2014

The Impact of EI on Pentathletes and Heptathletes While Controlling for Gender

Marissa Norman

BARRY UNIVERSITY

SCHOOL OF HUMAN PERFORMANCE AND LEISURE SCIENCES

THE IMPACT OF EI ON PENTATHLETES AND HEPTATHLETES WHILE CONTROLING FOR GENDER

BY

MARISSA NORMAN

A thesis submitted to the
Department of Sport and Exercise Science
in partial fulfillment of the requirements
for the degree of
Master of Science in
Movement Science
With a specialization in Sport, Exercise, and Performance Psychology

Miami Shores, Florida
2014

Abstract

Emotional intelligence is the ability, reason, use, and knowledge of emotions to enhance thought and action (Mayer, Roberts, & Barsade, 2008). Many studies have suggested that EI has a strong influence on career and academic success (Acker & Porter, 2003; Goleman, 2004; Rahim, Psenicka, Polychroniou, Zhao, Yu, Chan et al, 2002). More recently research has focus on EI and sport, in fact practitioners have become increasingly vocal in their suggestion that EI may be an important paradigm in the sports world (Botterill & Brown, 2002; McCann, 1999; Meyer, Fletcher, Kilty, & Richburg, 2003; Zizzi, Deaner, & Hirschhorn, 2003). In addition to sport there is not a concrete understanding in regards to EI and gender. The findings in the literature are ambivalent in respects to gender differences in EI (Naghavi, F. & Mar'of, R. 2011; & Fernández-Berrocal, Cabello, Castillo, & Extremera, 2012) and more research is necessary in this area. The purpose of this study is to examine if EI determined performance in pentathletes and heptathletes while controlling for gender. Participants consisted of both men heptathletes (n = 49) and woman pentathletes (n = 64) from NCAA college level track and field teams, and were contacted via email. Respondents were directed to a website that contained a demographic questionnaire and the Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002). A multiple regression was used to determine if those athletes with high EI would be more successful while also controlling for gender.

Dedication

This thesis is dedicated to my Aunt Nicole. I know you are above watching over me and cheering me on. You are my motivation; every day I strive to make you proud. Love you so much!

Acknowledgment

I would first like to thank my family for making all of this possible - Mom, Dad, Sissy, Brody. There are no words that can express how grateful I am for everything that all of you have done for me. Your support, sacrifices, and reassurance have allowed me to excel, turning my dreams into reality. Love you all so much.

I would also like to thank Anthony. You have been my biggest support system throughout this entire process. I don't know how sane I would have been this past year without you. Your encouragement and companionship has got me through many obstacles and for that I am forever grateful.

Last, but certainly not least, I would like to thank my committee members for your guidance and support, not only through this thesis process, but also my two years here at Barry University. This thesis would not have been possible without all of you. I have been fortunate enough to have multiple classes with all of my committee members allowing me to learn and build strong relationships with each one of you. I sincerely appreciate all of you. Thank you for everything!

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CHAPTER I

INTRODUCTION

There was a time when emotions were not considered to be an important factor in research; in fact most organizational theories had the tendency to marginalize the exploration of emotions (Martin, Knopff, & Beckman, 1998). However, emotion has become a main topic of interest in many different studies (Clarke, 2006a, 2006b; Drodge & Murphy, 2002; Jordan & Troth, 2002; Kunnanatt, 2004; Landen, 2002). A particular aspect of emotions that has recently received attention in the scientific community is the concept of emotional intelligence (EI).

EI was initially established through the works of Thorndike (1920) exploring social intelligence and Gardner (1983) investigating personal intelligence. Years later, the term EI was reassessed by Salovey and Mayer (1990) and used in the United States academic literature. They defined it as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). Eventually this concept was accepted as a principal topic of interest when Daniel Goleman (Emotional Intelligence, 1995) defined EI as having 5 domains: (a) knowing one's emotions, (b) managing emotions, (c) motivating oneself, (4) recognizing emotions in others, and (5) handling relationships. In addition, Goleman (1998) suggested that EI increased effectiveness in leadership, social involvement, and organizational membership.

Through the works of those previously mentioned, EI had become a popular research topic. Research has sought to determine the effects of gender on EI, as well as its

influence on success across an array of areas. Previous research has shown that gender was a significant predictor of EI, and typically, females are better than males in managing their emotions (Brody & Hall, 2000; Hall & Mast, 2008). For example, results from Craig, Tran, Hermens, Williams, Kemp, Morris, and Gordon (2009) showed that females had higher overall EI scores than males. Despite these previous findings, there is literature suggesting that gender has no affect on EI. For example, Whitman, Van Rooy, Viswesvaran, and Kraus (2009) determined that there is no gender difference in EI in all (i.e., self emotion appraisal, others' emotion appraisal, & regulation of emotion) but one subscale of the Wong and Law Emotional Intelligence Scale (WLEIS); females scored higher on the Use of Emotion Scale. Additionally, Saklofske, Austin, Galloway, and Davidson (2007) suggested that there is no gender effect in global EI using a trait EI measure (SSEIT). Finally, when using the three subscales on the Trait Meta-Mood Scale (TMMS) to investigate EI in male and female university students from western Canada, Fernández-Berrocal, Extremera, and Ramos (2004) found no significant gender differences. These contradictory findings warrant further research to investigate gender differences in EI.

Studies have suggested that EI has a strong influence on career and leadership success (Acker & Porter, 2003; Goleman, 2004; Rahim, Psenicka, Polychroniou, Zhao, Yu, Chan et al, 2002). For example, Wu (2011) investigated the effects of EI on the relationship between job stress and job performance by using a sample of employees in the Taiwanese finance sector. Results suggested that EI has a positive impact on job performance and that highly EI employees are more likely than low EI employees to be able to reduce the potential negative effects of job stress. Much research has also

investigated the effects of EI on leadership; EI has long been theorized to contribute to effectiveness in leadership (Antonakis et al., 2009; Dasborough, 2006; George, 2000). For instance, Munroe (2010) examined the degree to which a relationship existed between EI and instructional leadership behaviors by using a sample population that consisted of 35 elementary principals involved in Michigan's Reading First Initiative. Results indicated a significant relationship between the principal's total scale score of instructional leadership behaviors and their overall EI score.

Recently it has been suggested that EI is a significant predictor of sport performance; practitioners have become increasingly vocal in their suggestion that EI may be an important paradigm in the sports world (Botterill & Brown, 2002; McCann, 1999; Meyer, Fletcher, Kilty, & Richburg, 2003; Zizzi, Deaner, & Hirschhorn, 2003). For example, Crombie (2009) studied the effect of team EI on the performance of South African cricket players and found that EI contributed to the success, suggesting that EI contributed to the success of teams participating in complex sports similar to cricket. In a different study, Zizzi (2003) found components of EI were moderately related to pitching performance when exploring the relationship between EI and athletic performance in a sample of 61 NCAA Division I baseball players. These initial findings suggest that EI may be a valuable predictor of sport performance (Van Rooy & Viswesvaran, 2004).

For the purposes of this study, two particular sport performances (i.e., pentathlon and heptathlon) are investigated. The pentathlon is one of the many events in women's indoor track and field. It requires a combination of five individual events, in which all events are completed in a single day. The pentathlon consists of the 60-meter hurdles, high jump, shot put, long jump, and the 800-meter. A similar event to the pentathlon is

the heptathlon; however, this is an event in men's track and field and consists of seven different events completed in two days. On the first day, athletes compete in the 60-meter sprint, long jump, shot put, and the high jump. On the second day, athletes compete in the 60-meter hurdles, pole vault, and then 1000 meter.

For the simple reason that both the pentathlon and heptathlon consist of many different events, there is a strong possibility for athletes to transfer emotions from one event to the other. By definition an emotion is a reaction to a stimulus, which can be either real or imagined (Deci, 1980). For example, a pentathlete could feel happy because she got the highest score in the hurdles, angry because she didn't clear the bar in the high jump, or nervous because she's not sure what her teammates will think about her if she loses. Due to the many events and possibilities of reactions to each event, it is important for an athlete to have the ability to facilitate and control their emotions. It would be ideal if these were strictly positive emotions, however this is not always the case. Past research about automaticity of movement has suggested more association with positive emotions (i.e., excitement and happiness) rather than negative emotions (i.e., anxiety, dejection and anger; Vast, Young, & Thomas, 2010). This links to the attention explanation of the choking phenomenon in sports that states that negative emotion such as anxiety can lead to conscious efforts to control an already highly automatic physical task, which leads to degradation in performance (Beilock & Gray, 2007; Memmert & Furley, 2007). Further, the negative emotion of anxiety is positively related to task-irrelevant thinking and attending to threatening information and positive emotions are related to task-relevant information, which is more optimal for performance (Derryberry & Tucker, 1994). To increase the likelihood of better performance, it is most optimal to

have an athlete experience positive emotions as opposed to negative emotions. A huge component of EI is one's ability to understand and regulate their emotions. With an understanding of how positive emotions facilitate performance and negative emotions have the potential to harm performance, it is clear that EI is important for athletes to possess in order to promote positive emotions and decrease or prevent negative emotions. In addition, it may be important for athletes to have strong EI in order to decrease the chances of negative emotions persisting from one event to another. Those athletes with high EI may be able to facilitate and control their emotions more adequately than those with low EI (Parker, Summerfeldt, Hogan, & Majeski, 2004) allowing them to perform at the optimal mindset leading them to a higher score compared to those athletes with lower EI.

Statement of the Problem

The pentathlon and heptathlon are unique sport performances in that many different events contribute to one's ultimate performance outcome. Thus, there is the potential for different emotions to arise throughout this performance depending on the athlete's perception of how they performed in each event. It may, therefore, be important for athletes to have control over their emotions regardless of outcome of any of their individual events. More specifically, it is likely to be important for athletes to maintain positive emotions, which facilitate performance, and avoid negative emotions, which can harm performance (Vast, Young, & Thomas, 2010). EI is defined as the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. Through this definition alone one could understand how EI can be beneficial for sport performances such as the

pentathlon and the heptathlon. More specifically, EI may be beneficial in sport performances such as the pentathlon and the heptathlon where athletes are given a short period in between events to understand what emotions they are experiencing, and manage their negative emotions in an effective way so that they can facilitate positive emotions for their next performance. However, research is needed to determine whether or not EI actually predicts performance in sports before contributions can be made toward the advancement of the scientific and applied sport psychology literatures (Meyer, & Fletcher, 2007).

Furthermore, Brody and Halls (2000) found that females are generally better at managing their emotions, which indicates that gender may be a predictor of EI. However, Saklofske, Austin, Galloway, and Davidson (2007) found no significant gender effect in global EI. This contradiction in the research leaves a question regarding the significance of gender on EI. Due to this gap in the literature, more research must be done in order to understand the effects of gender on EI.

Past studies have suggested that females are more sensitive than men to the emotions of others (Hall & Mast, 2008) as well as have a stronger vocabulary to describe their emotions (Fivush, Brotman, Bunkner, & Goodman, 2000). This study will add to the literature by investigating whether EI predicts performance in pentathlon and heptathlon as well as whether there are gender differences in the use of EI to predict performance.

The Purpose of This Study

There were 3 purposes of this study:

1) To investigate if EI predicts performance in pentathletes

2) To investigate if EI predicts performance in heptathletes
3) To investigate if there are gender differences in the prediction of EI on performance. More specifically, to investigate if EI is more important to determine performance for females compared to males.

Hypotheses

In congruence with past research (i.e., Crombie, Lombard, & Noakes, 2009; Perlini & Halverson, 2006; Zizzi, Deaner, & Hirschhorn, 2003) it was hypothesized that:

1) EI would predict performance in the pentathlon

    Which factors (i.e., self emotion appraisal, others' emotion appraisal, use of emotion, & regulation of emotion) of EI predict performance in pentathletes

2) EI would predict performance in the heptathlon

    Which factors (i.e., self emotion appraisal, others' emotion appraisal, use of emotion, & regulation of emotion) of EI predict performance in heptathletes

As stated before, there is some research that suggests females have higher levels of EI when compared to males (Ciarrochi, Chan, & Bagar, 2001; Day & Caroll, 2004; Mayer, Caruso, & Salovey, 1999). However, there is also research that claims when looking at EI as a whole there are no gender differences (Petrides & Furnham, 2000; Petrides, Furnham, & Martin, 2004). Due to the contradictory findings, the researcher aimed to answer the following research question:

3) To what extent does the interaction of gender and EI predict performance?

Significance

Measures of EI have been associated with enhanced performance (Van Rooy & Viswesvaran, 2004). The findings from this study aimed to promote the education of EI to athletes, coaches, and sport psychology practitioners. It has already been argued that sport psychologists should seek to enhance the EI of athletes they work with (Meyer & Fletcher, 2007). In addition, Goleman (1995) has suggested that EI can be taught. Once coaches and sport psychologists begin to understand the impact that EI has on performance (specifically in this study pentathletes and heptathletes), they can begin to implement techniques to enhance athletes' EI.

Filling this gap and learning the importance of EI depending on gender can potentially help athletes, coaches, and practitioners to develop gender specific inventions to improve EI. In addition, it would be beneficial for coaches and practitioners to develop a method to enhance EI in their athletes if EI were to be a predictor of personal record (PR). The findings of this study aimed to help coaches and practitioners understand how EI may be a key factor to improve a pentathlete's (i.e., female's) and/or heptathlete's (i.e., male's) performance.

Assumptions

There are three assumptions that were made in this research study. One assumption is that an athlete's personal record of the year is a strong determinate of his/her performance. Those athletes with higher personal record scores in the pentathlon and heptathlon for the year will be deemed more successful than those athletes with lower personal records. Another assumption made in this research study was that emotional intelligence is a measurable intelligence. In addition, it is assumed that the Wong and

Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002) accurately measures the intended aspects of emotional intelligence. The last assumption in this research study was that participants are being honest with each of their answers in the WLEIS as well in the demographic section.

Limitations

One possible limitation is the use of personal records to determine an athletes' performance. There is a possibility that some athletes could be suffering with an injury preventing them from competing at their best, as well as the possibility that some athletes were not given the option to compete in many pentathlons or heptathlons due to the fact that not every track meet provides them, leaving them with less opportunities to achieve high scores. In addition, due to the population sample from this research, the findings cannot be generalized to all sport events.

Delimitations

Two delimitations apply to this study. First, the study was limited to track and field athletes that participate in the pentathlon and heptathlon. The researcher decided to investigate this very specific population because, unlike other athletes in track and field, those who participate in the pentathlon and heptathlon are guaranteed to compete in multiple events. The researcher hypothesized that those with higher EI would have better performance because they are able to control their emotions from event to event regardless of the outcomes from each event. In order to better investigate this idea, the researcher used a population that participates in many different events performed in a fairly short time frame from each other. Second, data was only collected from athletes ranging in ages from 18 to 25. This is simply because the researcher only looked at

NCAA D-I collegiate athletes, and the majority of collegiate athletes fall in the age range of 18-25. Lastly, data was collected only from athletes competing in indoor heptathlon and pentathlon events. The researcher chose to investigate only indoor track and field because there are not as many extraneous variables on performance such as the wind and other weather conditions (e.g., rain, cold, heat, etc.).

Operational Definitions

Emotional Intelligence (EI): "The ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p.189).

Self-Emotion Appraisal: Individuals' ability to understand and express their own emotions.

Others' Emotion Appraisal: Peoples' ability to perceive and understand the emotions of others.

Use of Emotion: Individuals' ability to use their emotions effectively by directing them toward constructive activities and personal performance.

Regulation of Emotion: Individuals' ability to manage their own emotions.

Women's Pentathlon: An event in women's indoor track and field that consists of five different events, from the Greek *pente* (five) and *athlon (contest*), which are all completed in one day (60 meter hurdles, high jump, shot put, long jump and the 800 meter).

Men's Heptathlon: An event in men's indoor track and field in which the name derives from the Greek *hepta* (seven) and *athlon* (contest). The event is split into two separate back-to-back days and includes the 60-meter, long jump, shot put and high jump which

are all performed in the first day and the 60-meter hurdles, pole vault and the 1000 meter which are performed in the second day.

Personal Record (PR): An individual's highest achievement in a specific track and field event during the past year (from October 2013 to March 2014). For example, if an athlete only ran in the 100 meter dash a total of three times in their life; the first time they ran it in 13 seconds, the second time they ran it in 12 seconds and their last time they ran it in 12.3 seconds. In this example their personal record in the 100-meter dash would be 12 seconds.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents a review of the literature on EI and the lack of literature that ultimately lead to the purpose of this study. The first section presents the research that lead to the idea of EI, how EI is defined, and the original model of EI. The second section discusses the many different scales created in order to measure EI, whether it is for ability or trait EI. Next the chapter presents gaps in the literature (sport and gender) that are relevant to the purpose of the current study. The last part of this chapter will discuss the two track and field events investigated in this study, the pentathlon and heptathlon.

