clinical skills. A database search of the terms “athletic training,” “student,” and “preparedness” yielded zero results. Sawyer, Peters, and Willis (2013) have shown a correlation between feelings of preparedness and self-efficacy in counseling students. Self-efficacy is a product of performance accomplishments vicarious experiences, verbal persuasion, and physiological states/emotional

arousal (Bandura, 1977). Because this preparedness pattern is reflected in the preceptor values (i.e., valuing patient education, motivation, and psychological interventions over pain perception and sociocultural issues), it may be possible that efficacy-building experiences of performance accomplishments, vicarious experiences, and verbal encouragement are not happening during clinical experiences.

Likelihood

Results also indicated that the competency for pain perceptions was ranked lower in likelihood than patient education, motivation, and psychological interventions. In other words, students are more likely to use the skills of patient education, motivation, and psychological interventions. As mentioned above, this is problematic as almost every patient-athlete seeking athletic training services is doing so because he or she is experiencing some type of pain. This is also a challenge given the fact that ATs are highly likely to encounter athletes who need assistance with emotional regulation due to the negative emotional response to injury. Results also showed a difference between psychological interventions and sociocultural issues, indicating they were less likely to use sociocultural knowledge than they were to use psychological interventions. This is also challenging in that it is reasonable to assume that as ATs, they will encounter an athlete (or staff member) with a background different from them. In the competency document, the NATA (2011) includes a collection of “Foundational Behaviors”. These are “basic behaviors [that] permeate professional practice and

should be incorporated into instruction and assessed throughout the educational program (p.9);” listed under these foundational behaviors is “cultural competence”. Not only are sociocultural issues a distinct competency under the Psychosocial Content Area, but cultural awareness is also expected to be incorporated through all areas of athletic training education.

Likelihood Predictors

Similar to the value and preparedness outcomes, there were few and inconsistent predictors for likelihood. PD value predicted likelihood of using the pain perception competency, and location taught predicted sociocultural issues. What was consistent however, was that student value and preparedness predicted how likely a student is to use a competency in the future for all five competencies. This is encouraging in that gives educators two entry points for influencing student behaviors. The results of this analysis indicate that educators must address both value and preparing a student to use a competency. While the simple act of including a competency in the required education gives it a degree of inherent value, it is clear that this is a key component for students’ future clinical practice. Further, these results would indicate the importance of clinical education in student’s future as a professional. It is also possible that the relationship between preparedness and value is recursive, similar to Value and Modeling in Preceptors. If a student values a competency, it is likely that the student will pay closer attention to it and thus feel more prepared. Likewise, if a

student feels more prepared, he or she might apply it more and subsequently find more value in it.

In interviews with athletic training students, Mensch and Ennis (2002) repeatedly found that students responded quite positively to scenarios and case studies, that the content increased in meaningfulness and preparedness for clinical rotations. Case studies are used often in didactic education as a way to enhance problem-solving, reasoning skills, and make clinical skills relevant before applying them in a clinical setting (Speicher, Bell, Kehrhahn, & Casa, 2012). The results of this study offer an opportunity to include not just information regarding injury signs and symptoms, but to also include relevant psychosocial details (e.g., pain perception, sociocultural issues) and include psychological interventions or motivation techniques as part of the course of every outcome and rehabilitation plan. Skills such as patient education have become fairly well accepted, and students understand the importance of education with regard to psychological issues (Harris, Demb, & Passtor, 2005). Case studies can be a way to positively influence students' value and preparedness to use all five of the competencies in this study. By consistently including psychosocial details in case studies across the curriculum, athletic training educators can reinforce the value of these skills, and students will be more aware as they approach their clinical education. Teaching students to automatically look for and/or ask questions about psychosocial issues through the use of case studies can prepare them to

anticipate the likely possibility of encountering psychosocial issues when evaluating and treating their athletes.

Future Competencies

The next edition of the Athletic Training Competencies is currently in development. They will be a distinct departure from the current format, as the new document will incorporate the World Health Organization's International Classification of Functioning (ICF) Model. This is a disability-based model using a Patient-Oriented focus as opposed to a Disease-Oriented oriented focus. This shift in thinking emphasizes not only the injury or illness, but the actual effect that specific injury or illness has on a patient's lived experience (Snyder, et al., 2008). Patient-oriented care also encompasses a patient's values and expects clinicians to respect a patient's differences; this adjustment results in patient care that is clinically meaningful to a patient and that is not focused just on the outcomes desired by the clinician. For example, in a disease-oriented framework, a clinician might be concerned with a patient's range of motion or gait patterns. However in a patient-oriented framework, a clinician might ask how the patient's range of motion is impacting their ability to get ready in the morning or how their gait pattern is influencing their hurdling technique.

The inclusion of the ICF Model should dovetail well with the Integrated Responses to Injury Model (Wiese-Bjornstal, et al, 1998) as both incorporate personal and environmental factors as components to an athlete's level of functioning. Adopting the ICF Model in athletic training education should also

increase emphasis on the ideas of pain perception and sociocultural issues as these two concepts directly address a patient's experience. This model "refocus[es] health care interventions on the unique needs of each patient" (p. 434, Snyder at al., 2008) and thus might further empower PD's to include patient-oriented case studies throughout their curricula.