Theoretical Foundation of Emotional Intelligence

Although the idea of EI has existed for many years, the term "emotional intelligence" (EI) wasn't empirically defined until the early 90's (Salovey & Mayer, 1990). Before this time many researchers used IQ to determine one's competency; however, some researchers at this time believed that there was much more than cognitive ability that influenced one's competence and performance (Gardner, 1983; Thorndike, 1920). Two researchers with specific theoretical foundations of EI were Thorndike (1920) whom coined the term "social intelligence" and Gardner (1983) whom developed the idea of "multiple intelligence".

Social intelligence was developed by Thorndike who believed that individuals acquire an array of intelligences, with intrapersonal and interpersonal properties. Thorndike (1920) identified three basic intelligences: (a) Mechanical intelligence (i.e., the ability to learn, understand, and handle objects and mechanisms); (b) Abstract

intelligence (i.e., cognitive capacity for managing and understanding ideas, and to logically make connections between them); and (c) Social intelligence (i.e., skill that people possess that allows them to relate to one another). It is within this third intelligence that fundamental components of EI can be found. According to Thorndike, social intelligence consists of two components: (1) cognitive and (2) behavioral (Kinga, & István, 2012). Thorndike defined social intelligence as "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (1920, p. 228, quotes by Kihlstrom & Cantor, 2000).

An additional theoretical foundation of EI is multiple intelligence. Gardner's (1983) multiple intelligence theory specified eight distinct abilities: linguistic, visual-spatial, musical, logical-mathematical, naturalist, kinesthetic, intrapersonal, and interpersonal (Gardner, H. (1983). He did this with intentions to expand the idea of cognitive intelligence by including intra-intelligence (i.e., self knowledge, goal setting, self-management, & self-appraisal) (Shearer, 2004) and inter-intelligence (i.e., understanding others) (Pfeiffer, 2001). Similar to Thorndike, Gardner understood the importance of EI and its roles, when he wrote:

> In its most primitive form, the intrapersonal intelligence amounts to little more than the capacity to distinguish a feeling of pleasure from one of pain, and on the basis of such discrimination, to become more involved in or to withdraw from a situation. At its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings. The other personal intelligence turns outward, to other individuals. The core capacity here is the ability to notice and make distinctions among other individuals and, in

> particular, among their moods, temperaments, motivations, and intentions. Examined in its most elementary form, the interpersonal intelligence entails the capacity of the young child to discriminate among the individuals around him and to detect their various moods. In an advanced form, interpersonal knowledge permits a skilled adult to read the intentions and desires even when these have been hidden from many other individuals and, potentially, to act upon this knowledge. (Gardner, 1983, p. 239)

From these words it is clear that Gardner understood the idea of EI before the term was scientifically developed. Gardner lead research away from focusing solely on internal cognitive capacities and expanded the focus to abilities that involve some interaction with emotional states or the external environment. In addition, Gardner (1983) gave popularity to the idea of EI in the field of education with his research on the theory of multiple intelligence.

Although Thorndike and Gardner helped pave the way to the idea of EI, it was two psychologists, Peter Salovey and John Mayer that actually proposed the term in 1990. They wrote an article on the concept where they defined it and created a theory, which helped to create a way to measure it (Mayer, DiPaolo, & Salovey, 1990; Salovey & Mayer, 1990). This definition was based on cumulative data and described EI as the "ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). Years later Mayer and Salovey (1997) revised and refined their definition of EI as:

> The capacity to reason with and about emotions, including: (a) the

> ability to perceive accurately, appraise, and express emotions; (b) the ability to access and or generate feelings when they facilitate thought; (c) the ability to understand emotion and emotion knowledge; (d) the ability to regulate emotions to promote emotional and intellectual growth. (p. 10)

In addition, Mayer and Salovey (1997) created a model that helped to explain "cognitive and emotional mechanisms". This model is composed of four conceptually related branches, arranged from the simplest to the more psychologically complex (Brackett et al. 2006). First, is *perceiving emotion*, which is EI at its most basic form, giving one the ability to discover and interpret emotions in faces, pictures, voices, and cultural artifacts. In addition, it includes the ability to classify one's own emotions (Salovey & Grewel, 2005). The second branch of EI focuses on *using emotions* through problem solving, critical thinking and how an individual feels after work, tasks, creative thinking and challenging obstacles, etc. The third branch of EI is *understanding emotions* and applying that to language skills and complex relationships recognizing the subtleties of feelings. The final branch is *managing emotions* within yourself and others and having the ability to keep your moods stable when necessary.

The term EI became popular in the management community due to the publications of Daniel Goleman's (1995) best-selling book *Emotional Intelligence*. In 1995, Goleman voiced the importance of EI and argued that EI was a predictor of one's future success. Since then, much research has verified this claim and found positive developmental outcomes in physical and psychological health, well-being, adaptive coping styles, and mental health (Gallagher & Vella-Brodrick, 2008; Mavroveli, Petrides,

Rieffe, & Bakker, 2007; Tsaousis & Nikolaou, 2005). Goleman's main priority was to focus on the work environment and discover reasons why some individuals who score high on IQ tests do not perform well in the working world. In addition, he sought to determine other factors besides IQ that could help one excel in the workplace. Eventually, Goleman (1995) stated that EI was a better predictor of success than IQ. However, this prediction was not based on empirical data, which is why this idea fell out of favor (Neubauer & Fredenthaler, 2005). Fortunately, this non-supported statement led to the popularity of more research on EI.

Although most researchers (Bar-On, 1997; Mayer & Salovey, 1997; & Mayer, Roberts, & Barsade, 2008) would agree that both emotional control and emotional awareness are core factors of EI, there are other researchers (e.g., Schutte, Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998; & Wong & Law, 2002) who believe there are other important factors that contribute to the idea of EI. For example, Goleman (1995) incorporated social and emotional competencies as well as some personality traits and attitudes as factors of EI. Other research focused on emotional abilities as factors of EI that link emotions and cognition (Mayer et al., 2000). There are two different conceptualizations of EI: (1) ability and (2) trait EI (Petrides & Furnham, 2003). Ability refers to specific emotional abilities, and since abilities can be learned so can the ability of EI (Goleman, 1995). It is important to note that trait EI and ability EI are two very different constructs. Unfortunately, because the differences in the two forms of intelligence are not fully understood, the facets that comprise the two EIs have been confused. Trait EI is defined as a constellation of emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies which encompasses

emotion-related behavioral dispositions and self-perceived abilities measured via self-report (Petrides, Perez-Gonzalez, & Furnham, 2007. Ability EI is defined as "the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others." (Mayer & Salvoy 1997, p 396). The main difference between trait EI and ability EI is the method that is used to measure them (Mayor, Salovey, & Caruso, 2000). Overall, ability EI is associated with cognitive emotional ability and trait EI is associated with emotional self-efficacy (Petrides & Furnham, 2000a, 2000b, 2001).

Measures of Emotional Intelligence

Due to the popularity of EI in many different fields (e.g., academics, business, sport, etc.) many measures have been created in order to indicate EI competencies within an individual as well as EI levels. For example, Neubauer and Freudenthanler (2005) placed EI into three categories: (a) ability, (b) competency, and (c) traits. The EI categories previously listed are the foundation for the three popular scales, which are the Mayor-Salovey-Caruso Emotional Intelligence Test (MSCEIT), Emotional Competence Inventory (ECI), and the Bar-on Emotional Quotient Inventory (EQ-i). There are also three additional EI measures that will be covered in this section, the Emotional Intelligence Scale (EIS), Wong and Law Emotional Intelligence Scale (WLEIS), and Trait Meta-Mood Scale (TMMS).

Mayor-Salovey-Caruso Emotional Intelligence Test (MSCEIT). The MSCEIT V2.0 is a 141-item ability based measure of EI; a shortened version of the MEIS (Mayer, Caruso, & Salovey, 1999). The MSCEIT is made up of eight subgroups that are designed to represent four branches of emotional function within EI (Myer, et al., 2004):

Perception, Facilitating Thought, Understanding Emotions, and Managing Emotions (see figure 1). These four branches create two areas of EI: (1) emotional experiencing and (2) emotional reasoning (Wilhelm, 2005). The "perception" branch consists of a picture and face task where emotional terms (e.g., sadness, excitement, fear) are rated on a 5-point scale (e.g. 1= no happiness to 5 extremely happy) based on how the participant perceives emotion portrayed in the art or faces. The "facilitating thought" branch includes a facilitation task (participants rate the usefulness of a certain emotion in a variety of situations) and a synesthesia task (participants compare emotions to different sensations) where emotions are rated on a 5-point scale (1= not useful to 5 = useful). The third branch, "understanding emotions" includes a blends task in which participants represent various emotions with a single emotional construct; and an identifying task where participants classify the product of conflicting emotions. Lastly, the "emotional management" branch is scored by having participants read a scenario and answer questions about how a person's actions in each situation affects character's emotions or emotions of other characters within the scenario. Reliability is high as evidenced by Cronbach's alphas reported in Mayer et al. (2000) for the four branches Perception, Facilitating Thought, Understanding Emotions and lastly Managing Emotions as .91, .90, .77, and .87, respectively.

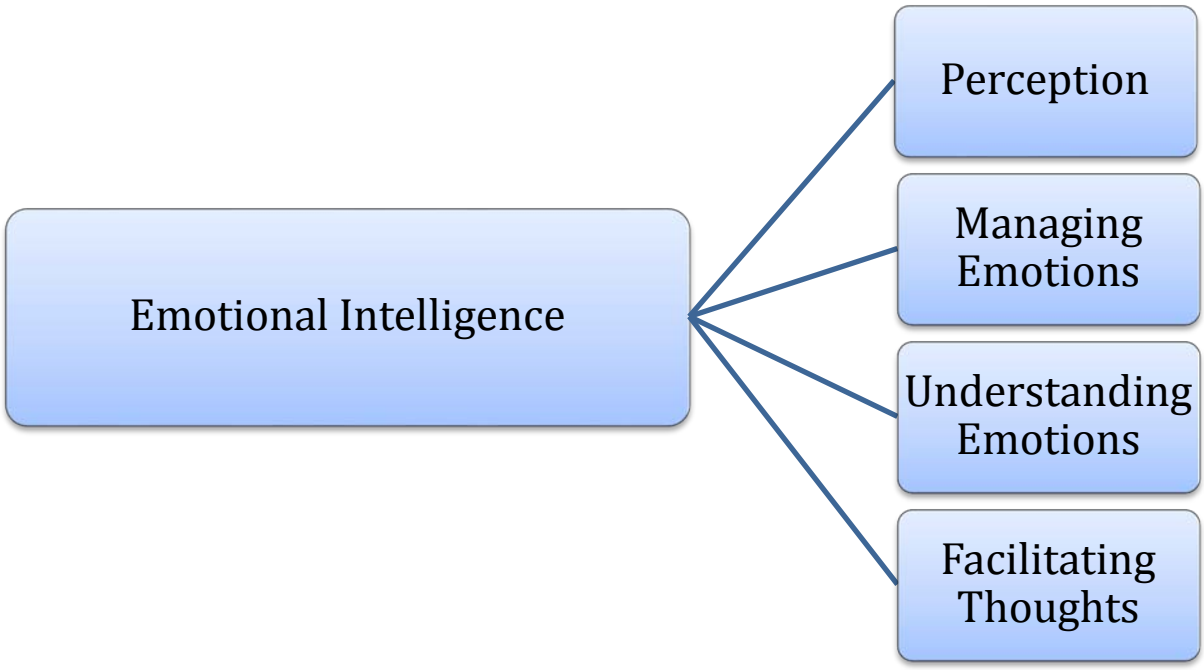

Figure 1. A four-branch model of the skills involved in EI (Mayer & Salovey, 1997).

Emotional Competence Inventory (ECI-2). Goleman and the Hay Mc/Group assisted Botyatzis with developing a measure for EI. Goleman (1998) believed that emotional competence was something that one could learn (depending on their levels of EI) that could result in optimal performance. This view of EI led to the development of the ECI. Thus, Goleman (1998) created a model for the ECI, which includes 5 dimensions of EI and 25 emotional competencies. This model was created with the belief that one must entail strengths in at least 6 competencies spread over all 5 areas of EI (Goleman, 1988). Since then Richard Boyatzis and Daniel Goleman developed the ECI-2 with the help of the Hay Group (Boyatzis, 1982; Boyatzis & Sala, 2004; Goleman, 1998; McClelland, 1973). Results from this scale are strictly to be used for feedback/development rather than hiring or compensation decisions. This 360-degree feedback tool is a 72-item self-

report measure that requires participants to indicate to which degree a particular statement accurately describes them on a 6-point Likert scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Consistently 6 = Don't know). The ECI-2 measures 18 competencies into four clusters (see Table 1). The average internal consistency coefficient of the ECI-2 is 0.78 and the self-ratings have an overall average internal consistency coefficient of 0.63 (Wolff, 2006).

Table 1. The ECI inventory measures 18 competencies in four Clusters

Clusters of EI	Emotional Competencies
Self-awareness	
	Emotional awareness
	Accurate self-assessment
	Self-confidence
Self-Management	
	Emotional self-control
	Trustworthiness
	Achievement Orientation
	Adaptability
	Initiative
	Optimism
Social Awareness	
	Organizational Awareness
	Service Orientation
	Empathy
Social Skills	
	Inspirational leadership
	Developing others
	Influence
	Change Catalyst
	Conflict Management
	Teamwork & Collaboration

Bar-on Emotional Quotient Inventory (EQ-i; Bar-On, 1997). The EQ-i is a 133 item self-report measure in which participants' scores are based on their answers to a variety of test questions. Using a five-point Likert scale (1 = "Very seldom or not true of me"; 5 = "Very often true of me"), participants rate themselves based on the degree to which the items describe them. Once the EQ-i is completed, an overall Emotional Quotient (EQ) score is determined, as well as scores for the 15 sub-scales which are divided into 5 composite scales; (1) Intrapersonal (Self-regard, Emotional Self -Awareness, Assertiveness, Independence and Self-Actualization); (2) Interpersonal (Empathy, Social Responsibility, Interpersonal Relationship); (3) Adaptability (Reality Testing, Flexibility, Problem Solving); (4) Stress Management (Stress Tolerance, Impulse Control); and (5) General Mood (Optimism, Happiness) (Bar-On, 1997). In 2000, Bar-On narrowed the 15 sub-scales to 10 (see Table 2). Past research has reported that the internal consistency reliability of the general EQ-i is 0.76 (Bar-On, 2000). In addition, Bar-On, (1997) has indicated that the EQ-i has displayed sufficient test–retest reliability of 0.85 after 1 month and 0.75 after 4 months.

Table 2. *Five Dimensions of the Bar- On Emotional Quotient Inventory (EQ-i) (Bar-On, 1997)*

Dimensions	**Abilities/Description**
	Awareness of one's own emotions
Intrapersonal	Capacity to express one's emotions
	Capacity to maintain relationships with others
Interpersonal	Capacity to recognize emotions in others
	Capacity to tolerate stress
Stress Management	Capacity to control one's impulses
	Capacity to solve problems and test reliability
Adaptability	Capacity to be flexible in the face of change
	Presence of general happiness
General Mood	Overall optimism

The Emotional Intelligence Scale (EIS). The Emotional Intelligence Scale (Schutte et al., 1998) is a commonly used scale due to the fact that it is a free and an easily available self-report measure. The EIS includes 33 items (rated on a 5-point scale anchored by 1 = strongly agree to 5 = strongly disagree), and is made up of six factors: (1) Appraisal of own emotions has 5-items (e.g., I am aware of my emotions as I experience them); (2) Appraisal of others' emotions has 7-items (e.g., I know what other people are feeling just by looking at them); (3) Optimism has 5-items (e.g., Emotions are one of the things that make my life worth living); (4) Regulation has 4-items (e.g., I have control over my emotions); (5) Social skills has 5-items (e.g., I compliment others when they have done something well); and (6) Utilization of emotions has 7-items (e.g., When I experience a positive emotion, I know how to make it last). Previously reported, Cronbach Alpha values for the EIS are 0.90 to 0.89 (Saklofske et al., in press; Schutte et al., 1998).

The Wong and Law Emotional Intelligence Scale (WLEIS). The Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002) is a popular self-report scale originally used as a short measure of EI for organizational research purposes (Libbrecht, Nele, Lievens, & Schollaert, 2010). The WLEIS consists of 16 items with each of the following subscales measured with 4 items: (1) Self Emotion Appraisal Dimension assesses individual's ability to understand and express their own emotions; (2) Other Emotion Appraisal Dimension measures people's ability to perceive and understand the emotions of others; (3) The Use of Emotion Dimension denotes individual's ability to use their emotions effectively by directing them toward constructive activities and personal performance; and lastly (4) The Regulation of Emotion Dimension refers to individual's ability to manage their own emotions. The WLEIS is measured using a 5-point Likert-

type scale, ranging from 1 (totally *disagree)* to 5 (totally *agree).* According to Aslan and Erkus (2008), Cronbach Alpha reliability coefficients for the 4 composite scales vary between 0.83 and 0.90.

Trait Meta-Mood Scale (TMMS). The Trait Meta-Mood Scale (TMMS; Salovey et al., 1995) is heavily based on Salovey and Mayer's (1990) original model of EI. The TMMS was created in order to determine one's degree of their "meta-mood experience" or monitoring, controlling and assessing feelings and emotions (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). The TMMS consists of three subscales made up of 30 items. The three subscales consist of: (1) Attention to feeling; (2) Clarity in discrimination of feeling; and lastly (3) Mood Repair. Scoring of the TMMS is based on the responses of participants on a 5-point Likert scale ranging from 1 (strongly *disagree)* to 5 (strongly *agree*). Cronbach Alpha coefficients reported were .86, .88, and .82, respectively (Salovey et al., 1995).

Emotional Intelligence and Gender

Gender differences within EI have been widely investigated throughout research. Although there is some research that suggests there are no gender differences (Bar-On 1997; Bar-On, Brown, Kirkcaldy & Thome, 2000; & Brackett & Mayer, 2003) the majority of research has suggested that females have higher levels of EI (Ciarrochi, Chan, & Bagar, 2001; Day & Caroll, 2004; Mayer, Caruso, & Salovey, 1999; Palmer, Monach, Gignac, & Stough, 2003; Van Rooy, Alonso, & Viswesvaran, 2004). Furthermore, past research has suggested that women are both biologically prepared and socialized to pay more attention to emotions (LaFrance, 1992). For example, Mayer, Caruso, and Salovey (1999) administered the Multifactor Emotional Intelligence Scale (MEIS) to determine EI

in women. Results from this study indicated that women are more sensitive when expressing emotions and put more effort in their emotions. In a different study, Mayer et al. (2000) indicated that women scored about 0.5 standard deviations greater than men in EI. Not only does research indicate that women have higher levels of EI but it also reveals that they differ in intensity of emotions when compared to men. According to one study, women experience more personal emotions with greater intensity when compared to men (Grossman & Wood, 1993).

In contrast to the research findings mentioned above, other studies have suggested that when investigating EI as a whole, there is no gender difference (Petrides & Furnham, 2000a; Petrides, Furnham, & Martin, 2004). For example, Goleman (1995) believed males and females had their own personal profiles of strengths and weaknesses when it comes to EI. In other words, one gender is not necessarily better than the other when it comes to EI, but each gender has their advantages and disadvantages. More specifically, Bar-On (2000) theorized that when EI is represented as a factorial component, males are more independent, flexible, and optimistic when compared to women. On one hand, males are better at coping with stress, solving problems, and self regard. On the other hand, females act more socially responsible, demonstrate more empathy, relate better interpersonally, and are more aware of their emotions when compared to men.

In conclusion, Bar-On (2000) suggests that although there are differences in a few factorial components of the construct when observing EI gender differences, far more similarities exist than differences. In addition, Lyusin and Favorov's (2006) research findings not only suggested that there were no significance differences in EI as a

whole between genders, but also that men managed their emotions and control expressions better than women. The findings in the literature are equivocal in regards to gender differences in EI (Fernández-Berrocal, Cabello, Castillo, & Extremera, 2012; Naghavi & Mar'of, 2011). Thus, more research on the impact of gender on EI is warranted.

EI and Performance

One with high EI has the ability to understand their own and other's emotions as well as to manage their emotions. With an understanding of EI it can be assumed that one can benefit from having high EI. Research in a variety of settings took this a step further and has suggested that EI can predict success in individuals. Below are some of the areas that have been investigated to determine the impact EI has on performance.

Human resource development. Human resource development (HRD) is the distribution system used by many different companies/organizations to progress individuals through necessary training and development (Brooks & Nafukho, 2006). Within any successful organization the area of Human Resources should exist to capitalize on the investment in people, and within human resources a development department should exist, not only for the organization as a whole, but for the individual as well (Weinberg, 2002). The development of one's expertise in conjunction with emotional intelligence, "was significantly associated with organizational commitment and that it predicted a large amount of the variance in both job satisfaction and organizational commitment" (Weinberg, 2002, p.221). Emotional intelligence was explored in three aspects of the organization: leadership, management, and individual and team performance.

In terms of leadership, there exist many theories in the workplace and the most effective type is transformational (Avolio, Kahai, Dodge, 2001; Bass 1995; Cawthon 1996). Transformational leadership has a core value of charisma, which is defined as the "quality of an individual personality, by virtue of which he is set apart from ordinary men and treated as endowed with supernatural, superhuman, or at least specifically exceptional qualities" (Weinberg, 2002, p.224). EI is linked to transformational leadership because these leaders have a heightened sense of self-awareness in terms of fostering their relationships, dealing with their own emotions and knowing when is the right and wrong time to use specific emotion when interacting with others. EI is used in management development to determine the competencies of high potential employees and their value to the organization in the long term. It's "the most appropriate [way] to evaluate the link between emotion and cognitive interactions and the resulting contributions to organizational performance" (Weinberg, 2002, p.225). In HRD, part of the development is individual and team based activities as a predictor of future job performance. "EI and cognitive ability play equally important roles in explaining differences in people's ability to (a) influence and (b) demonstrate interpersonal competence" (Weinberg, 2002, p.225). Once these abilities are recognized, then the management and leadership team can relay to the HRD department that there are high potential employees within the ranks that can be beneficial to the organization. Past research has suggested that EI improvement programs provided to human resource development practitioners may assistance them to provide employees with surplus skills to address divergence in the workplace (Jordan, & Troth, 2002).

Criminology. Any aspect of law enforcement is especially stressful given the gravity and depth of all the situations that are to be dealt with (Macdonald, 2008). The law enforcement agents and investigators are the ones whom on a daily basis tolerate the interactions with those who disobey the law. These positions are for qualified individuals and before one becomes part of this elite team, they have to undergo a series of screenings to ensure they are competent and of sound mind. One assessment in particular is created to determine officer's EI. It has been suggested that EI is more likely to be a valid judgment of performance in settings that officers are highly likely to be part of; where stress management and social skills are crucial components of daily responsibilities (Ono, Sachau, Deal, Englert, & Taylor, 2011). The study took various members of law enforcement from around the United States who went through an intensive 17-week training program for the Air Force Office of Special Investigations and attained an agent or supervisor position. One year after their training program was completed, they participated in a follow-up study to determine the different aspects of emotional intelligence that were most prevalent in their success as officers. Results from this study indicated that overall job performance; cognitive ability, neuroticism, and EI were positively related to performance (Ono, Sachau, Deal, Englert, & Taylor, 2011). In other words, EI was found to be extremely important for a very physical job that requires both cognitive and social ability such as law enforcement agents. In fact, the researchers were so confident that EI is important to performance that they suggested EI be used as a tool to select law enforcement personnel.

Education. It has been suggested that EI could moderate the result of cognitive skills on academic performance (Frederickson & Furnham, 2004; Gil-Olarte, Palomera, &

Brackett, 2006). EI combined with cognitive ability are most defined by students' grade point average at the end of the year, however, there is an initiative to make EI the standard for acceptance and inclusion internationally (Sherlock, 2002). Most education research focuses mainly on cognitive domains. However, given the nature of international education EI is extremely important because it helps to understand others in other cultures as well as understand one's self in order to understand others. For this reason, these EI skills are extremely valued throughout both the school community and changing job market, and these emotional intelligence skills would be the ideal and practical demands of an international education (Sherlock, 2002).

Past research has examined the importance of EI as it pertains to academics, and found that when EI abilities increase in children, their academic success increases, social interactions are strengthened, and discipline problems are decreased (Freedman, Jensen, Stone-McCown, & Rideout, 1997). With the knowledge of these findings, many researchers advocate for special educational programs that have helped to increase EI in children (Finley, Pettinger, Rutherford, & Timmes, 2000; Gore, 2000; Kolb & Weede, 2001; Van Kuyk, 1999).

Politics. According to Wolack and Marcus (2007) in the political forum, voters tend to lean towards the candidate whom they relate to most and whom they feel has the same values as they do. EI can play a role in a political candidate's future based on the personality they present, which can be best understood by the masses in order to get elected. Voters want to feel a sense of citizenship from their candidates and feel that they are genuine. All four aspects of the EI branch model and the Big 5 personality traits can be explained as to why one would feel obligated to go into politics. It has been suggested

that extroverts may be more likely to consider new knowledge and prompt a desire for greater personal political engagement.

EI and sport performance

It is no surprise that an athlete experiences a variety of intense emotions during performance. In fact, research suggests that athletes experience these intense emotions the most when they are striving to reach a performance goal (Terry, 1995). For this reason, the ability to control emotions is an extremely important aspect of preparation (Laborde, Brüll, Weber, & Anders, 2011). Many athletes learn different techniques in order to control their emotions; these techniques are learned through experience where athletes relate success with specific emotions experienced during performance (Hanin, 2003).

As stated before, EI has become a very popular concept throughout research. Unfortunately, there is a scarce amount of research on the role of EI in sport (Laborde et al., 2011). However, the research that has been done seems to show a pattern of the benefits of EI on performance. Individually, EI was shown to be beneficial for each athlete (team or individual sport). More specifically, the use of psychological skills (i.e., self-talk and imagery) was positively related to higher levels of EI (Lane, Thelwell, Lowther, & Devonport, 2009). In this particular study, the relationship between self-report trait emotional intelligence and psychological skills were investigated using the male athlete population. Each participant completed the Emotional Intelligence Scale (EIS; Schutte et al., 1998) and the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999). Overall findings from this study suggested that those that frequently used psychological skills have higher levels of EI. This finding is very useful

due to the already known knowledge on the importance of psychological skills on optimal performance (Beauchamp, 1996; Gelinas, & Munroe-Chandler, 2006; Jackson, Thomas, Marsh, & Smethurst, 2001).

From past research we can begin to understand the benefits of EI in individual athletes, however, recent research has found benefits within team sports as well. When investigating team sport results from past research, high levels of EI were correlated with high performance levels in many sports such as baseball, hockey, and cricket (Crombie, Lombard, & Noakes, 2009; Perlini & Halverson, 2006; Zizzi, Deaner, & Hirschhorn, 2003). Zizzi et al., (2003) found components of EI were moderately related to pitching performance when exploring the relationship between EI and athletic performance in a sample of 61 Division I baseball players. The players were divided into pitchers and hitters and were administered the previously mentioned Emotional Intelligence Scale (EIS). The number of earned runs, walks, hits, strikeouts, and wild pitches were investigated to determine the success of pitchers' performances. The number of hits, doubles, walks, and strikeouts were determinates of hitting performance. Zizzi et al., found that EI was positively correlated with the total number of strikeouts by the pitcher, but did not find a relationship between EI and hitting performance. Results from this study provide modest support of the relationship between EI and athletic performance.

In Perlini and Halverson's (2006) study they aimed to evaluate EI in National Hockey League players as well as evaluate the relationship of draft rank and EI measure to hockey performance. Participants, which consisted of 79 players across 24 NHL teams, completed the previously discussed Bar-On EQ-i in order to measure EI. With respect to EI, findings from this study suggested that intrapersonal competency and

general mood added significant variance to the prediction of the number of NHL points as well as games played. The findings on EI in this study were notable for two reasons. First, the findings go against speculation that hockey players are both emotionally and socially deficient; in fact, in such an aggressive sport having mood regulation is extremely important. Lastly, these findings showed that EI is a predictor of success in hockey players even more so than draft ranking.

Laborde, Lautenback, Allen, Herbert, & Achtezehn, (2014) conducted a study that investigate male as well as female athletes. In this study, the role of trait emotional intelligence in emotion regulation and performance under pressure was examined. Evidence concluded that trait EI plays an important role in human behavior in pressure situations (Laborde, Lautenback, Allen, Herbert, & Achtezehn, 2014). The researchers attempted to study trait EI along with a biological marker, in this case being cortisol secretion and its effect on performance under pressure. The population totaled 28 near expert tennis players consisting of 13 females and 15 males. The task of participating tennis players was to successfully complete a second serve. In tennis a second serve is awarded to the offensive player if they fault or are un-successful in placing their first serve within the marked boundary located on their opponent's side of the court. Failure to place this second serve within the marked territory results in a point for their adversary. The study called this second serve, the tennis task and it was where they measured the cortisol secretion. With the help of a straw, spit was collected by the players. The spit was used as the measurement that served as the biological scale (Kirschbaum & Hellhammer, 2000) along with the Anxiety Inventory-2 CSAI-2 scale (Martens, Vealey, Burton, Bump, & Smith, 1990). The questionnaire that was used to

measure trait EI was the Trait Emotional Intelligence Questionnaire (TEIQue; Freudenthaler, Neubauer, Gabler, Scherl, & Rindermann, 2008). What this research demonstrated was that trait EI can explain the variance in emotion regulation in a stressful competition beyond that of regular competitive emotion. It is important to highlight that, in this study, Trait EI did not predict performance under pressure. In fact, performance under pressure is best understood by the athlete's experiences at the hormonal and subjective levels. However, what was done in this particular study with tennis players can be used in other sports, especially when isolating emotion regulation and performance under pressure.

Lastly, Crombie, Lombard, and Nokes (2009) investigated the relationship between team EI and performance in cricket teams. Team EI was measured by the previously discussed MSCEIT, which was administered to athletes prior to the start of the season. EI scores were then correlated with the final log points standing for the team at the end of a competition (performance). Results from this study indicated that team EI was a significant predictor of team performance. This finding suggests that EI may contribute to the success of teams participating in complex sports like cricket. An explanation for this may be due to the fact that enhanced EI has the potential for athletes to communicate and make decisions in a way that best suits the requirements of the team, ultimately influencing team cohesion.

Taken together, it can be assumed that there is a positive correlation between EI and sport performance. One of the reasons we may see these correlations is because EI has been found to help with the stress athletes experience from different pressures (i.e., goals, coaches, outcome; Lane et al., 2010). In order to be successful in any sport,

athletes must learn how to cope with the stress they are experiencing (Haney & Long, 1995). As previously mentioned, EI allows one to recognize and control one's own emotions and the emotions of others. Another reason why we may see these correlations is because it is crucial for athletes to understand their own emotions as well as their teammates in order to be successful as a team (Zizzi, Deaner, & Hirschhorn, 2003).

With the research that is available that pertains to the role of EI in sports, it can be concluded that EI can help an athlete's performance. However, not only are the athletes benefiting from EI, but their coaches as well. In has been suggested that EI is positively associated with motivation efficacy as well as character building (Thelwell, Lane, Weston, & Greenless, 2008).

Pentathlon and Heptathlon Events

Track and field events can be broken up into three categories: (1) track events, (2) field events, and (3) combined events. Combined events consist of the decathlon, heptathlon, and the pentathlon. For the purpose of this chapter, the focus will be on the pentathlon and heptathlon. The pentathlon is one of the many events in women's indoor track and field. A total of five different events make up the pentathlon (see table 3), in which all events are completed in a single day. Each event in the pentathlon is given a score dependent on the individual time, distance, or height, and after the last event the individual scores are tallied together to determine an athletes' overall score (see appendix G & H for examples). These individual scores for each event can be found in the "Big Gold Book" for scoring in track and field multi-events (Garry, Lindstrom, Hendershott, 2011). Pentathletes who run faster times in hurdle and running events receive more

points than those who have slower times; the same concept applies for jumps and throws. The athlete with the highest cumulative score is the winner of the pentathlon.

Table 3. Pentathlon Events in Women's Track and Field

Pentathlon - Women
55/60 Meter Hurdles
High Jump
Shot Put
Long Jump
800 Meters

Note: Although there are two options for the distance of the hurdles, 60 meters is recommended.

A similar event to the pentathlon is the heptathlon; however, this is an event in men's indoor track and field and consists of seven different events completed in two days (see table 4).

Table 4: Heptathlon Events in Women's Track and Field

Heptathlon- Men	
First Day	Second Day
55/60 Meter	55/60 Meter Hurdle
Long Jump	Pole Vault
Shot Put	1000 Meters
High Jump	

Note: Although there are two options for the distance of the hurdles, 60 meters is recommended.

NCAA rules for the pentathlon and heptathlon are the same (see appendix I). Both events consist of at least a 30 minute break between the time the last athlete completely finishes one event and the next event begins. In the event that an athlete does not show up for one of the events within the pentathlon or heptathlon, he/she will not be allowed to participate in any other involved events and will not receive a total mark score.

Although there is no current research on how emotions play a role in either the pentathlon or the heptathlon, it may be logical to suggest that due to the many different events completed in such a long time frame, (4 hours or more) that those competing in the multi experience many different emotions while in competition. Moreover, it may be important for athletes to have control over their emotions regardless of outcome of any of their individual events. With the knowledge of the importance of athletes maintaining positive emotions to facilitate performance, and avoid negative emotions, which can harm performance (Vast, Young, & Thomas, 2010), getting a better understanding of how emotions play a role in the pentathlon and heptathlon can be deemed beneficial.

Summary

This chapter explored the theoretical development of EI, how it is defined, and how it can be measured. Although there have been many different studies investigating EI, one commonality between all studies is the significance of EI as we interact with others, make decisions, and become successful (Kaufhold & Johnson, 2005). Many research findings added support to the growing body of literature that indicates a relationship with EI and performance in many areas, such as business (Weinberg, 2002); criminology (Ono, Sachau, Deal, Englert & Taylor, 2011); academics (Sherlock, 2002); and politics (Wolack & Marcus, 2007).