While it is outside the purview of this study to indicate how specifically PD's might fully change or alter their educational practices, and it is the belief of this author that PD's are well-versed in educational methods and know best how to incorporate these changes in the interest of their unique programs, there are some steps that can be adopted without much difficulty. Where case studies are currently used, they can easily be adapted to include the personal and environmental components found in the ICF Disability and Integrated Responses to Injury Models. PDs must also remember that students value these competencies more than they do; it is up to the PDs to appreciate this in their students and meet their needs accordingly. This is particularly salient for the concept of pain perception, as it was shown that PD value predicts student value for this specific competency. In the long term, knowing that students are not comfortable with these competencies should motivate PDs to look at their programs with a critical eye towards meeting the needs of their students. They should also be encouraged to be mindful of how their own biases may unintentionally be reflected in their programs.

Much of the research shows that ATs are not comfortable with these concepts and skills. The original ATPSQ (Larson, Starkey, & Zaichkowsky) study was published in 1996, now twenty years ago. Presumably, those ATs are today's educators. It may be necessary to provide support to program directors through continuing education, providing a database of prepared case studies available through the "Educator Resources" section of the [Higher Education professional interest group](#) website (via nata.org), and providing workshops at the Athletic Training Educators' Conference.

Summary

PDs show no difference in competency value, but students and preceptors do, primarily in that patient education, motivation, and psychological interventions are valued over pain perceptions and sociocultural issues. Students also differed in their feelings of preparedness and likelihood of using certain competencies. However, the results indicate that a complete picture of student predictors (for all three outcomes) have yet to be understood. It is not clear what motivates the students' values of competencies for patient education, motivation, and psychological interventions, or why they feel more prepared, and are thus more likely to use these particular competencies when compared to pain perception and sociocultural issues.

Of primary concern are the competencies addressing pain perception and sociocultural issues. Overall, students valued these competencies less, felt less prepared, and less likely to use them in the future. This is troubling in that the

pain perception competency addresses the entirety of an ATs' patient population. Moreover, athletic training students are likely to treat a diverse patient population and cultural issues are central to the delivery of appropriate health care. More attention needs to be afforded to these competencies, in both clinical and didactic education.

Limitations

A significant limitation to the study was the inability to link students to preceptors. An initial goal of the study was to determine the impact of clinical education as compared to didactic education. Particularly with the outcome that modeling of a competency is significantly related to value of that competency in a preceptor and value and preparedness are predictors of possible clinical usage by a student, it is clear that the clinical education component is one that must be studied in the future. It should also be noted that the competencies selected are written as either to "describe" or "explain" a concept, rather than the proficiencies which are meant to reflect the actual skills of integrated care of the athlete. It is not known how much difference would have been made in the results if the language of the proficiency ("select and integrate appropriate psychosocial techniques") had been used rather than the competencies.

Another limitation is that we cannot account for all the possible ways in which someone might learn to value a concept or behavior; students may have their own personal reasons for valuing (or not valuing) a competency and this avenue was not able to be explored. It is unknown whether the values a student

brings with them to a program have more or less influence on their clinical practice than their education. Moreover, we only surveyed PDs and not necessarily the person who instructs these competencies. It may even be that these competencies are taught in different courses. A student's relationship with a particular instructor may heavily influence how she approaches or embraces a given concept. Lastly low response rates, from PDs in particular, were challenging to contend with. While one can certainly appreciate that PDs are asked routinely for requests to participate in research, it is possible that the value scores are inflated due to PDs completing this survey because they have an interest in the topic at hand. If preceptors did not complete this survey because they do not view this content area as important, certainly the value scores in this study could potentially be skewed upwards relative to what would have been found in the entire population. Moreover, students and preceptors from these programs were not captured. Because PD value was shown to be a predictor of student value in several instances, it would stand to reason that lower PD value scores could result in lower student value scores.

Future Research

Further studies should be conducted to understand how to positively affect a student's value of a competency. By understanding what students value to begin with and how to increase value in competencies, PDs can make better pedagogical decisions. While number of ways of teaching or evaluating did not appear to predict student value or preparedness, it still leaves the question of

what does increase value and therefore the likelihood that students will use these skills in clinical practice once they are certified. Concurrently, the construct of student preparedness should be explored in greater depth.

Another avenue to pursue is to further understand why students are not valuing pain perceptions and sociocultural issues to a similar degree as the other competencies. Because predictors of values and preparedness were divergent it is not clear as to what variables might be responsible for this lack of appreciation for these two competencies.

Research should also address the influence of the clinical education on the students' values and preparedness. While it is evident that value and preparedness significantly predict a student's likelihood to use a competency, the role of clinical education in this process remains unclear. The student will spend a significant amount of time with each preceptor and it is unknown the degree to which preceptor values of competencies might influence student practices and increase student preparedness.

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APPENDIX A

PROGRAM DIRECTOR SURVEY

Q1.1 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO CONSENT TO ACT AS A HUMAN PARTICIPANT Project Title: “The Psychosocial Domain in Athletic Training Education: Perceptions of Athletic Training Educators and Outcomes in Athletic Training Students”

Principal Investigator and Faculty Advisor (if applicable): Leah Washington (PI), Jennifer Etnier (Faculty Advisor)

What are some general things you should know about research studies? You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likeliness of using psychological skills. This study will evaluate the values of the primary educators (i.e., program directors and preceptors), the setting of the initial instruction, the extent of exposure to psychological skills via multiple instructional methods, the depth of evaluation and assessment of psychological skills, and the role modeling of psychological skills as predictors of ATs' value of, preparedness for using, and likelihood of using psychological skills.

Why are you asking me? You are being asked to participate because you are either a program director of an athletic training education program, a preceptor affiliated with an athletic training education program or a student currently

accepted into an athletic training education program. You must be at least 18 years old to participate.

What will you ask me to do if I agree to be in the study? The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likeliness of using psychological skills as predicted by their educational experiences. Participants will be asked to complete a survey. The survey will be online and can be accessed from any computer with an internet connection. The survey should take no longer than 15 minutes.

If you have any questions regarding your participation in the study, you may contact Leah Washington (lmwashin@uncg.edu or 703-967-7934).

Is there any audio/video recording? There will be no audio or video recording.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants.

If you have questions, want more information or have suggestions, please contact the principal investigator, Leah Washington (lmwashin@uncg.edu or 703-967-7934) or the faculty advisor, Dr. Jenny Etnier (jletnier@uncg.edu or 336-334-3037).

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Are there any benefits to society as a result of me taking part in this research? Research from this study may improve our understanding of athletic training education and athletic training students' learning experiences.

Are there any benefits to me for taking part in this research study? There are no direct benefits to participants in this study.

Will I get paid for being in the study? Will it cost me anything? There are no costs to you or payments made for participating in this study.

How will you keep my information confidential? All information obtained in this study is strictly confidential unless disclosure is required by law. All data collected by the research team will be stored on a password protected computer. Access to data will be limited to the research team. All participants will be identified by a number and will not include any identifying

characteristics. Data will be stored for a minimum of 5 years. Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. If you would like to know more about the privacy and security of the internet survey platform (Qualtrics) being used in this study, you can access that information here: www.qualtrics.com/privacy-statement and here: www.qualtrics.com/security-statement/.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By participating in the survey, you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Leah Washington.

Q1.2 I attest that I have read the consent statement provided (above) by the research team and agree to participate in this survey. I understand that by answering yes to this question, my responses will be included in a research project.

- Yes (1)
- No (2)

Q1.3 I am at least 18 years old

- Yes (1)
- No (2)

Q2.1 What university program are you affiliated with?

Q2.2 Years at current position of Program Director:

Q2.3 Total number of years as a Program Director:

Q2.4 Number of years certified:

Q2.5 I currently also have clinical responsibilities

- Yes (1)
- No (2)

Answer If I currently also have clinical responsibilities No Is Selected

Q51 How many months/years has it been since you have had clinical responsibilities?

Q2.6 What is your age?

Q2.7 What is your gender?

- Male (1)
- Female (2)
- Prefer not to answer (3)
- I need more identifiers (4)

Answer If What is your gender? I need more identifiers Is Selected

Q52 Here are some more gender identifiers:

- Trans male (1)
- Trans female (2)
- Intersex (3)
- Gender fluid (4)
- I do not identify with a particular gender (5)
- Other (6) _____

Q2.8 What is your ethnicity?

- Hispanic/Latino (1)
- Not Hispanic/Latino (2)

Q2.9 What category best describes your race?

- Asian (1)
- Black or African American (2)
- Multi-racial (3)
- Native American/Alaskan Native (4)
- Pacific Islander/Native Hawaiian (5)
- White/Caucasian (6)
- Other (7) _____
- Prefer not to answer (8)

Q2.10 What is your education?

- Bachelor's degree in: (1) _____
- Master's degree in (2) _____
- Doctoral degree in (3) _____
- Other degree in (4) _____

Q3.1 In what department is your program?

- Athletic Training (1)
- Kinesiology (2)
- Exercise Science (3)
- Other (4) _____

Q3.2 In what school is your program located?

- Medical School (1)
- School of Education (2)
- Health Sciences (3)
- Other (4) _____

Q3.3 Is your program:

- Entry level master's (1)
- Undergraduate (2)

Q3.4 What is the total number of students officially admitted to your program?

- 1-5 (1)
- 6-10 (2)
- 11-15 (3)
- 16-20 (4)
- 21-25 (5)
- 25+ (6)

Q3.5 In what division are the majority of your athletics programs?

- D-III (1)
- D-II (2)
- D-I (3)
- NAIA (4)
- Other (5) _____

Q3.6 How large is your university?