Where research seems to be lacking is in the athletic population, more specifically, there is no research on how EI may impact pentathletes' and/ or heptathletes' performance. In track and field combined events, an athlete must perform well in all events if she/he wants to be successful. During a competition there is ample opportunity for a variety of emotions. F or this reason, it is important for this population to have high levels of EI in order to maintain positive emotions. In turn, this facilitates performance, and helps athletes to stray away from negative emotions, which can harm performance (Vast, Young, & Thomas, 2010).

In addition, the findings in the literature are ambivalent in regards to gender differences in EI (Fernández-Berrocal, Cabello, Castillo, & Extremera, 2012; Naghavi & Mar'of, 2011) and more research is warranted. Furthermore, the importance of information on gender differences in EI is needed for track and field coaches as well as sport psychology practitioners.

CHAPTER III

METHODS

Participants

This study included 113 participants, comprised of males (*n* = 64) and females (*n* = 49). Each participant was a multi-eventer (pentathlon, heptathlon) in NCAA D-I (*n*=40), D-II (n=24), & D-III (*n*=49) track and field and were categorized as freshman (*n*=27) sophomores (*n*=28) juniors (n=30) and seniors (*n*=28). The athletes ranged in age from 18-24 years of age (*M*=20.41, *SD*=1.67) and classified themselves as non-Hispanic white (*n*=87), black or African American (*n*=13), Hispanic or Latino (*n*=4), Asian or Asian American (*n*=6), and American Indian or Alaska Native (*n*=3). Participants were recruited via email and those willing to participate in this study went to a provided web link and fill out a questionnaire (see appendix C).

Procedure

After IRB approval was obtained, recruitment of participants began with contacting coaches from a variety of college level track and field teams. Coaches were contacted via email (see appendix D); the email included information regarding the study, a link to survey monkey, as well as a request to forward the email to their multi- eventer athletes (pentathletes and heptathletes). Once the emails were sent to athletes it was their decision whether they would like to participate in the current study. Those willing to participate then clicked the SurveyMonkey link, which sent them directly to the survey. Before participants started the 15 minute survey they had to read the cover page which stated that all participants must be 18 years of age or older. In addition, the cover page explained to participants that their responses were anonymous and confidential so it is important that they be as accurate and honest as possible. Participants were also

informed that they are able to drop out of the survey during anytime. Those athletes willing to participate in this study then filled out a demographic questionnaire (see appendix E) as well as the WLEIS (see appendix F).

Instrumentation

Demographic Information. Each participant was given a demographic questionnaire (see appendix E). Questions asked for the athletes to report their age, gender, ethnicity, academic year, and personal record (PR) for the current track year in either the pentathlon or heptathlon.

Emotional Intelligence Scale. The Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002) is a valid and reliable self-report measure of EI for the four dimensions of Self-Emotion Appraisal, Others' Emotion Appraisal, Use of Emotions, and Regulation of Emotion; Chrobach Alpha coefficients were .86, .82, .85, and .79, respectively (Wong & Law, 2002). This EI scale is based on Davies et al.'s (1998) four- dimensional definition of EI. These four distinct dimensions consist of the different aspects of EI, which combined, make up one's overall EI. The WLEIS consists of 16 items with each subscale measured with 4 items. The Self Emotion Appraisal dimension assesses an individual's ability to understand and express his/her own emotions. A sample item is "I really understand what I feel." The Other Emotion Appraisal dimension measures a person's ability to perceive and understand the emotions of others. A sample item is "I always know my friend's emotions from their behavior." The Use of Emotion dimension denotes individual's ability to use their emotions effectively by directing them toward constructive activities and personal performance. A sample item is "I always tell myself I am a competent person." The Regulation of

Emotion dimension refers to an individual's ability to manage his/her own emotions. A sample item from this dimension is "I have good control of my own emotions." The WLEIS is measured with a 5-point Likert-type scale, ranging from 1 (totally *disagree)* to 5 (totally *agree).* The researcher asked participants to complete each question in reference to their performance in either the pentathlon or heptathlon in their current indoor season.

In addition to the reliable reported Chrobach Alpha coefficients (Wong & Law, 2002) there are two main reasons why the researcher choose to use the WLEIS for this current study. First, when investigating what type of EI scales were used in studies that investigated whether EI was a predictor of performance in sports, the researcher found that a majority of studies investigated trait EI (Lane, et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003). In addition, there is a great deal of controversy on the concept ability EI, simply because ability scales attempt to be subjective and emotions themselves are objective matters (Matthews, Zeidner, & Robers, 2007; Robinson & Clore, 2002).

Secondly, the researcher ran a pilot study having recreational runners fill out a variety of EI scales that were available for public use and measured trait EI. More specifically, participants completed the Brief Emotional Intelligence Scale (BEIS-10; Davies et al, 2010); the Emotional Intelligence Scale (Schutte et al., 1998); the Self-Rated Emotional Intelligence Scale (SREIS; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2004); and lastly the Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002). Once all participants completed all scales, data analysis was run to determine the reliability of each scale. All scales showed low Chrobach Alpha coefficients except for the WLEIS (.87, .84, .83, and .79). For these two reasons the

researcher had decided to use the WLEIS to measure trait EI in this current study.

Personal Record (PR). Each participant was asked to report their PR for the current season for the pentathlon (for females) or the heptathlon (for males). If any athlete did not have knowledge of their PR for the season the researcher provided them with a link, in which they type in their full name and they can locate their PR.

Data Analysis

Using SPAA, data was screened for outliers, homogeneity of variance, and skewness. The following descriptives were analyzed: gender, age, personal record (in either pentathlon or heptathlon), and the 4 EI subscales.

A Multiple Regression was used to investigate whether emotional intelligence can predict performance in the pentathlon; where the independent variable was the four EI subscales (i.e., SEA, OEA, UOF, ROE) and the dependent variable was performance in the pentathlon, which was measured by their personal record (PR).

A Multiple Regression was used to investigate whether EI can predict performance in the heptathlon; where the independent variable was the four EI subscales (i.e. SEA, OEA, UOE, ROE) and the dependent variable was performance in the heptathlon, which will be measured by their personal record (PR).

Lastly, a Multiple Regression was used to investigate whether EI predicts performance depending on gender. Male and female's PR score were converted to T scores so that scores were comparable. The independent variables were gender and the four EI subscales (i.e., SEA, OEA, UOE, ROE) and the dependent variable was PR.

CHAPTER IV

RESULTS

The first purpose of the present study was to investigate whether EI predicts performance in pentathletes. The second purpose of the study was to investigate whether EI predicts performance in heptathletes. The third and final purpose of this study was to investigate if there are gender differences in the use of EI to predict performance. More specifically, to investigate if EI is more important to determine performance for females compared to males. The following subsections will discuss in greater detail the following areas: (a) data screening, (b) descriptive statistics and reliability analysis, (c) prediction of performance in pentathlon, (d) prediction of performance in heptathlon, and (e) gender differences.

Data Screening

Data management showed that there were some outliers located in the heptathlon data: participants 8, 9, 16, and 24. For this reason, the data was then transformed and again checked for skewness and outliers. This was done by getting the transformed inverse of each of the four subscales of EI; these new numbers were then used to get the transformed log10 of each subscale. Once this step was completed, data management showed that there were no longer any outliers and that all variables and all combinations of the variables were normally distributed. The data set for the pentathlon alone and the combination of the heptathlon and pentathlon was not transformed since there were no outliers and the data was normally distributed.

Descriptive Statistics and Reliability Analysis

Data was collected from a total of 113 participants. Participants were NCAA male (*n*= 49) and NCAA female (*n*=64) multi-eventers (those who compete in the heptathlon or the pentathlon) in indoor track and field from NCAA D-I (*n*=40), D-II (n=24), & D-III (*n*=49). Participants were given a questionnaire that would determine their EI. More specifically The Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002) assessed participants' EI.

Descriptive statistics for NCAA, age, year of eligibility, PR, scores on each subscale, and scores on overall EI (see table 5) were computed. Descriptive statistics were broken down also broken down for each division for scores on each subscale, and scored on overall EI (see table 06). For a more specific breakdown of the participants in this current study, cross- tabulations were computed to investigate both college and race classifications in each gender (see table 7 & 8). Each subscale from the WLEIS was analyzed for internal consistency (see Table 9). During this analysis it was found that Cronbach's Alpha coefficients were above .70 and acceptable with the exception of the subscale Self-Emotion Appraisal when used to determine EI in pentathletes (Nunally, 1978).

Table 5.
Descriptive Statistics

Demographics	**Pentathlon(females)**		**Heptathlon(males)**	
	Mean	**SD**	**Mean**	**SD**
Age years	20.44	1.79	20.39	1.50
PR	3046.53	462.19	4408.67	596.31
SEA	3.96	.55	4.30	.73
OEA	3.97	.65	3.86	.70
UOE	4.29	.67	4.46	.56
ROE	3.64	.78	4.04	.79
Overall EI	3.97	.46	4.16	.45

Note: PR= personal record, SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion. Also note that a score of 5 on each EI subscales and overall EI indicates highest levels of EI

Table 6.
Descriptive Statistics for Division

Subscales	**D1**		**D2**		**D3**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
SEA	3.99	.69	3.99	.68	4.10	.65
OEA	3.86	.81	3.95	.68	3.93	.67
UOE	4.37	.74	4.22	.58	4.36	.63
ROE	3.71	.82	3.55	1.01	3.81	.81
Overall EI	3.97	.51	3.92	.51	4.15	.42

Note: SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion

Table 7.
Cross-Tabulation of Male vs. Female Groups and College Classifications

	Group		
	Males	**Females**	**Total**
Freshman	11	16	27
Sophomore	16	12	28
Junior	10	20	30
Senior	12	16	28
Total	49	64	113

Table 8.
Cross-Tabulation of Male vs. Female Groups and Race Classifications

	Group		
	Males	**Females**	**Total**
American Indian or Alaskan Native	2	1	3
Asian or Asian American	2	4	6
Black or African American	6	7	13
Hispanic or Latino	2	2	4
Non-Hispanic or White	37	50	87
Total	49	64	113

Table 9.
Reliability of the Wong and Law Emotional Intelligence Scale

Subscales	Cronbach Alpha
Pentathlon	
SEA	.595
OEA	.773
UOE	.773
ROE	.835
Heptathlon	
SEA	.872
OEA	.803
UOE	.706
ROE	.905
Pentathlon and Heptathlon	
SEA	.764
OEA	.774
UOE	.750
ROE	.874

Note: SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion

Prediction of Performance in Pentathlon

The first hypothesis stated that EI predicts performance in pentathletes. The results failed to support this hypothesis. A multiple regression was calculated to predict if EI predicts performance in pentathletes. The regression equation was not significant ($F(4, 59) = .482$, $p > .05$) with an R^2 of .032. Neither EI nor any of the subscales were a predictor of performance in pentathletes. See table 10 for multiple regression results.

Table 10.

Results of Regression Analysis predicting pentathletes'PR with the Wong and Law Emotional Intelligence Subscales (SEA, OEA, UOE, and ROE)

Variables	PR *β(t)*
SEA	-58.10(-.41)
OEA	-81.10(-.80)
UOE	114.57(1.18)
ROE	17.60(.18)
Overall model F	.48
Adjusted R^2	-.03
Standard Error	469.87
Degree of Freedom	4,59

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

Prediction of Performance in Heptathlon

The second hypothesis stated that EI predicts performance in heptathletes. The results failed to support this hypothesis. A multiple regression was calculated to predict if EI predicts performance in heptathletes. The regression equation was not significant ($F(4, 44) = .616$, $p > .05$) with an R^2 of .053. Neither EI nor any of the subscales were a predictor of performance in heptathletes. See table 11 for the multiple regression results.

Table 11

Results of Regression Analysis predicting heptathletes PR with the Wong and Law Emotional Intelligence subscales (SEA, OEA, UOE, and ROE).

Variables	PR *β(t)*
SEA	-37.85(-.28)
OEA	-100.10(-.77)
UOE	26.38(.14)
ROE	142.90 (1.01)
Overall model F	.62
Adjusted R^2	-.03
Standard Error	606.08
Degree of Freedom	4,44

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

Gender Differences in the Prediction of Performance

The research question in this study was, to what extent does gender impact the prediction of EI on performance? The regression equation was ($F(1,105) = 1.36$, $p > .05$) with an R_2 of .061. EI was not more important to predict performance in either the pentathlon or the heptathlon. See table 12 for the multiple regression result.

Table 12.

Results of multiple regression analysis predicting pentathletes and heptathletes PR with gender and the Wong and Law Emotional Intelligence subscales (SEA, OEA, UOE, and ROE).

Variables	***PR*** *β(t)*
Gender	.68(.34)
SEA	-1.84(-1.01)
OEA	-2.37 (-1.63)
UOE	2.27(1.35)
ROE	1.78(1.23)
Overall model F	1.36
Adjusted R^2	.016
Standard Error	9.87
Degree of Freedom	5,105

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

CHAPTER V

DISCUSSION

EI has become a very popular research topic in many different areas. In fact, it has been suggested that EI is a predictor of performance in areas such as academia (Frederickson & Furnham, 2004), job performance (Jordan & Troth, 2002), and leadership (Weinberg, 2002). More recently it has been suggested that EI is a significant predictor of sport performance (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003). Moreover, many practitioners in the sport psychology field have suggested that EI is an important concept in the sports world (Botterill & Brown, 2002; McCann, 1999; Meyer, et al., 2003; Zizzi et al., 2003). Although some researchers have attempted to investigate EI and how it can affect performance in sports such as baseball, hockey, and cricket (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003) there is still a lack of research on EI and sport performance. The primary purpose of this study was to investigate whether EI was a predictor of performance in pentathletes and heptathletes, as well as if EI was more important for one gender over the other to predict performance.

EI and Performance

Based on past research suggesting that EI is a predictor of sport performance (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003), it was hypothesized that EI was a predictor of performance in the pentathlon and the heptathlon. The results failed to support this hypothesis and suggest that EI is not a predictor of performance in the pentathlon or the heptathlon. Furthermore, athletes that played at the D-I level were more likely to perform at a higher level than those that competed at the D-II or D-III

level. However, when looking at the overall EI mean in each division, results suggest that on average D-I athletes are not more emotionally intelligent. In fact, D-III athletes have the highest overall EI score on average. When looking at the means of each of the four subscales of EI in each division, results show that D-I athletes on average only scored higher on one of the subscales, (UOE) suggesting that D-I athletes are better able to use their emotions in a productive way. Interestingly, those participants that compete at the D-III level on averages scored highest on two of the four subscales (SEA & ROE) suggesting that pentathlon and heptathlon athletes at the D-III level are better at understanding their own emotions as well as regulating them. On average D-II athletes only scored highest on one subscale (OEA) indicating that D-II athletes are better able to understand the emotions of others. This information helps support the current findings by allowing performance to be assessed in a different way (i.e., one's division level). Descriptive statistics revealed that even when using a different variable to determine performance, EI was not a predictor of performance in the pentathlon or heptathlon.

These findings support those of Laborde, Lautenbach, Allen, Herbert, and Achtzehn, (2014) study. Their study used a sample of female (n=13) and male (n=15) tennis players whom they had perform two series of 35 serves separated by a pressure manipulation to examine the independent and interrelated contribution of trait EI and state emotions to a biological marker of emotion regulation (cortisol secretion). In addition, this study sought to examine the contribution of trait EI, state anxiety, and cortisol secretion to performance under pressure. It was found that EI and not the Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Vealey, Burton, Bump, & Smith, 1990) predicted cortisol secretions (i.e., a hormone released in response to stress).

This information suggests that trait EI has an important role in human behavior in pressure situations as trait EI can explain variance in emotion regulation beyond that explained by current competitive emotions. Furthermore, the study found that a model combining overall cortisol and self-confidence, but not trait EI, predicted performance under pressure. Laborde et al. (2014) suggested that trait EI was related to emotion regulation (cortisol secretion) and not performance under pressure, suggesting that personality-trait-like individual differences have a greater role in long-term performance, or short-term behaviors (e.g. coping, emotion regulation), than in short-term performance under pressure.

These results may be useful to understand the findings in this current study. From a research standpoint, track and field and tennis are composed of many short-term performances. Both studies showed no evidence that trait EI predicted performance in performance in either sport. However, the findings in the tennis study (Laborde et al., 2014) revealed that trait EI can predict emotion regulation in performance under pressure situations in short term performance, which means if one can control and lower the stress levels one will perform better. The link between personality-trait-like individual differences (Allen, Greenlees, & Jones, 2013; Laborde, Breuer-Weissborn et al., in press) play a greater role in effecting long distance performance, meaning that if one can control personality traits such as stress (which relates to your state of mind, self talk, coping tools, confidence) one will perform better. With this in mind, perhaps if the present study investigated track athletes that competed in the 3000 meter (a longer term performance in track and field) then results may show that EI can be used as a measurement to predictor performance.