- (1)
- 1,001-5,000 (2)
- 5,001-10,000 (3)
- 10,001-15,000 (4)
- 15,001-20,000 (5)
- >20,000 (6)
- Unsure (7)

Q4.1 As you know, one of the ways in which athletic training education is developed for your ATEP is by the Athletic Training Competencies (5th edition). These competencies are published by the Professional Education Council of the National Athletic Trainers' Association. The Commission on Accreditation of Athletic Training Education (CAATE) requires that the Competencies be instructed and evaluated in each professional athletic training education program in order to maintain accreditation.

You will see each of the five competencies that are listed under "psychosocial strategies" within the Psychosocial Strategies and Referral content area. For each of these, I would like to know where the competency is taught, the instructional methods used to teach the competency, where the competency is evaluated, and the methods used to evaluate the competency (this is similar to the information you provide to CAATE). Lastly, I would like to know the value that you see in these competencies for athletic training education.

For the instructional setting, please refer to the following definitions: Laboratory: A setting where students practice skills on a simulated patient (i.e., role playing) in a controlled environment. Clinical education: The application of athletic training knowledge, skills, and clinical abilities on an actual patient base that is evaluated and feedback provided by a preceptor.

Q5.1 Competency PS-6: Explain the importance of educating patients, parents/guardians, and others regarding the condition in order to enhance the psychological and emotional well-being of the patient.

Q5.2 This competency is taught in:

- classroom/lab (1)
- clinical education (2)
- both (3)

Q5.3 What is/are the instructional method(s) used? (select all that apply)

- activities & games (1)
- assignment (e.g.: worksheet, written assignment, digital assignment, project, powerpoint, etc.) (2)
- brainstorming (3)
- case studies (4)
- cooperative learning (5)
- discovery learning (6)
- graphic learning/organizing (7)
- guest speaker/expert panel (8)
- journal/blog (9)
- know-what to know-learned (K-W-L) (10)
- laboratory (11)
- learning centers & communities (12)
- lecture (13)
- lecture with discussion (14)
- observation settings/reports (15)
- online learning tool (16)
- peer assisted learning (17)
- problem-based learning (18)
- report-back sessions (19)
- research project (20)
- role-playing/simulations (21)
- scaffolding (22)
- small group discussion or class discussion (23)
- storytelling (24)
- student response system/polling (25)
- values clarification exercises (26)
- video (27)

Q5.4 This competency is evaluated in:

- classroom/lab (1)
- clinical evaluation (2)
- both (3)

Q5.5 What is/are the evaluation method(s) use when assessing this competency? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q5.6 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q6.1 Competency PS-7: Describe the psychological techniques (e.g., goal-setting, imagery, positive self-talk, relaxation/anxiety reduction) that the athletic trainer can use to motivate the patient during injury rehabilitation and return to activity processes.

Q6.2 This competency is taught in:

- classroom/lab (1)
- clinical education (2)
- both (3)

Q6.3 What is/are the instructional method(s) used? (select all that apply)

- activities & games (1)
- assignment (e.g.: worksheet, written assignment, digital assignment, project, powerpoint, etc.) (2)
- brainstorming (3)
- case studies (4)
- cooperative learning (5)
- discovery learning (6)
- graphic learning/organizing (7)
- guest speaker/expert panel (8)
- journal/blog (9)
- know-what to know-learned (K-W-L) (10)
- laboratory (11)
- learning centers & communities (12)
- lecture (13)
- lecture with discussion (14)
- observation settings/reports (15)
- online learning tool (16)
- peer assisted learning (17)
- problem-based learning (18)
- report-back sessions (19)
- research project (20)
- role-playing/simulations (21)
- scaffolding (22)
- small group discussion or class discussion (23)
- storytelling (24)
- student response system/polling (25)
- values clarification exercises (26)
- video (27)

Q6.4 This competency is evaluated in:

- classroom/lab (1)
- clinical evaluation (2)
- both (3)

Q6.5 What is/are the evaluation method(s) use when assessing this competency? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q6.6 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q7.1 Competency PS-8: Describe the psychological interventions (e.g., goal setting, motivational techniques) that are used to facilitate a patient's physical psychological and return to activity needs.

Q7.2 This competency is taught in:

- classroom/lab (1)
- clinical education (2)
- both (3)

Q7.3 What is/are the instructional method(s) used? (select all that apply)

- activities & games (1)
- assignment (e.g.: worksheet, written assignment, digital assignment, project, powerpoint, etc.) (2)
- brainstorming (3)
- case studies (4)
- cooperative learning (5)
- discovery learning (6)
- graphic learning/organizing (7)
- guest speaker/expert panel (8)
- journal/blog (9)
- know-what to know-learned (K-W-L) (10)
- laboratory (11)
- learning centers & communities (12)
- lecture (13)
- lecture with discussion (14)
- observation settings/reports (15)
- online learning tool (16)
- peer assisted learning (17)
- problem-based learning (18)
- report-back sessions (19)
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- role-playing/simulations (21)
- scaffolding (22)
- small group discussion or class discussion (23)
- storytelling (24)
- student response system/polling (25)
- values clarification exercises (26)
- video (27)

Q7.4 This competency is evaluated in:

- classroom/lab (1)
- clinical evaluation (2)
- both (3)

Q7.5 What is/are the evaluation method(s) use when assessing this competency? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q7.6 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q8.1 Competency PS-9: Describe the psychosocial factors that affect persistent pain sensation and perception (e.g., emotional state, locus of control, psychodynamic issues, sociocultural factors, personal values and beliefs) and identify multidisciplinary approaches for assisting patients with persistent pain.