Although Laborde et al. (2014) provided support for the results in this current study, there were some differences. Laborde et al. investigated tennis players and used the tennis serve to determine performance, whereas this study investigated the multi eventers in track and field and used athletes individual PR's for the season as a marker for performance. Laborde, et al. also used the German version of the Trait Emotional Intelligence Questionnaire, whereas this study used WLEIS. The basis of the Trait Emotional Intelligence Questionnaire (TEIQue) is made up of 153 items, 15 facets, 4 factors, and global trait EI. Research states that this is the preferred scale for EI questionnaires because it is to the point route in trait EI, its comprehensive coverage of trait EI sampling domain, and its greater predictive validity (Freudenthaler, Neubauer, Gabler, & Scherl, 2008). Because of the overwhelming conclusions in regards to the effectiveness of the TEIQue scale, it has been translated into 15 different languages, German being one of them. Historically, the TEIQue scale was designed to be factor-analyzed at the facet level (Hough & Paullin, 1994).

The results in this current study contradict those findings found in previous research that concluded that EI does predict performance (Crombie, Lombard, & Noakes, 2009). Specifically, Crombie (2009) studied the effect of team EI on the performance of South African cricket competitors and found that EI contributed to the performance of teams participating in complex sports similar to cricket. These differences in results could be due to the different instruments being used. Crombie's study assessed EI and the performance of cricket players using the Mayer-Salovery-Caruso Emotional Intelligence Test (MSCEIT). It is important to realize that the MSCEIT is a scale that is specifically used to measure the construct of EI classified as ability EI. The MSCEIT

scale measures ability EI through the use of maximum performance tests. The problem with this form of measurement is the scale itself, which attempts to eliminate the subjectivity of emotional experience (Matthews, Zeidner, & Roberts, 2007). The major problem with attempting to do this is creating questions or tasks that can be scored based on a truly objective manner which in turn creates the issue of what scoring method to use (Ortony, Revelle, & Zinbarg, 2007; O'Sullivan & Ekman, 2004; Robers, Zeidner, & Matthews, 2001). In contrast, in this study, the WLEIS was used to determine EI in multi-eventers. A second difference between Crombie's study and the current one is the difference in sample. Crombie's study focused on cricket athletes or a team sport while this study focused on multi-eventers track and field athletes in which is classified as an individual sport.

The results from this study both support and contrast to Zizzi et at., (2003) study, which explored the relationships between EI and global measures of baseball performance in a sample of NCAA D-1 college baseball players. The results from this study suggest that components of EI appear to be moderately related to pitching performance. However, when examining hitting performance, the findings in the Zizzi et al., revealed that EI was not a predictor. These differences in results could be due to the fact that the researchers used more than one factor to determine performance in baseball (hitting and pitching) as opposed to the present study that only included each athletes' PR for the season to determine performance. A limiting factor of using PR is that it only explains one performance (one's best performance) and does not give any information about an athlete's overall performance for the season. The differences in results could also have been due to the different instruments used. This study used the Emotional

Intelligence Scale (Schutte et al, 1998) as an instrument to determine EI whereas this study used the WLEIS. The Emotional Intelligence Scale (EIS) is related to personality traits, but not to cognitive ability (Van der Zee, Thjis, & Schakel, 2002). The scale is slightly different in format than the WLEIS scale in that it is based upon 85 items and a 5-point Likert Scale and 17 subscales. However, unlike the WLEIS scale there is a relatively low internal consistency (Van der Zee et al., 2002), which is a major limitation. The three-factor structure that this scale specifically measures is empathy, autonomy, and emotional control (Van der Zee et al., 2002).

The lack of significance found between EI and performance in the pentathlon and heptathlon suggest that there may be other variables that can be used as predictors of performance. For example, self-efficacy and the amount of time spent practicing are two specific variables that have been supported in research (Baker, Cote, & Abernathy, 2003; Burke & Jin, 1996). According to Moritz and colleagues (2000) meta-analysis study, positive correlations between self-efficacy and performance range from .79 to .01, indicating that the majority of studies that have investigated the impact of self-efficacy on performance have been able to show the significant relationships between self-efficacy and performance. For example, Burke and Jin's (1996) study compared the strength of self-efficacy in relations to other physiological and psychological variables in predicting performance. More specifically, they investigated Ironman triathletes using their total performance time as well as their individual swim, cyclist, and run times. Physiological measures (VO2Max, adiposity, height, weight), and the history of performance and psychological skills (self-efficacy, motivation, confidence, cognitive and somatic

anxiety) were utilized to determine performance. Interestingly, results found that performance times were predicted more accurately by self-efficacy, history of performance, and weight. This study suggests the impact that self-efficacy may have on performance.

Another predictor of performance could be the amount of practice an athlete engages in. Researchers have suggested that the level of mastery of an athletic movement is directly related to the amount of hours of practice (Baker, Cote, & Abernathy, 2003). In fact, when investigating over 100 D-I NCAA football players through questionnaire, Spieler, Czech, Joyner, and Munkasy (2007) found that age, high school size, and coping with adversity were predictors of starting status in collegiate football. These findings lead the researchers to suggest that these prevalence of experiential factors as descriptors of athletic performance may be the result of the amount and intensity of practice.

Gender Differences in EI's Prediction of Performance

Past studies have tried to determine to what extent gender is a predictor of EI. Brody and Halls (2000) found that females are generally better at managing their emotions, indicating that females are more likely to have higher levels of EI. On the contrary, Saklofske, Austin, Galloway, and Davidson (2007) found no significant gender effect in global EI. This contradiction in the research leaves a question regarding the impact of gender on EI. The final purpose of this study was to investigate if there were gender differences in the prediction of EI on performance. The findings of this study did not show gender and emotional intelligence to predict performance in the pentathlon and heptathlon.

Research suggests that EI as a whole does not predict success more in males or females, (Petrides & Furnham, 2000a; Petrides, Furnham, & Martin, 2004) which is confirmed with the results of this study. However, the data that was collected does support theories suggested by Goleman (1998) who believed males and females had their own personal profiles of strengths and weaknesses when it comes to EI. One research paper by Fernandez-Berrocal, Cabello, Castillo, and Extremera (2012) found that most studies of EI that are based on ability test such as the MSCEIT (Mayer, Salovey, & Caruso, 2002) and that include gender in their analysis have assumed women to be superior in emotional abilities (e.g., Brackett & Mayer, 2003; Ciarrochi et al., 2000; Extremera, Fernandez-Berrocal, & Salovey, 2006; Kafetsios, 2004; Mayer et al., 1999; Palmer et al., 2005). The scale that was used for this research was a scale that measured trait EI, which could explain why the data yielded results that were different from the previously mentioned study. Upon closer examination of each subscale that this study measured, when looking at the overall means of the heptathlon and pentathlon, the data concludes that men show higher levels of EI in three out of the fours subscales. Specifically, the average mean for men in the SEA, UOE, and ROE were higher than those of their female counterparts. This suggests that men on average are better able to understand their own emotions, better able to use their emotions in a constructive way and are better able to regulate their emotions. The only subscale that showed women to express more EI was in the OEA. This finding indicates that women are better at understanding other's emotions, which would be expected according to LaFrance (1992)

because females are socialized to pay more attention to emotions so that they are able to understand other's emotions and be nurturing.

It is important to note that most studies support the fact that women display higher EI overall (Brody & Hall, 2000; Craig, et al., 2009; Hall & Mast, 2008) but there are discrepancies in the exact areas as to where women perform best. Mclntyre's (2010) study has shown women to be superior in a variety of aspects ranging from perception, facilitation, understanding, and total score. Some studies have found that women are superior in all dimensions of the MSCEIT (Day & Carroll, 2004; Extremera & Fernandez-Berrocal, 2009; & Palmer, Gignac, Manocha, & Stough, 2005). Overall, the differences in the means found in each of the four subscales were slightly higher for men. Typical to the findings of other research, the differences between the strengths found in EI whether it is for men or women are very small (e.g. Day & Carroll, 2004; Livingstone & Day, 2005; Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005). On the contrary, there is research that attempts to explain a contrasting idea to women being more emotionally intelligent. Baron-Cohen (2002) even proposed the "extreme male brain theory of autism" which looks to explain the masculine brain and why it predominantly seeks to understand and construct systems which links to why men are taught to minimize certain emotions related to sadness, guilt, vulnerability and fear (Brody & Hall, 1999). Even though this study showed results that differ from past research (Ciarrochi et al., 2001; Day & Caroll, 2004; Mayer et al., 1999; Palmer et al., 2003; Van Rooy et al., 2004), further research on gender differences in EI is warranted.

Practical Application

Although this research failed to show any significance in determining whether EI could predict performance in the pentathlon and/or heptathlon as well as whether EI was more important for females than it is for males, there are some practical applications for the findings. Since EI is not more important for either gender in predicting performance, these results suggest the importance of understanding an athlete as an individual. It is extremely important for coaches and practitioners to get to know their athlete and refrain from coming to any conclusion about them simply based on gender. The more a coach and/or sport psychologist understands their athlete as an individual, the better able they are to help them improve performance. When looking at overall means, it is evident that both males and females had high levels of EI in this study, which leads to another practical application.

Results in this study show that both pentathletes and heptathletes have high EI levels. This information suggests that pentathletes and heptathletes tend to have high EI traits. Although results did not suggest that EI is a predictor of performance, perhaps it is important for pentathletes and heptathletes to have high EI since they are competing in an individual sport that does not always have the support of their teammates. For this reason high EI would allow them to have control over their emotions and regulate them during competition. With this information coaches can assess the levels of EI in their incoming freshman to determine if they are good candidates for the pentathlon or heptathlon. However, all hope does not fail in those athletes with low or moderate EI levels. If a coach still sees potential in an athlete who scored low on an EI assessment, they can help to increase those athletes' EI because EI can be learned (Goleman, 1998).

Limitations and Future Research

One possible limitation is the use of personal records to determine athletes' performance. Not only was PR used to determine performance but the athletes PR of the current year. There are many external variables that can have an effect on one's PR for the season. Some of these variables are, but are not limited to, injury and lack of participation in meets that provide the pentathlon and the heptathlon. Another limitation with using PR to determine one's performance is that it only explains one meet, in other words an athlete could have performed poorly in all but one meet which may give him a high PR even with a poor season. A more effective alternative way to determines one's performance could be to calculate an average score from all meets combined. This would allow performance to be determined through multiple performances as opposed to one (PR). Future research should continue to investigate this population to determine the effects EI plays on performance while using athletes' average score for the season to determine performance.

Another limitation of this study is that the WLEIS was used to determine EI in multi-eventers. However, this scale was not designed specifically for athletes and lacks validity. In fact, it has never been used in a study that investigated athletes. Although this scale has not been used before, the researcher used this measurement because it showed internal consistency in a pilot study performed by the researcher of this current study. However, the pilot study investigated recreational runners while this current study aimed to investigate pentathletes and heptathletes. The differences in populations (athlete vs. non-athlete) could explain why the scale was not valid when using it in the present study. Perhaps, a validated EI scale designed specifically for athletes may have provided

different results. To the researchers knowledge there is only one scale that was developed to measure EI in the athletic population. Lane et al. (2009) created a 19-item version of the Emotional Intelligence Scale (EIS: Schutte et al., 1998) that would measure EI in athletes. However, this study failed to report Cronbach Alphas, and no other study that has investigated the effects on EI and performance has used this scale as a way to measure EI in the athletic population. For this reason, it is important for future researchers to create a valid and reliable measure to assess EI in the athletic population. With an accurate way to measure EI in an athletic population, interested researchers will be better able to investigate EI and its effect on athletic performance.

Lastly, another limitation in this study is the vague understanding of the differences between trait and ability EI. It is difficult to fully understand the role EI plays on pentathletes and heptathletes until trait EI is more concretely defined and distinguished from ability EI. Perhaps one of the largest areas of discrepancy in studying EI has been the recent differentiation of how to accurately measure and quantify EI. There are two conceptualizations that make up EI: trait EI and ability EI (Petrides & Furnham, 2003). Due to the slight degree of difference found in the two terms, restating the definitions will assist in understanding the role that these two constructs played in this study. Trait EI is defined as "a constellation of emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies which encompasses emotion-related behavioral dispositions and self-perceived abilities measured via self-report" (Petrides, Perez-Gonzalez, & Furnham, 2007, p. 264). Ability EI is defined as "the ability to perceive and express emotion assimilate emotion in thought understand and reason with emotion and regulate emotion in the self and others" (Myer & Salvoy

1997, p. 396). Understanding these two constructs have both complicated as well as attempted to isolate the complete understanding of EI. This may have been one of the underlying reasons that there was no statistical significance found in this study, simply because the incorrect construct and measurement scale was used. Petrides and Furnham (2000, 2001) noted this was problematic because different measurement approaches would almost certainly produce difference results, even if the underlying model being operationalized were one and the same. It has since been demonstrated, in empirical studies investigating this issue, that the two constructs used in the measurement of EI are very different (Van Rooy, Viswesvaran, & Pluta, 2005; Warwick & Nettelbeck, 2004) and that it is imperative to draw a distinction between self-reports and maximal performance tests in the field (Freuenthaler & Neubauer, 2007). As research has suggested, these two constructs are extremely important to differentiate in order to correctly measure and interpret their results. Trait EI and ability EI together create EI but their differences are important to understand because of how they are measured. Trait EI uses questionnaires that are mainly used to personally measure emotional experience whereas ability EI uses maximum performance tests and tasks to objectively score emotional experience. The measurement of ability EI is problematic because as previously mentioned emotional intelligence is difficult to score on a truly objective basis (Matthews, Zeidner, & Robers, 2007; Robinson & Clore, 2002). However, if ability EI tests are not objective the maximum performance tests will not work. Whereas trait EI does not attempt to remove the subjectivity of the personal experience as it relates to emotion, it heavily relies on self-reports, which leaves the researcher to heavily rely upon the honesty and understanding of the participants. In summary, the two separate

constructs that make up EI, study the same subject but do it through very different avenues of measurement, which has an impact on the findings.

Future research should attempt to better understand these two constructs, so that we are better able to understand EI within itself, which will eventually help to understand how EI effects the athletic population. In addition, the use of other research designs may help to explain the relationship between EI and sport performance. A qualitative research design could provide a useful avenue to investigate the relationship of EI and sport performance that may not be found through quantitative research. This would allow the researcher to ask specific questions in order to fully understand how the different aspects of EI (i.e., self- emotional appraisal, others emotional appraisal, use of emotions & regulation of emotions) and how they impact sport performance.

Conclusion

In every major aspect of life whether it be a leadership role, career development, mental or physical health, social functioning and academia, emotional intelligence (EI) has proven to be a relevant factor in one way or another (e.g., Brackett, Rivers, & Salovey, 2011; Hervas, 2011; Mayer, Rovers, & Barsade, 2008; O'Boyle, Humphrey, Pollack, Hawyer, & Story, 2010). The purpose of this study was to investigate whether EI was a predictor of performance in heptathletes and pentathletes as well as to investigate if gender impacted this relationship. Even though hypotheses were not supported, results revealed several important aspects of emotional intelligence. The current findings further suggest that a more comprehensive approach should be taken to accurately measure the two different conceptual forms of EI (Brannick, Wahi, Arce &

Johnson, 2009). In addition, this research parallels Goleman (1995) in providing further evidence that both men and women have their strengths and weaknesses as it pertains to EI. The research from this study also supported results from outside data that also nullified gender differences in EI (Petrides & Furnham, 2000a; Petrides, Furnham, & Martin, 2004), but more importantly, expanded the field of research in EI to include a sport that had previously never been studied before.

References

Ackers, M.D., & Porter, G.L. (2003). Your EQ skills: Got what it takes? *Journal of Accountancy, 195 (3),* 65-69.

Allen, M. S., Greenlees, I., & Jones, M. V. (2013). Personality in sport: A comprehensive review. International Review of Sport and Exercise Psychology, 6, 184–208.

Antonakis, J., Ashkanasy, N.M. and Dasborough, M.T. (2009), "Does leadership need emotional intelligence?", The Leadership Quarterly, Vol. 20 No. 2, pp. 247-61.

Aslan, S., & Erkus, A. (2008). Measurement of emotional intelligence: validity and reliability studies of two scales. World Applied Science Journal, 4(3), 430-438.

Avolio, B. J., Kahai, S. R., & Dodge, G. E. (2001) 'E-Leadership: Implications For Theory, Research, and Practices', *The Leadership Quarterly* 11(4): 615–68.

Baker, J., Côté, J., & Abernethy, B. (2003). Learning from the experts: Practice activities of expert decision makers in sport. *Research Quarterly for Exercise and Sport*, *74*(3), 342-347.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in cognitive sciences*, *6*(6), 248-254.

Bar-On, R. (1997). Bar-On Emotional Quotient Inventory: A measure of emotional intelligence. Multi-health systems.

Bar-On, R. (2000). Emotional and social intelligence: Insight from the Emotional Quotient Inventory (EQ-I). In R. Bar-On & J.D.A. Parker (Eds.), *Handbook of emotional intelligence* (pp. 363-3880. San Francisco: Jossey-Bass.