Q8.2 This competency is taught in:

- classroom/lab (1)
- clinical education (2)
- both (3)

Q8.3 What is/are the instructional method(s) used? (select all that apply)

- activities & games (1)
- assignment (e.g.: worksheet, written assignment, digital assignment, project, powerpoint, etc.) (2)
- brainstorming (3)
- case studies (4)
- cooperative learning (5)
- discovery learning (6)
- graphic learning/organizing (7)
- guest speaker/expert panel (8)
- journal/blog (9)
- know-what to know-learned (K-W-L) (10)
- laboratory (11)
- learning centers & communities (12)
- lecture (13)
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- observation settings/reports (15)
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- problem-based learning (18)
- report-back sessions (19)
- research project (20)
- role-playing/simulations (21)
- scaffolding (22)
- small group discussion or class discussion (23)
- storytelling (24)
- student response system/polling (25)
- values clarification exercises (26)
- video (27)

Q8.4 This competency is evaluated in:

- classroom/lab (1)
- clinical evaluation (2)
- both (3)

Q8.5 What is/are the evaluation method(s) use when assessing this competency? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q8.6 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q9.1 Competency PS-10: Explain the impact of sociocultural issues that influence the nature and quality of healthcare received (e.g., cultural competence, access to appropriate healthcare providers, uninsured/underinsured patients, insurance) and formulate an implement strategies to maximize client/patient outcomes.

Q9.2 This competency is taught in:

- classroom/lab (1)
- clinical education (2)
- both (3)

Q9.3 What is/are the instructional method(s) used? (select all that apply)

- activities & games (1)
- assignment (e.g.: worksheet, written assignment, digital assignment, project, powerpoint, etc.) (2)
- brainstorming (3)
- case studies (4)
- cooperative learning (5)
- discovery learning (6)
- graphic learning/organizing (7)
- guest speaker/expert panel (8)
- journal/blog (9)
- know-what to know-learned (K-W-L) (10)
- laboratory (11)
- learning centers & communities (12)
- lecture (13)
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- observation settings/reports (15)
- online learning tool (16)
- peer assisted learning (17)
- problem-based learning (18)
- report-back sessions (19)
- research project (20)
- role-playing/simulations (21)
- scaffolding (22)
- small group discussion or class discussion (23)
- storytelling (24)
- student response system/polling (25)
- values clarification exercises (26)
- video (27)

Q9.4 This competency is evaluated in:

- classroom/lab (1)
- clinical evaluation (2)
- both (3)

Q9.5 What is/are the evaluation method(s) use when assessing this competency? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q9.6 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

APPENDIX B

PRECEPTOR SURVEY

Q1.1 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO CONSENT TO ACT AS A HUMAN PARTICIPANT Project Title: “The Psychosocial Domain in Athletic Training Education: Perceptions of Athletic Training Educators and Outcomes in Athletic Training Students”

Principal Investigator and Faculty Advisor (if applicable): Leah Washington (PI), Jennifer Etnier (Faculty Advisor)

What are some general things you should know about research studies? You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likeliness of using psychological skills. This study will evaluate the values of the primary educators (i.e., program directors and preceptors), the setting of the initial instruction, the extent of exposure to psychological skills via multiple instructional methods, the depth of evaluation and assessment of psychological skills, and the role modeling of psychological skills as predictors of ATs' value of, preparedness for using, and likelihood of using psychological skills.

Why are you asking me? You are being asked to participate because you are either a program director of an athletic training education program, a preceptor affiliated with an athletic training education program or a student currently

accepted into an athletic training education program. You must be at least 18 years old to participate.

What will you ask me to do if I agree to be in the study? The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likeliness of using psychological skills as predicted by their educational experiences. Participants will be asked to complete a survey. The survey will be online and can be accessed from any computer with an internet connection. The survey should take no longer than 15 minutes.

If you have any questions regarding your participation in the study, you may contact Leah Washington (lmwashin@uncg.edu or 703-967-7934).

Is there any audio/video recording? There will be no audio or video recording.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants.

If you have questions, want more information or have suggestions, please contact the principal investigator, Leah Washington (lmwashin@uncg.edu or 703-967-7934) or the faculty advisor, Dr. Jenny Etnier (jletnier@uncg.edu or 336-334-3037).

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Are there any benefits to society as a result of me taking part in this research? Research from this study may improve our understanding of athletic training education and athletic training students' learning experiences.

Are there any benefits to me for taking part in this research study? There are no direct benefits to participants in this study.

Will I get paid for being in the study? Will it cost me anything? There are no costs to you or payments made for participating in this study.

How will you keep my information confidential? All information obtained in this study is strictly confidential unless disclosure is required by law. All data collected by the research team will be stored on a password protected computer. Access to data will be limited to the research team. All participants will be identified by a number and will not include any identifying

characteristics. Data will be stored for a minimum of 5 years. Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. If you would like to know more about the privacy and security of the internet survey platform (Qualtrics) being used in this study, you can access that information here: www.qualtrics.com/privacy-statement and here: www.qualtrics.com/security-statement/.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By participating in the survey, you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Leah Washington.

Q1.2 I attest that I have read the consent statement provided (above) by the research team and agree to participate in this survey. I understand that by answering yes to this question, my responses will be included in a research project.

- Yes (1)
- No (2)

Q1.3 I am at least 18 years old.

- Yes (1)
- No (2)

Q2.1 What university program are you affiliated with?

Q2.2 Years at current clinical athletic training position:

Q2.3 Total years in a clinical athletic training position:

Q2.4 Number of years certified:

Q2.5 Total years as a preceptor:

Q2.6 What is your age?

Q2.7 What is your gender?

- Male (1)
- Female (2)
- Prefer not to answer (3)
- I need more identifiers (4)

Answer If What is your gender? I need more identifiers Is Selected

Q42 Here are some more gender identifiers:

- Trans male (1)
- Trans femal (2)
- Intersex (3)
- Gender fluid (4)
- I do not identify with a particular gender (5)
- Other (6) _____

Q2.8 What is your ethnicity?

- Hispanic/Latino (1)
- Not Hispanic/Latino (2)

Q2.9 What category best describes your race?

- Asian (1)
- Black or African American (2)
- Multi-racial (3)
- Native American/Alaskan Native (4)
- Pacific Islander/Native Hawaiian (5)
- White/Caucasian (6)
- Other (7) _____
- Prefer not to answer (8)

Q3.1 What type of clinical setting do you work in?

- College/University (1)
- Hospital/Clinical (2)
- Occupational health (3)
- Military (4)
- Performing Arts (5)
- Physician Extender (6)
- Professional Sports (7)
- Public Safety (8)
- Secondary Schools (9)
- Other (10) _____

Q3.2 What is your job title?

- Graduate Assistant/Intern (1)
- Assistant Athletic Trainer (2)
- Associate Athletic Trainer (3)
- Head Athletic Trainer (4)
- Other (5) _____

Q3.3 Do you have any academic responsibilities with the program for which you are acting as a preceptor?

- I do not have any other academic responsibilities (1)
- Full-time faculty member (2)
- Part-time faculty member (3)
- Adjunct instructor (4)
- Guest lecturer (5)
- Other (6) _____

Q3.4 What is your education?

- Bachelor's degree in: (1) _____
- Master's degree in (2) _____
- Doctoral degree in (3) _____

Q3.5 How many students do you typically work with as a preceptor in the fall semester?

Q3.6 How many students do you typically work with as a preceptor in the spring semester?

Q4.1 As you may know, one of the ways in which athletic training education is developed for your ATEP is by the Athletic Training Competencies (5th edition). These competencies are published by the Professional Education Council of the National Athletic Trainers' Association. The Commission on Accreditation of Athletic Training Education (CAATE) requires that the Competencies be instructed and evaluated in each professional athletic training education program in order to maintain accreditation. Next, you will see each of the five competencies that are listed under "psychosocial strategies" within the Psychosocial Strategies and Referral content area. For each of these, I would like to know how often you model the competency for your athletic training student(s) as well as how you assess your student(s) on each competency. Lastly, I would like to know the value that you see in these competencies for athletic trainers.

Q5.1 Competency PS-6: Explain the importance of educating patients, parents/guardians, and others regarding the condition in order to enhance the psychological and emotional well-being of the patient.

Q5.2 How often do you model, in your own clinical practice, this competency?

_____ 0= I never model this behavior; 100= I consistently model this behavior
(1)

Q5.3 What evaluation methods do you use when assessing this competency with your athletic training student(s)? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q5.4 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q6.1 Competency PS-7: Describe the psychological techniques (e.g., goal-setting, imagery, positive self-talk, relaxation/anxiety reduction) that the athletic trainer can use to motivate the patient during injury rehabilitation and return to activity processes.

Q6.2 How often do you model, in your own clinical practice, this competency?

_____ 0= I never model this behavior; 100= I consistently model this behavior (1)

Q6.3 What evaluation methods do you use when assessing this competency with your athletic training student(s)? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
- simulations/scenarios/role play (9)
- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q6.4 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q7.1 Competency PS-8: Describe the psychological interventions (e.g., goal setting, motivational techniques) that are used to facilitate a patient's physical, psychological, and return to play needs.

Q7.2 How often do you model, in your own clinical practice, this competency?