Bar-On, R., Brown, J. M., Kirkcaldy, B. D., & Thome, E. P. (2000). Emotional expression and implications for occupational stress; an application of the Emotional Quotient Inventory (EQ-i). Personality and individual differences, 28(6), 1107-1118.

Barrett, L. F., Lane, R. D., Sechrest, L., & Schwartz, G. E. (2000). Sex differences in emotional awareness. *Personality and Social Psychology Bulletin*, *26*(9), 1027-1035.

Bass, B. M. (1985). *Leadership and performance beyond expectation.* New York: Free Press.

Beauchamp, P. H. (1996, October). Psychological influences on golfers' putting performance. Dissertation Abstracts International, 57,

Beilock, S. L., & Gray, R. (2007). Why do athletes choke under pressure?

Botterill, C., & Brown, M. (2002). Emotion and perspective in sport. *International Journal of Sport Psychology, 33,* 38–60.

Boyatzis, R.E. (1982). The competent manager: A model for effective performance. New York: John Wiley & Sons.

Boyatzis, R. E., & Sala, F. (2004). The Emotional Competence Inventory (ECI).

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. Personality and social psychology bulletin, 29(9), 1147-1158.

Brackett, M.A. & Rivers, S.E. & Shiffman, S. & Lerner, N. & Salovey, P. (2006), Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. Journal of Personality and Social Psychology, 91 (4), pp. 780-795.

Brannick, M. T., Wahi, M. M., Arce, M., Johnson, H. A., Nazian, S., & Goldin, S. B. (2009). Comparison of trait and ability measures of emotional intelligence in medical students. *Medical education*, *43*(11), 1062-1068.

Brody, L. R., Hall, J. A., Lewis, M., & Haviland, J. (2000). Handbook of emotions. Gender, Emotion and Expression. 338-349.

Brooks, K., & Nafukho, F. M. (2006). Human resource development, social capital, emotional intelligence: any link to productivity?. *Journal of European Industrial Training*, *30*(2), 117-128.

Burke, S. T., & Jin, P. (1996). Predicting performance from a triathlon event. *Journal of sport Behavior*, *19*(4), 272-287.

Cawthon, David L. (1996). Leadership: The Great Man Theory Revisited. *Business Horizons,10,* 44-48.

Ciarrochi, J., Chan, A.Y. C., & Bajar, J. (2001). Measuring emotional intelligence in adolescents. *Personality and Individual Differences, 31,* 1105-1119.

Clarke, N. (2006a). Developing emotional intelligence through workplace learning: Findings from a case study in healthcare. Human Resource Development International, 9, 447-465.

Clarke, N. (2006b). Emotional intelligence training: A case of caveat emptor. Human Resource Development Review, 5, 422-441.

Craig, A., Tran, Y., Hermens, G., Williams, L.M., Kemp, A., Morris, C., & Gordon, E. (2009). Psychological and neural correlates of emotional intelligence in a large sample of adult males and females. *Personality and Individual Differences, 46*, 111-5.

Crombie, D., Lombard, C., & Noakes, T. (2009). Emotional intelligence scores predict team sports performance in a national cricket competition. *International Journal Of Sports Science & Coaching, 4(2),* 209-224. doi:10.1260/174795409788549544

Dasborough, M.T. (2006), "Cognitive asymmetry in employee emotional reactions to leadership behaviors", The Leadership Quarterly, Vol. 17 No. 2, pp. 163-78.

Day, A. L., & Carroll, S. A. (2004). Using an ability-based measure of emotional intelligence to predict individual performance, group performance, and group citizenship behaviors. *Personality and Individual Differences, 36,* 1443–1458.

Deci, E. L. (1980). The psychology of self-determination. Lexington, MA: Lexington Books.

Derryberry, D., & Tucker, D. M. (1994). Motivating the focus of attention.

Drodge, E. N., & Murphy, S. A. (2002). Interrogating emotions in police leadership. Human Resource Development Review, 1, 420-438.

Extremera, N., & Fernández-Berrocal, P. (2009). Test de Inteligencia Emocional de Mayer Salovey Caruso. *Madrid, ES, TEA Ediciones*.

Fernández-Berrocal, P., Cabello, R., Castillo, R., & Extremera, N. (2012). Gender differences in emotional intelligence: The mediating effect of age. Behavioral Psychology, 20, 77-89.

Fernández-Berrocal, P., Extremera, N., & Ramos, N. (2004). Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. *Psychological Reports, 94,* 751-755.

Finley, D., Pettinger, A., Rutherford, T., & Timmes, V. (2000). Developing Emotional Intelligence in a Multiage Classroom.

Fiori, M., & Antonakis, J. (2012). Selective attention to emotional stimuli: What IQ and openness do, and emotional intelligence does not. *Intelligence, 40*(3), 245-254. doi:10.1016/j.intell.2012.02.004

Fivush, R., Brotman, M. A., Buckner, J. P., & Goodman, S. H. (2000). Gender differences in parent–child emotion narratives. Sex Roles, 42(3-4), 233-253.

Frederickson, N. & Furnham, A. (2004) 'The relationship between sociometric status and peer assessed behavioral characteristics of included pupils who have moderate learning difficulties and their classroom peers', *British Journal of Educational Psychology*, 74 (3), 391–410.

Freedman, J.M., Jensen, A.L., Stone-McCown, K., & Rideout, M.S. (1998). Self-Science: The emotional intelligence curriculum. San Mateo, CA: 6Seconds.

Freudenthaler, H. H., & Neubauer, A. C. (2007). Measuring emotional management abilities: Further evidence of the importance to distinguish between typical and maximum performance. *Personality and Individual Differences*, *42*(8), 1561-1572.

Freudenthaler, H. H., Neubauer, A. C., Gabler, P., Scherl, W. G., & Rindermann, H. (2008). Testing and validating the trait emotional intelligence questionnaire (TEIQue) in a German-speaking sample. Personality and Individual Differences, 45, 673–678. http://dx.doi.org/10.1016/j.paid.2008.07.014.

Gallagher, E. N., & Vella-Brodrick, D. A. (2008). Social support and emotional intelligence as predictors of subjective well-being. Per- sonality and Individual Differences, 44, 1551-1561.

Gardner, H. (1983). Frames of mind: The theory of multiple intelligences. New York: Basic Books.

Garry, E., Lindstrom, S., Hendershott, J. (2011). BIG GOLD BOOK: Metric Conversions for Track & Field, Combined Decathlon/Heptathlon Scoring and Metric Conversion Tables, and Other Essential Data for the Track Fan, Athlete, Coach and Official.Tafnews Press

Gelinas, R., & Munroe-Chandler, K. (2006). Psychological skills for successful ice hockey goaltenders. Athletic Insight: The Online Journal Of Sport Psychology, 8(2),

George, J.M. (2000), "Emotions and leadership", Human Relations, Vol. 53 No. 8, pp. 1027-55.

Gil-Olarte, P., Palomera, R. & Brackett, M. (2006). Relating emotional intelligence to social competence and academic achievement in high school students. Psicothema, 18, suppl., 118-123.

Goleman, D. (1995). Emotional intelligence. New York: Bantam Books.

Goleman, D. (1998). Working with emotional intelligence. New York: Bantam Books.

Goleman, D. (2004). What makes a leade? Harvard Business Review, 82 (1), 82-91.

Gore, S. W. (2000). Enhancing Students Emotional Intelligence and Social Adeptness.

Grossman, M. Wood, W. (1993). Sex differences in intensity of emotional experience: A social role interpretation. *Journal of Personality and Social Psychology, 65* (5), 1010-1022.

Hall, J.A., & Halberstack, A.G., (1981). Sex roles and nonverbal communication. *Sex Roles*, 7, 273-287.

Hall, J. A., & Mast, M. S. (2008). Are women always more interpersonally sensitive than men? Impact of goals and content domain. Personality and Social Psychology Bulletin, 34(1), 144-155.

Haney, C. J., & Long, B. C. (1995). Coping effectiveness: A path analysis of self- efficacy, control, coping, and performance in sport competitions. Journal of Applied Social Psychology, 25, 1726–1746.

Hanin, Y. L. (2003, January). Performance Related Emotional States in Sport: A Qualitative Analysis. In Forum: Qualitative Social Research (Vol. 4, No. 1).

Hough, L., & Paullin, C. (1994). Construct-oriented scale construction: The rational approach.

Jackson, S. A., Thomas, P. R., Marsh, H. W., & Smethurst, C. J. (2001). Relationships between flow, self-concept, psychological skills, and performance. Journal Of Applied Sport Psychology, 13(2), 129-153. doi:10.1080/104132001753149865

Jordan P. J., Troth A. C. (2002). Emotional intelligence and conflict resolution: Implications for human resource development. *Advances in Developing Human Resources*, 4, 62–79.

Kaufhold, J. A., & Johnson, L. R. (2005). The Analysis of the Emotional Intelligence Skills and Potential Problem Areas of Elementary Educators. Education, 125(4).

Kihlstrom, J. F. &Cantor, N. (2000). Social Intelligence. In R. J. Sternberg (Ed.), Handbook of intelligence, 2nd ed. (359-379). Cambridge, U.K.: Cambridge University Press, 2000.

Kinga, S., & István, S. (2012). Relationship between social creativity and social intelligence, and their cognitive correlates. Erdélyi Pszichológiai Szemle, 13(1), 39-62.

Kolb, K., & Weede, S. (2001). Teaching Prosocial Skills to Young Children To Increase Emotionally Intelligent Behavior.

Kunnanatt, J. T. (2004). Emotional intelligence: The new science of interpersonal effectiveness. Human Resource Development Quarterly, 15, 489-495.

Laborde, S., Brüll, A., Weber, J., & Anders, L. (2011). Trait emotional intelligence in sports: A protective role against stress through heart rate variability?. Personality And Individual Differences, 51(1), 23-27. doi:10.1016/j.paid.2011.03.003

Laborde, S., Lautenbach, F., Allen, M. S., Herbert, C., & Achtzehn, S. (2014). The role of trait emotional intelligence in emotion regulation and performance under pressure. *Personality and Individual Differences*, *57*, 43-47.

Laborde, S., Raab, M., & Dosseville, F. (in press). Emotions and Performance: Valuable insights from the sports domain. In: Handbook of Psychology of Emotions: Recent Theoretical Perspectives and Novel Empirical Findings. Vol. 1. New York, NY: Nova.

LaFrance, M., & Banaji, M, (1992). Towards a reconsideration of the gender-emotion relationship. *Review of Personality and Social Psychology, 14,* 178-201.

Landen, M. (2002). Emotional management: dabbling in mystery – white witchcraft or black art? Human Resource Development International, 5, 507-521.

Lane, A. M., Devonport, T. J., Soos, I., Karsai, I., Leibinger, E., & Hamar, P. (2010). Emotional intelligence and emotions associated with optimal and dysfunctional athletic performance. Journal of Sports Science and Medicine, 9, 388–392.

Lane, A. M., Meyer, B., Devonport, T. J., Davies, K. A., Thelwell, R., Gill, G. S., et al. (2009). Validity of the emotional intelligence scale for use in sport. Journal of Sports Science and Medicine, 8, 289–295.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. The Sport Psychologist, 14, 229–252.

Libbrecht, N., Lievens, F., & Schollaert, E. (2010). Measurement equivalence of the Wong and Law Emotional Intelligence Scale across self and other ratings. Educational and Psychological Measurement, 70(6), 1007-1020.

Livingstone, H. A., & Day, A. L. (2005). Comparing the construct and criterion-related validity of ability-based and mixed-model measures of emotional intelligence. *Educational and Psychological Measurement*, *65*(5), 757-779.

Lopes, P., Grewal, D., Kadis, J., Gall, M., & Salovey, P. (2006). Evidence that emotional intelligence is related to job performance and affect and attitudes at work. *Psicotherma, (18),* 132-138.

Lumley, M. A., Gustavson, B. J., Partridge, R. T., & Labouvie-Vief, G. (2005). Assessing alexithymia and related emotional ability constructs using multiple methods: interrelationships among measures. *Emotion*, *5*(3), 329.

Lyusin, D. B., & Favorov, N. (2006). Emotional intelligence as a mixed construct: Its relation to personality and gender. Journal Of Russian & East European Psychology, 44(6), 54-68. doi:10.2753/RPO1061-0405440604

Macdonald, N. (2008). The relationship between levels of stress and physical fitness, as experienced by law enforcement officers. Dissertation Abstracts International, 69.

Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990). Development and validation of the competitive state anxiety inventory-2. *Competitive anxiety in sport*, 117-190.

Martin, J., Knopoff, K., & Beckman, C. (1998). An alternative to bureaucratic impersonality and emotional labor: Bounded emotionality at The Body Shop. Administrative Science Quarterly, 43, 429-469.

Matthews, G., Zeidner, M., & Roberts, R. D. (Eds.). (2007). *The science of emotional intelligence: Knowns and unknowns*. Oxford University Press.

Mavroveli, S., Petrides, K. V., Rieffe, C., & Bakker, F. (2007). Trait emotional intelligence, psychological well-being and peer-rated social competence in adolescence. British Journal of Developmental Psychology, 25, 263-275.

Mayer, J.D., Caruso, D.R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence*, *27* (4), 267-298.

Mayer, J. D., Roberts, R., & Barsade, S. (2008). Human abilities: Emotional intelligence. *Annual Review of Psychology, 59,* 507–536. doi:0.1146/annurev.psych.59.103006.093646

Mayer, J. D., DiPaolo, M., & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. Journal of Personality Assessment, 54, 772–781.

Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators* (p. 3- 31). New York: Basic Books.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), Handbook of intelligence (pp. 396–420). Cambridge, England: Cambridge University Press.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2004). Emotional intelligence: Theory, findings, and implications. Psychological inquiry, 15(3), 197-215.

McCann, S. (1999). Emotional intelligence: The secret of athletic excellence. *Olympic Coach, 9,* 8–9.

McClelland, D. C. (1973). Testing for competence rather than for" intelligence." American psychologist, 28(1), 1.

McIntyre, H. H. (2010). Gender differences in the nature and linkage of higher-order personality factors to trait and ability emotional intelligence. *Personality and Individual Differences*, *48*(5), 617-622.

Memmert, D., & Furley, P. (2007). "I spy with my little eye!" Breadth of attention, inattentional blindness, and tactical decision making in team sports. Journal of Sport & Exercise Psychology, 29(3).

Meyer, B. B., Fletcher, T. B., Kilty, K., Richburg, M. J. (2003, October). *Emotional intelligence: Theo- retical and applied implications for AAASP constituents.* Colloquium presented at the Association for the Advancement of Applied Sport Psychology, Philadelphia.

Meyer, B., & Fletcher, T. B. (2007). Emotional intelligence: A theoretical overview and implications for research and professional practice in sport psychology. Journal Of Applied Sport Psychology, 19(1), 1-15.

Moritz, S. E., Feltz, D. L., Fahrbach, K. R., & Mack, D. E. (2000). The relation of self-efficacy measures to sport performance: A meta-analytic review. *Research quarterly for exercise and sport*, *71*(3), 280-294.

Naghavi, F. & Mar'of, R. (2011). The relationship between gender and emotional intelligence. World Applied Sciences Journal, 555-561.

Neubauer, A.C., & Freudenthaler, H.H. (2005). Models of emotional intelligence. In R. Schulze & R.D. Roberts (Eds.), *Emotional Intelligence: An International Handbook* (pp. 31-50). Cambridge, MA: Hogrefe & Huber Publishers.

Nunnaly, J. (1978). Psychometric theory. New York: McGraw-Hill.

Ono, M., Sachau, D., Deal, W., Englert, D., & Taylor, M. (2011). Cognitive ability, emotional intelligence, and the big five personality dimensions as predictors of criminal investigator performance. *Criminal Justice and Behavior, 38*(5), 471-491. doi: 10.1177/0093854811399406

Ortony, A., Revelle, W., & Zinbarg, R. (2007). Why emotional intelligence needs a fluid component. *The Science of Emotional Intelligence: Knowns and Unknowns*, 288-304.

O'Sullivan, M., & Ekman, P. (2004). Facial expression recognition and emotional intelligence.

Palmer, B. R., Gignac, G., Manocha, R., & Stough, C. (2005). A psychometric evaluation of the Mayer–Salovey–Caruso emotional intelligence test version 2.0. *Intelligence, 33*(3), 285-305.

Palmer, B.R. Monacha, R. Gignac,G. & Stough, C.(2003). Examining the factor structure of the Bar-On Emotional Quotient Inventory with an Australian general population sample. *Personality and Individual differences, 35,* 1191- 1211.

Parker, J. D., Summerfeldt, L. J., Hogan, M. J., & Majeski, S. A. (2004). Emotional intelligence and academic success: Examining the transition from high school to university. Personality and individual differences, 36(1), 163-172.

Perlini, A. H., & Halverson, T. R. (2006). Emotional Intelligence in the National Hockey League. Canadian Journal of Behavioral Science, 38, 109–119.

Petrides, K. V., & Furnham, A. (2000a). Gender differences in measured and self estimated trait emotional intelligence. Sex roles, 42, 449–461.

Petrides, K. V., & Furnham, A. (2000b). On the dimensional structure of emotional intelligence. Personality and Individual Differences, 29, 313–320.

Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. European Journal of Personality, 15, 425–448.

Petrides, K., Pe´rez-Gonza´lez, J. C., & Furnham, A. (2007). On the criterion and incremental validity of trait emotional intelligence. Cognition and Emotion, 21, 26–55.

Petrides, K.V., & Furnham, A. (2000). Gender differences in measured and self-estimated trait emotional intelligence. *Sex Roles, 42,* 449-461.

Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioral validation in two studies of emotion recognition and reactivity to mood induction. European Journal of Personality, 17, 39-57.

Petrides, K. V., Furnham, A., & Martin, G. (2004). Estimates of Emotional and Psychometric Intelligence: Evidence for Gender-Based Stereotypes. *The Journal Of Social Psychology, 144(*2), 149-162. doi:10.3200/SOCP.144.2.149-162

Pfeiffer, S. 2001. Emotional intelligence: Popular but elusive construct. Roeper review, 23(3): 138-142.

Rahim, M.A., Psenicka, C., Polychronious, P., Zhao, J., Yu, C., Chan, K.A., et al. (2002). A model of emotional intelligence and conflict management strategies: A study in seven countries. *The International Journal of Organizational Analysis, 10 (2),* 302-326.

Roberts, R. D., Zeidner, M., & Matthews, G. (2001). Does emotional intelligence meet traditional standards for an intelligence? Some new data and conclusions. *Emotion*, *1*(3), 196.

Robinson, M. D., & Clore, G. L. (2002). Episodic and semantic knowledge in emotional self-report: evidence for two judgment processes. *Journal of personality and social psychology*, *83*(1), 198.

Saklofske, D., Austin, E., Galloway, J. and Davidson, K. (2007) Individual Difference Correlates of Health Related Behaviors: Preliminary evidence for links between emotional intelligence and coping. *Personality and Individual Differences, 42*, 491–502.

Salovey P and Grewal D (2005) The Science of Emotional Intelligence. Current directions in psychological science, Volume14 -6

Salovey, P., Mayber, J.D., Goldman, S.L., Turvey, C., & Palfai, T., (1995). Emotional attention, clarity and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed). *Emotions, disclosure and health* (pp. 125-154). Washington, DC: American Psychological Association

Salovery, P., & Mayer, J.D. (1990). Emotional Intelligence. *Imagination, Cognition, & Personality*, 9, 185-211.

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. Personality and individual differences, 25(2), 167-177.

Selbert, S.E., Kraimer, M.L & Linden, R.C (2001). A social capital theory of career success. *Academy of Management Journal, 44*, 219-237.

Shearer, C.B. (2004). Multiple intelligences after 20 years. Teachers College Record, 106(1), 2-16

Sherlock, P. (2002). Emotional intelligence in the international curriculum. *Journal of Research in International Education, 1*(2), 139-158. doi: 10.1177/147524002764248112

Spieler, Martin, et al. "Predicting athletic success: factors contributing to the success of NCAA division IAA collegiate football players." *Athletic Insight* 9.2 (2007): 22-33.

Terry, P. C. (1995). The efficacy of mood state profiling among elite competitors: A review and synthesis. *The Sport Psychologist, 9,* 245-260.

Thelwell, R. C., Lane, A. M., Weston, N. J. V., & Greenlees, L. A. (2008). Examining relationships between emotional intelligence and coaching efficacy. International Journal of Sport & Exercise Psychology, 6, 224–235.

Thomas, P. R., Murphy, S. M., & Hardy, L. (1999). Test of performance strategies: Development and preliminary validation of a comprehensive measure of athletes' psychological skills. Journal of Sports Sciences, 17(9), 697-711.

Thorndike, E. L. (1920). Intelligence and its use. Harper's Magazine, 140, 227–235.

Tsaousis, I., & Nikolaou, I. (2005). Exploring the relationship of emotional intelligence with physical and psychological health functioning. Stress and Health: Journal of the International Soci- ety for the Investigation of Stress, 21, 77-86.

Van der Zee, K., Thijs, M., & Schakel, L. (2002). The relationship of emotional intelligence with academic intelligence and the Big Five. *European journal of personality, 16*(2), 103-125.

Van Kuyk, J. J. (2001). Pyramid Educational Method for 3 to 6-Year-Old Children: Theory and Research.

Van Rooy, D. L., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior, 65*, 71–95.

Van Rooy, D. L., Viswesvaran, C., & Pluta, P. (2005). An evaluation of construct validity: what is this thing called emotional intelligence?. *Human Performance, 18*(4), 445-462.

Vast, R., Young, R., & Thomas, P. (2010). Emotions in sport: Perceived effects on attention, concentration, and performance. Australian Psychologist, 45(2), 132-140. doi:10.1080/00050060903261538.

Warwick, J., & Nettelbeck, T. (2004). Emotional intelligence is…?. *Personality and Individual Differences, 37*(5), 1091-1100.

Weinberger, L. (2002). Emotional intelligence: Its connection to HRD theory and practice. *Human Resource Development Review, 1 (2),* 215-243.

Whitman, D., Van Rooy, D., Viswesvaran, C., and Kraus, E. (2009). Testing the structure and measurement equivalence of the Wong and Law Emotional Intelligence Scale across gender and ethnicity. *Educational and Psychological Measurement, 69,* 1059-1074.

Wilhelm, O. (2005). Measures of emotional intelligence: Practice and standards. Emotional intelligence: An international handbook, 131-154.

Wolack, J., & Marcus, G. (2007). Personality and emotional response: Strategic and tactical responses to changing political circumstances. *The ANNALS of the American Academy of Political and Social Science*, *614*(1), 178-195. doi: 10.1177/0002716207306086

Wolff, S. (2006). Ethnic Conflict. Oxford University Press.

Wong, C. S., & Law, K. S. (2002). The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. The Leadership Quarterly, 13(3), 243-274.

Wu, Y. (2011). Job stress and job performance among employees in the Taiwanese finance sector: The role of emotional intelligence. Social Behavior And Personality, 39(1), 21-32. doi:10.2224/sbp.2011.39.1.21

Yu, Q., & Yuan, D. (2008). The impact of the emotional intelligence of employees and their manager on the job performance of employees. *Acta Psychologica Sinica, 40(1),* 74-83. doi:10.3724/SP.J.1041.2008.00074

Zizzi, S. J., Deaner, H. R., & Hirschhorn, D. K. (b). The Relationship Between Emotional Intelligence and Performance Among College Baseball Players. Journal Of Applied Sport Psychology, 15(3), 262-269. doi:10.1080/10413200305390

Appendix A

THE IMPACT OF EI ON PENTATHLETES AND HEPTATHLETES WHILE CONTROLING FOR GENDER

There was a time where emotions were not considered to be an important factor in research; in fact most organizational theories had the tendency to marginalize the exploration of emotions (Martin, Knopff, & Beckman, 1998). However, emotion has become a main topic of interest in many different studies (Clarke, 2006a, 2006b; Drodge & Murphy, 2002; Jordan & Troth, 2002; Kunnanatt, 2004; Landen, 2002). An emerging concept that has received researcher's focus is emotional intelligence (EI).

EI was initially established through the works of Thorndike (1920) exploring social intelligence and Garner (1983) investigating personal intelligence. Years later, the term EI was reassessed by Salovey and Mayer (1990) and used in the United States academic literature. Eventually this concept was launched as a principal topic of interest through Daniel Goleman's published book (1995). EI is the ability, reason, use and knowledge of emotions to enhance thought and action (Mayer, Roberts, & Barsade, 2008). EI is thought to lead to more effectiveness in leadership, social involvement and organizational membership (Goleman, 1998).

Previous research has shown that gender was a significant predictor of EI, and typically, females are better than men in managing their emotions (Brody & Hall, 2000; Hall & Mast, 2008). For example, results from Craig et al. (2009) showed that females had higher overall emotional intelligence scores than males. Despite these previous findings, there is literature suggesting that gender has no affect on emotional intelligence. For example, using a trait EI measure (SSEIT), Saklofske, Austin, Galloway, and

Davidson (2007) found no significant sex effect in global EI. Due to the findings of gender and EI, it is suspected that gender will have a significant affect on EI. However, due to the knowledge of the researcher there is a gap in the literature of the importance of EI on to each gender when determining success.

Many studies have suggested that emotional intelligence has a strong influence on career and academic success (Acker & Porter, 2003; Goleman, 2004; Rahim, Psenicka, Polychroniou, Zhao, Yu, Chan et al, 2002). For example, Wu (2011) study investigated the effects of emotional intelligence on the relationship between job stress and job performance, by using a sample of employees in the Taiwanese finance sector. Results suggested that emotional intelligence has a positive impact on job performance and that highly emotional intelligence employees are more likely than low emotional intelligence employees to be able to reduce the potential negative effects of job stress. Much research has also investigated the effects of EI on leadership. EI has long been theorized to contribute to effectiveness in leadership (Antonakis et al., 2009; Dasborough, 2006; George, 2000). For instance, Munroe (2010) study examine the degree to which a relationship existed between emotional intelligence and instructional leadership behaviors by using a sample population which consisted of 35 elementary principals involved in Michigan's Reading First Initiative. Results indicate a significant relationship between the principal's total scale score of instructional leadership behaviors and the overall emotional intelligence score.

Recently it has been suggested that EI is a significant predictor of sport performance, practitioners have become increasingly vocal in their suggestion that EI may be an important paradigm in the sports world (Botterill & Brown, 2002; McCann,

1999; Meyer, Fletcher, Kilty, & Richburg, 2003; Zizzi, Deaner, & Hirschhorn, 2003). For example, Crombie (2009) studied the effect of team EI on the performance of South African cricket competitors and found that EI contributed to the success of teams participating in complex sports similar to cricket. In a different study, Zizzi (2003) found components of emotional intelligence were moderately related to pitching performance when exploring the relationship between emotional intelligence and athletic performance in a sample of 61 Division I baseball players. While initial data suggest that EI may be a valuable predictor of performance (Van Rooy & Viswesvaran, 2004) and therefore have a place in applied sport psychology, much investigation remains to be done before contributions can be made toward the advancement of the scientific and applied literatures (Meyer, & Fletcher, 2007).

Many different emotions can arise during a long distance run; in addition to these emotions it is easy for a recreational runner to end a run short when experiencing negative emotions. A recreational runner with high emotional intelligence will be able to control emotions and finish a run opposed to a runner with low emotional intelligence. The purpose of this study is to determine if emotional intelligence predicts success in recreational distance runners while controlling for gender. It is hypothesized that the more successful runners will have higher levels of EI. Although previous research has not investigated whether EI is as important for women as it is for men in determining success, it is hypothesized that EI is more important for determining a woman's success due to the strong support of evidence that suggested women are more likely to have greater EI than men.

The pentathlon and heptathlon are unique sport performances in that many different events contribute to one's ultimate performance outcome. Thus, there is the potential for different emotions to arise throughout this performance depending on the athlete's perception of how they performed in each event. It may, therefore, be important for athletes to have control over their emotions regardless of outcome of any of their individual events. More specifically, it is likely to be important for athletes to maintain positive emotions, which facilitate performance, and avoid negative emotions, which can harm performance (Vast, Young, & Thomas, 2010). EI is defined as the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. Through this definition alone one could understand how EI can be beneficial for sport performances such as the pentathlon and the heptathlon. More specifically, EI may be beneficial in sport performances such as the pentathlon and the heptathlon where athletes are given a short period in between events to understand what emotions they are experiencing, and manage their negative emotions in an effective way so that they can facilitate positive emotions for their next performance. However, research is needed to determine whether or not EI actually predicts performance in sports before contributions can be made toward the advancement of the scientific and applied sport psychology literatures (Meyer, & Fletcher, 2007).

Furthermore, Brody and Halls (2000) found that females are generally better at managing their emotions, which indicates that gender may be a predictor of EI. However, Saklofske, Austin, Galloway, and Davidson (2007) found no significant gender effect in global EI. This contradiction in the research leaves a question regarding the

significance of gender on EI. Due to this gap in the literature, more research must be done in order to understand the effects of gender on EI.

Past studies have suggested that females are more sensitive than men to the emotions of others (Hall & Mast, 2008) as well as have a stronger vocabulary to describe their emotions (Fivush, Brotman, Bunkner, & Goodman, 2000). This study will add to the literature by investigating whether EI predicts performance in pentathlon and heptathlon as well as whether there are gender differences in the use of EI to predict performance.

Methods

Participants

This study included 113 participants, comprised of males (n = 64) and females (n = 49). Each participant was a multi-eventer (pentathlon, heptathlon) in NCAA D-I (n=40), D-II (n=24), & D-III (n=49) track and field and were categorized as freshman (n=27) sophomores (n=28) juniors (n=30) and seniors (n=28). The athletes ranged in age from 18-24 years of age (M=20.41, SD=1.67) and classified themselves as non-Hispanic white (n=87), black or African American (n=13), Hispanic or Latino (n=4), Asian or Asian American (n=6), and American Indian or Alaska Native (n=3). Participants were recruited via email and those willing to participate in this study went to a provided web link and fill out a questionnaire.

Procedure

After IRB approval was obtained, recruitment of participants began with contacting coaches from a variety of college level track and field teams. Coaches were contacted via email; the email included information regarding the study, a link to survey monkey, as well as a request to forward the email to their multi- eventer athletes

(pentathletes and heptathletes). Once the emails were sent to athletes it was their decision whether they would like to participate in the current study. Those willing to participate then clicked the SurveyMonkey link, which sent them directly to the survey. Before participants started the 15 minute survey they had to read the cover page which stated that all participants must be 18 years of age or older. In addition, the cover page explained to participants that their responses were anonymous and confidential so it is important that they be as accurate and honest as possible. Participants were also informed that they are able to drop out of the survey during anytime. Those athletes willing to participate in this study then filled out a demographic questionnaire as well as the WLEIS.

Instrumentation

Demographic Information

Each participant will be given a demographic questionnaire. Questions assessed the athlete's age, gender, division and personal record (PR) in the pentathlon or the heptathlon.

Emotional Intelligence

The Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002) is a popular self-report measure of EI. This EI scale is based on Davies et al.'s (1998) four- dimensional definition of EI. The WLEIS consists of 16 items with each subscale measured with 4 items. The Self Emotion Appraisal dimension assesses individual's ability to understand and express their own emotions. A sample item is "I really understand what I feel." The Other Emotion Appraisal dimension measures people's

ability to perceive and understand the emotions of others. A sample item is “I always know my friend’s emotions from their behavior.” The Use of Emotion dimension denotes individual’s ability to use their emotions effectively by directing them toward constructive activities and personal performance. A sample item is “I always tell myself I am a competent person.” The Regulation of Emotion dimension refers to individual’s ability to manage their own emotions. A sample item from this dimension is “I have good control of my own emotions.” The WLEIS is measured with a 5-point Likert-type scale, ranging from 1 (totally *disagree)* to 5 (totally *agree).* Reliability estimates (coefficient alphas) for the four dimensions of self-emotion appraisal, uses of emotion, regulation of emotion, and other’s emotion appraisal were .89, .88, .76, and .85, respectively.

Data Analysis

Using SPAA, data was screened for outliers, homogeneity of variance, and skewness. The following descriptives were analyzed: gender, age, personal record (in either pentathlon or heptathlon), and the 4 EI subscales.

A Multiple Regression was used to investigate whether emotional intelligence can predict performance in the pentathlon; where the independent variable was the four EI subscales (i.e., SEA, OEA, UOF, ROE) and the dependent variable was performance in the pentathlon, which was measured by their personal record (PR).

A Multiple Regression was used to investigate whether EI can predict performance in the heptathlon; where the independent variable was the four EI subscales (i.e. SEA, OEA, UOE, ROE) and the dependent variable was performance in the heptathlon, which will be measured by their personal record (PR).

Lastly, a Multiple Regression was used to investigate whether EI predicts performance depending on gender. Male and female's PR score were converted to T scores so that scores were comparable. The independent variables were gender and the four EI subscales (i.e., SEA, OEA, UOE, ROE) and the dependent variable was PR.

Results

The first purpose of the present study was to investigate whether EI predicts performance in pentathletes. The second purpose of the study was to investigate whether EI predicts performance in heptathletes. The third and final purpose of this study was to investigate if there are gender differences in the use of EI to predict performance. More specifically, to investigate if EI is more important to determine performance for females compared to males. The following subsections will discuss in greater detail the following areas: (a) data screening, (b) descriptive statistics and reliability analysis, (c) prediction of performance in pentathlon, (d) prediction of performance in heptathlon, and (e) gender differences.

Data Screening

Data management showed that there were some outliers located in the heptathlon data: participants 8, 9, 16, and 24. For this reason, the data was then transformed and again checked for skewness and outliers. This was done by getting the transformed inverse of each of the four subscales of EI; these new numbers were then used to get the transformed log10 of each subscale. Once this step was completed, data management showed that there were no longer any outliers and that all variables and all combinations of the variables were normally distributed. The data set for the pentathlon alone and the

combination of the heptathlon and pentathlon was not transformed since there were no outliers and the data was normally distributed.