_____ 0= I never model this behavior; 100= I consistently model this behavior (1)

Q7.3 What evaluation methods do you use when assessing this competency with your athletic training student(s)? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
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- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q7.4 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q8.1 Competency PS-9: Describe the psychosocial factors that affect persistent pain sensation and perception (e.g., emotional state, locus of control, psychodynamic issues, sociocultural factors, personal values and beliefs) and identify multidisciplinary approaches for assisting patients with persistent pain.

Q8.2 How often do you model, in your own clinical practice, this competency?

_____ 0= I never model this behavior; 100= I consistently model this behavior
(1)

Q8.3 What evaluation methods do you use when assessing this competency with your athletic training student(s)? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
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- skills demonstrations (10)
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- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q8.4 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

Q9.1 Competency PS-10: Explain the impact of sociocultural issues that influence the nature and quality of healthcare received (e.g., cultural competence, access to appropriate healthcare providers, uninsured/underinsured patients, insurance) and formulate and implement strategies to maximize client/patient outcomes.

Q9.2 How often do you model, in your own clinical practice, this competency?

_____ 0= I never model this behavior; 100= I consistently model this behavior (1)

Q9.3 What evaluation methods do you use when assessing this competency with your athletic training student(s)? (select all that apply)

- audio and visual materials (could include graphic learning.organizer) (1)
- case studies (2)
- laboratory (3)
- lecture/presentation (4)
- online learning tools (5)
- peer-assisted learning/learning community (6)
- portfolio, journal or blogging (7)
- problem based learning (8)
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- skills demonstrations (10)
- student response system/polling (11)
- written exam/quiz (12)
- written work and research (could include discovery learning) (13)
- group work/cooperative learning (14)
- guest speaker/panel (15)
- scaffolding, brainstorming, and discussion (16)

Q9.4 What value do you place on this competency?

_____ 0= no value; 100 the most value (1)

APPENDIX C

STUDENT SURVEY

Q1 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO CONSENT TO ACT AS A HUMAN PARTICIPANT Project Title: "The Psychosocial Domain in Athletic Training Education: Perceptions of Athletic Training Educators and Outcomes in Athletic Training Students"

Principal Investigator and Faculty Advisor (if applicable): Leah Washington (PI), Jennifer Etnier (Faculty Advisor)

What are some general things you should know about research studies? You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

What is the study about? This is a research project. Your participation is voluntary. The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likelihood of using psychological skills. This study will evaluate the values of the primary educators (i.e., program directors and preceptors), the setting of the initial instruction, the extent of exposure to psychological skills via multiple instructional methods, the depth of evaluation and assessment of psychological skills, and the role modeling of psychological skills as predictors of ATs' value of, preparedness for using, and likelihood of using psychological skills.

Why are you asking me? You are being asked to participate because you are either a program director of an athletic training education program, a preceptor affiliated with an athletic training education program or a student currently

accepted into an athletic training education program. You must be at least 18 years old to participate.

What will you ask me to do if I agree to be in the study? The purpose of this study is to add to our understanding of possible influences on athletic training students' value of, preparedness for using, and likeliness of using psychological skills as predicted by their educational experiences. Participants will be asked to complete a survey. The survey will be online and can be accessed from any computer with an internet connection. The survey should take no longer than 15 minutes.

If you have any questions regarding your participation in the study, you may contact Leah Washington (lmwashin@uncg.edu or 703-967-7934).

Is there any audio/video recording? There will be no audio or video recording.

What are the risks to me? The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants.

If you have questions, want more information or have suggestions, please contact the principal investigator, Leah Washington (lmwashin@uncg.edu or 703-967-7934) or the faculty advisor, Dr. Jenny Etnier (jletnier@uncg.edu or 336-334-3037).

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

Are there any benefits to society as a result of me taking part in this research? Research from this study may improve our understanding of athletic training education and athletic training students' learning experiences.

Are there any benefits to me for taking part in this research study? There are no direct benefits to participants in this study.

Will I get paid for being in the study? Will it cost me anything? There are no costs to you or payments made for participating in this study.

How will you keep my information confidential? All information obtained in this study is strictly confidential unless disclosure is required by law. All data collected by the research team will be stored on a password protected computer. Access to data will be limited to the research team. All participants will be identified by a number and will not include any identifying

characteristics. Data will be stored for a minimum of 5 years. Absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. If you would like to know more about the privacy and security of the internet survey platform (Qualtrics) being used in this study, you can access that information here: www.qualtrics.com/privacy-statement and here: www.qualtrics.com/security-statement/.

What if I want to leave the study? You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

What about new information/changes in the study? If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant: By participating in the survey, you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By participating in the survey, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Leah Washington.

Q2 I attest that I have read the consent statement provided (above) by the research team and agree to participate in this survey. I understand that by answering yes to this question, my responses will be included in a research project.

- Yes (1)
- No (2)

Q3 I am at least 18 years of age

- Yes (1)
- No (2)

Q4 Are you in (or about to be in) your final year of clinical education?

- Yes (1)
- No (2)

Q5 What school are you currently enrolled in?

Q34 Who is/will be your preceptor?

Q6 Are you currently in an:

- Entry-level master's degree program (1)
- Undergraduate program (2)

Answer If Are you currently in an: Entry-level master's degree program Is Selected

Q36 What was your undergraduate major?

Q7 What type of clinical setting are you currently (or most recently) assigned?

- College/University (1)
- Hospital/Clinical (2)
- Occupational Health (3)
- Military (4)
- Performing Arts (5)
- Physician Extender (6)
- Professional Sports (7)
- Public Safety (8)
- Secondary Schools (9)
- Other (10) _____

Q8 What is the job title of your preceptor?

- Graduate Assistant/Intern (1)
- Assistant Athletic Trainer (2)
- Associate Athletic Trainer (3)
- Head Athletic Trainer (4)
- Other (5) _____

Q9 What is your age?

Q10 What is your gender?

- Male (1)
- Female (2)
- Prefer not to answer (3)
- I need more identifiers (4)

Answer If What category best describes your race? Native American/Alaskan
Native Is Selected

Q35 Here are some more gender identifiers:

- Trans male (1)
- Trans female (2)
- Intersex (3)
- Gender fluid (4)
- I do not identify with a particular gender (5)
- Other (6) _____

Q11 What is your ethnicity?

- Hispanic/Latino (1)
- Not Hispanic/Latino (2)

Q12 What category best describes your race?

- Asian (1)
- Black or African American (2)
- Multi-racial (3)
- Native American/Alaskan Native (4)
- Pacific Islander/Native Hawaiian (5)
- White/Caucasian (6)
- Other (7) _____
- Prefer not to answer (8)

Q13 One of the ways in which athletic training education is developed for your ATEP is by the Athletic Training Competencies (5th edition). These competencies are published by the Professional Education Council of the National Athletic Trainers' Association. The Commission on Accreditation of Athletic Training Education (CAATE) requires that the Competencies be instructed and evaluated in each professional athletic training education program in order to maintain accreditation. This survey pertains to the five competencies that are listed under "psychosocial strategies" within the Psychosocial Strategies and Referral content area. For each of these, I would like to know how prepared you feel in applying the competency, how likely you are to use the competencies in your future clinical practice as a certified athletic trainer, and lastly, I would like to know the value that you see in these competencies for athletic trainers.

Q14 PS-6. Explain the importance of educating patients, parents/guardians, and others regarding the condition in order to enhance the psychological and emotional well-being of the patient.

Q15 How prepared do you feel to use this competency in your clinical practice?

_____ 0= not prepared at all; 100= extremely prepared (1)

Q16 How likely are you to use this competency in your clinical practice?

_____ 0= not at all likely; 100= extremely likely (1)

Q17 What value do you place on this competency?

_____ 0= no value; 100= the utmost value (1)

Q18 PS-7. Describe the psychological techniques (e.g., goal-setting, imagery, positive self-talk, relaxation/anxiety reduction) that the athletic trainer can use to motivate the patient during injury rehabilitation and return to activity processes.

Q19 How prepared do you feel to use this competency in your clinical practice?

_____ 0= not prepared at all; 100= extremely prepared (1)

Q20 How likely are you to use this competency in your clinical practice?

_____ 0= not at all likely; 100= extremely likely (1)

Q21 What value do you place on this competency?

_____ 0= no value; 100= the utmost value (1)

Q22 PS-8. Describe the psychological interventions (e.g., goal setting, motivational techniques) that are used to facilitate a patient's physical psychological and return to activity needs.

Q23 How prepared do you feel to use this competency in your clinical practice?

_____ 0= not prepared at all; 100= extremely prepared (1)

Q24 How likely are you to use this competency in your clinical practice?

_____ 0= not at all likely; 100= extremely likely (1)

Q25 What value do you place on this competency?

_____ 0= no value; 100= the utmost value (1)

Q26 PS-9. Describe the psychosocial factors that affect persistent pain sensation and perception (e.g., emotional state, locus of control, psychodynamic issues, sociocultural factors, personal values and beliefs) and identify multidisciplinary approaches for assisting patients with persistent pain.

Q27 How prepared do you feel to use this competency in your clinical practice?

_____ 0= not prepared at all; 100= extremely prepared (1)

Q28 How likely are you to use this competency in your clinical practice?

_____ 0= not at all likely; 100= extremely likely (1)

Q29 What value do you place on this competency?

_____ 0= no value; 100= the utmost value (1)

Q30 PS-10. Explain the impact of sociocultural issues that influence the nature and quality of healthcare received (e.g., cultural competence, access to appropriate healthcare providers, uninsured/underinsured patients, insurance) and formulate an implement strategies to maximize client/patient outcomes.

Q31 How prepared do you feel to use this competency in your clinical practice?

_____ 0= not prepared at all; 100= extremely prepared (1)

Q32 How likely are you to use this competency in your clinical practice?

_____ 0= not at all likely; 100= extremely likely (1)

Q33 What value do you place on this competency?

_____ 0= no value; 100= the utmost value (1)