Descriptive Statistics and Reliability Analysis

Data was collected from a total of 113 participants. Participants were NCAA male (*n*= 49) and NCAA female (*n*=64) multi-eventers (those who compete in the heptathlon or the pentathlon) in indoor track and field from NCAA D-I (*n*=40), D-II (n=24), & D-III (*n*=49). Participants were given a questionnaire that would determine their EI. More specifically The Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Law, 2002) assessed participants' EI.

Descriptive statistics for NCAA, age, year of eligibility, PR, scores on each subscale, and scores on overall EI (see table 5) were computed. Descriptive statistics were broken down also broken down for each division for scores on each subscale, and scored on overall EI (see table 06). For a more specific breakdown of the participants in this current study, cross- tabulations were computed to investigate both college and race classifications in each gender (see table 7 & 8). Each subscale from the WLEIS was analyzed for internal consistency (see Table 9). During this analysis it was found that Cronbach's Alpha coefficients were above .70 and acceptable with the exception of the subscale Self-Emotion Appraisal when used to determine EI in pentathletes (Nunally, 1978).

Table 5.
Descriptive Statistics

Demographics	**Pentathlon(females)**		**Heptathlon(males)**	
	Mean	**SD**	**Mean**	**SD**
Age years	20.44	1.79	20.39	1.50
PR	3046.53	462.19	4408.67	596.31
SEA	3.96	.55	4.30	.73
OEA	3.97	.65	3.86	.70
UOE	4.29	.67	4.46	.56
ROE	3.64	.78	4.04	.79
Overall EI	3.97	.46	4.16	.45

Note: PR= personal record, SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion. Also note that a score of 5 on each EI subscales and overall EI indicates highest levels of EI

Table 6.
Descriptive Statistics for Division

Subscales	**D1**		**D2**		**D3**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
SEA	3.99	.69	3.99	.68	4.10	.65
OEA	3.86	.81	3.95	.68	3.93	.67
UOE	4.37	.74	4.22	.58	4.36	.63
ROE	3.71	.82	3.55	1.01	3.81	.81
Overall EI	3.97	.51	3.92	.51	4.15	.42

Note: SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion

Table 7.
Cross-Tabulation of Male vs. Female Groups and College Classifications

	Group		
	Males	**Females**	**Total**
Freshman	11	16	27
Sophomore	16	12	28
Junior	10	20	30
Senior	12	16	28
Total	49	64	113

Table 8.
Cross-Tabulation of Male vs. Female Groups and Race Classifications

	Group		
	Males	**Females**	**Total**
American Indian or Alaskan Native	2	1	3
Asian or Asian American	2	4	6
Black or African American	6	7	13
Hispanic or Latino	2	2	4
Non-Hispanic or White	37	50	87
Total	49	64	113

Table 9.
Reliability of the Wong and Law Emotional Intelligence Scale

Subscales	Cronbach Alpha
Pentathlon	
SEA	.595
OEA	.773
UOE	.773
ROE	.835
Heptathlon	
SEA	.872
OEA	.803
UOE	.706
ROE	.905
Pentathlon and Heptathlon	
SEA	.764
OEA	.774
UOE	.750
ROE	.874

Note: SEA- self-emotional appraisal, OEA= other emotional appraisal, UOE= use of emotion, ROE=regulation of emotion

Prediction of Performance in Pentathlon

The first hypothesis stated that EI predicts performance in pentathletes. The results failed to support this hypothesis. A multiple regression was calculated to predict if EI predicts performance in pentathletes. The regression equation was not significant ($F(4, 59) = .482$, $p > .05$) with an R^2 of .032. Neither EI nor any of the subscales were a predictor of performance in pentathletes. See table 10 for multiple regression results.

Table 10.

Results of Regression Analysis predicting pentathletes'PR with the Wong and Law Emotional Intelligence Subscales (SEA, OEA, UOE, and ROE)

Variables	PR *β(t)*
SEA	-58.10(-.41)
OEA	-81.10(-.80)
UOE	114.57(1.18)
ROE	17.60(.18)
Overall model F	.48
Adjusted R^2	-.03
Standard Error	469.87
Degree of Freedom	4,59

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

Prediction of Performance in Heptathlon

The second hypothesis stated that EI predicts performance in heptathletes. The results failed to support this hypothesis. A multiple regression was calculated to predict if EI predicts performance in heptathletes. The regression equation was not significant ($F(4, 44) = .616$, $p > .05$) with an R^2 of .053. Neither EI nor any of the subscales were a predictor of performance in heptathletes. See table 11 for the multiple regression results.

Table 11

Results of Regression Analysis predicting heptathletes PR with the Wong and Law Emotional Intelligence subscales (SEA, OEA, UOE, and ROE).

Variables	PR *β(t)*
SEA	-37.85(-.28)
OEA	-100.10(-.77)
UOE	26.38(.14)
ROE	142.90 (1.01)
Overall model F	.62
Adjusted R^2	-.03
Standard Error	606.08
Degree of Freedom	4,44

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

Gender Differences in the Prediction of Performance

The research question in this study was, to what extent does gender impact the prediction of EI on performance? The regression equation was ($F(1,105) = 1.36$, $p > .05$) with an R_2 of .061. EI was not more important to predict performance in either the pentathlon or the heptathlon. See table 12 for the multiple regression result.

Table 12.

Results of multiple regression analysis predicting pentathletes and heptathletes PR with gender and the Wong and Law Emotional Intelligence subscales (SEA, OEA, UOE, and ROE).

Variables	***PR*** *β(t)*
Gender	.68(.34)
SEA	-1.84(-1.01)
OEA	-2.37 (-1.63)
UOE	2.27(1.35)
ROE	1.78(1.23)
Overall model F	1.36
Adjusted R^2	.016
Standard Error	9.87
Degree of Freedom	5,105

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

Discussion

EI has become a very popular research topic in many different areas. In fact, it has been suggested that EI is a predictor of performance in areas such as academia (Frederickson & Furnham, 2004), job performance (Jordan & Troth, 2002), and leadership (Weinberg, 2002). More recently it has been suggested that EI is a significant predictor of sport performance (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003). Moreover, many practitioners in the sport psychology field have suggested that EI is an important concept in the sports world (Botterill & Brown, 2002; McCann, 1999; Meyer, et al., 2003; Zizzi et al., 2003). Although some researchers have attempted to investigate EI and how it can affect performance in sports such as baseball, hockey, and cricket (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003) there is still a lack of research on EI and sport performance. The primary purpose of this study was to investigate whether EI was a predictor of performance in pentathletes and heptathletes, as well as if EI was more important for one gender over the other to predict performance.

EI and Performance

Based on past research suggesting that EI is a predictor of sport performance (Crombie et al., 2009; Perlini & Halverson, 2006; Zizzi et al., 2003), it was hypothesized that EI was a predictor of performance in the pentathlon and the heptathlon. The results failed to support this hypothesis and suggest that EI is not a predictor of performance in the pentathlon or the heptathlon. Furthermore, athletes that played at the D-I level were more likely to perform at a higher level than those that competed at the D-II or D-III level. However, when looking at the overall EI mean in each division, results suggest that

on average D-I athletes are not more emotionally intelligent. In fact, D-III athletes have the highest overall EI score on average. When looking at the means of each of the four subscales of EI in each division, results show that D-I athletes on average only scored higher on one of the subscales, (UOE) suggesting that D-I athletes are better able to use their emotions in a productive way. Interestingly, those participants that compete at the D-III level on averages scored highest on two of the four subscales (SEA & ROE) suggesting that pentathlon and heptathlon athletes at the D-III level are better at understanding their own emotions as well as regulating them. On average D-II athletes only scored highest on one subscale (OEA) indicating that D-II athletes are better able to understand the emotions of others. This information helps support the current findings by allowing performance to be assessed in a different way (i.e., one's division level). Descriptive statistics revealed that even when using a different variable to determine performance, EI was not a predictor of performance in the pentathlon or heptathlon.

These findings support those of Laborde, Lautenbach, Allen, Herbert, and Achtzehn, (2014) study. Their study used a sample of female (n=13) and male (n=15) tennis players whom they had perform two series of 35 serves separated by a pressure manipulation to examine the independent and interrelated contribution of trait EI and state emotions to a biological marker of emotion regulation (cortisol secretion). In addition, this study sought to examine the contribution of trait EI, state anxiety, and cortisol secretion to performance under pressure. It was found that EI and not the Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Vealey, Burton, Bump, & Smith, 1990) predicted cortisol secretions (i.e., a hormone released in response to stress). This information suggests that trait EI has an important role in human behavior in

pressure situations as trait EI can explain variance in emotion regulation beyond that explained by current competitive emotions. Furthermore, the study found that a model combining overall cortisol and self-confidence, but not trait EI, predicted performance under pressure. Laborde et al. (2014) suggested that trait EI was related to emotion regulation (cortisol secretion) and not performance under pressure, suggesting that personality-trait-like individual differences have a greater role in long-term performance, or short-term behaviors (e.g. coping, emotion regulation), than in short-term performance under pressure.

These results may be useful to understand the findings in this current study. From a research standpoint, track and field and tennis are composed of many short-term performances. Both studies showed no evidence that trait EI predicted performance in performance in either sport. However, the findings in the tennis study (Laborde et al., 2014) revealed that trait EI can predict emotion regulation in performance under pressure situations in short term performance, which means if one can control and lower the stress levels one will perform better. The link between personality-trait-like individual differences (Allen, Greenlees, & Jones, 2013; Laborde, Breuer-Weissborn et al., in press) play a greater role in effecting long distance performance, meaning that if one can control personality traits such as stress (which relates to your state of mind, self talk, coping tools, confidence) one will perform better. With this in mind, perhaps if the present study investigated track athletes that competed in the 3000 meter (a longer term performance in track and field) then results may show that EI can be used as a measurement to predictor performance.

Although Laborde et al. (2014) provided support for the results in this current study, there were some differences. Laborde et al. investigated tennis players and used the tennis serve to determine performance, whereas this study investigated the multi eventers in track and field and used athletes individual PR's for the season as a marker for performance. Laborde, et al. also used the German version of the Trait Emotional Intelligence Questionnaire, whereas this study used WLEIS. The basis of the Trait Emotional Intelligence Questionnaire (TEIQue) is made up of 153 items, 15 facets, 4 factors, and global trait EI. Research states that this is the preferred scale for EI questionnaires because it is to the point route in trait EI, its comprehensive coverage of trait EI sampling domain, and its greater predictive validity (Freudenthaler, Neubauer, Gabler, & Scherl, 2008). Because of the overwhelming conclusions in regards to the effectiveness of the TEIQue scale, it has been translated into 15 different languages, German being one of them. Historically, the TEIQue scale was designed to be factor-analyzed at the facet level (Hough & Paullin, 1994).

The results in this current study contradict those findings found in previous research that concluded that EI does predict performance (Crombie, Lombard, & Noakes, 2009). Specifically, Crombie (2009) studied the effect of team EI on the performance of South African cricket competitors and found that EI contributed to the performance of teams participating in complex sports similar to cricket. These differences in results could be due to the different instruments being used. Crombie's study assessed EI and the performance of cricket players using the Mayer-Salovery-Caruso Emotional Intelligence Test (MSCEIT). It is important to realize that the MSCEIT is a scale that is specifically used to measure the construct of EI classified as ability EI. The MSCEIT

scale measures ability EI through the use of maximum performance tests. The problem with this form of measurement is the scale itself, which attempts to eliminate the subjectivity of emotional experience (Matthews, Zeidner, & Roberts, 2007). The major problem with attempting to do this is creating questions or tasks that can be scored based on a truly objective manner which in turn creates the issue of what scoring method to use (Ortony, Revelle, & Zinbarg, 2007; O'Sullivan & Ekman, 2004; Robers, Zeidner, & Matthews, 2001). In contrast, in this study, the WLEIS was used to determine EI in multi-eventers. A second difference between Crombie's study and the current one is the difference in sample. Crombie's study focused on cricket athletes or a team sport while this study focused on multi-eventers track and field athletes in which is classified as an individual sport.

The results from this study both support and contrast to Zizzi et at., (2003) study, which explored the relationships between EI and global measures of baseball performance in a sample of NCAA D-1 college baseball players. The results from this study suggest that components of EI appear to be moderately related to pitching performance. However, when examining hitting performance, the findings in the Zizzi et al., revealed that EI was not a predictor. These differences in results could be due to the fact that the researchers used more than one factor to determine performance in baseball (hitting and pitching) as opposed to the present study that only included each athletes' PR for the season to determine performance. A limiting factor of using PR is that it only explains one performance (one's best performance) and does not give any information about an athlete's overall performance for the season. The differences in results could also have been due to the different instruments used. This study used the Emotional

Intelligence Scale (Schutte et al, 1998) as an instrument to determine EI whereas this study used the WLEIS. The Emotional Intelligence Scale (EIS) is related to personality traits, but not to cognitive ability (Van der Zee, Thjis, & Schakel, 2002). The scale is slightly different in format than the WLEIS scale in that it is based upon 85 items and a 5-point Likert Scale and 17 subscales. However, unlike the WLEIS scale there is a relatively low internal consistency (Van der Zee et al., 2002), which is a major limitation. The three-factor structure that this scale specifically measures is empathy, autonomy, and emotional control (Van der Zee et al., 2002).

The lack of significance found between EI and performance in the pentathlon and heptathlon suggest that there may be other variables that can be used as predictors of performance. For example, self-efficacy and the amount of time spent practicing are two specific variables that have been supported in research (Baker, Cote, & Abernathy, 2003; Burke & Jin, 1996). According to Moritz and colleagues (2000) meta-analysis study, positive correlations between self-efficacy and performance range from .79 to .01, indicating that the majority of studies that have investigated the impact of self-efficacy on performance have been able to show the significant relationships between self-efficacy and performance. For example, Burke and Jin's (1996) study compared the strength of self-efficacy in relations to other physiological and psychological variables in predicting performance. More specifically, they investigated Ironman triathletes using their total performance time as well as their individual swim, cyclist, and run times. Physiological measures (VO2Max, adiposity, height, weight), and the history of performance and psychological skills (self-efficacy, motivation, confidence, cognitive and somatic

anxiety) were utilized to determine performance. Interestingly, results found that performance times were predicted more accurately by self-efficacy, history of performance, and weight. This study suggests the impact that self-efficacy may have on performance.

Another predictor of performance could be the amount of practice an athlete engages in. Researchers have suggested that the level of mastery of an athletic movement is directly related to the amount of hours of practice (Baker, Cote, & Abernathy, 2003). In fact, when investigating over 100 D-I NCAA football players through questionnaire, Spieler, Czech, Joyner, and Munkasy (2007) found that age, high school size, and coping with adversity were predictors of starting status in collegiate football. These findings lead the researchers to suggest that these prevalence of experiential factors as descriptors of athletic performance may be the result of the amount and intensity of practice.

Gender Differences in EI's Prediction of Performance

Past studies have tried to determine to what extent gender is a predictor of EI. Brody and Halls (2000) found that females are generally better at managing their emotions, indicating that females are more likely to have higher levels of EI. On the contrary, Saklofske, Austin, Galloway, and Davidson (2007) found no significant gender effect in global EI. This contradiction in the research leaves a question regarding the impact of gender on EI. The final purpose of this study was to investigate if there were gender differences in the prediction of EI on performance. The findings of this study did not show gender and emotional intelligence to predict performance in the pentathlon and heptathlon.

Research suggests that EI as a whole does not predict success more in males or females, (Petrides & Furnham, 2000a; Petrides, Furnham, & Martin, 2004) which is confirmed with the results of this study. However, the data that was collected does support theories suggested by Goleman (1998) who believed males and females had their own personal profiles of strengths and weaknesses when it comes to EI. One research paper by Fernandez-Berrocal, Cabello, Castillo, and Extremera (2012) found that most studies of EI that are based on ability test such as the MSCEIT (Mayer, Salovey, & Caruso, 2002) and that include gender in their analysis have assumed women to be superior in emotional abilities (e.g., Brackett & Mayer, 2003; Ciarrochi et al., 2000; Extremera, Fernandez-Berrocal, & Salovey, 2006; Kafetsios, 2004; Mayer et al., 1999; Palmer et al., 2005). The scale that was used for this research was a scale that measured trait EI, which could explain why the data yielded results that were different from the previously mentioned study. Upon closer examination of each subscale that this study measured, when looking at the overall means of the heptathlon and pentathlon, the data concludes that men show higher levels of EI in three out of the fours subscales. Specifically, the average mean for men in the SEA, UOE, and ROE were higher than those of their female counterparts. This suggests that men on average are better able to understand their own emotions, better able to use their emotions in a constructive way and are better able to regulate their emotions. The only subscale that showed women to express more EI was in the OEA. This finding indicates that women are better at understanding other's emotions, which would be expected according to LaFrance (1992)

because females are socialized to pay more attention to emotions so that they are able to understand other's emotions and be nurturing.

It is important to note that most studies support the fact that women display higher EI overall (Brody & Hall, 2000; Craig, et al., 2009; Hall & Mast, 2008) but there are discrepancies in the exact areas as to where women perform best. Mclntyre's (2010) study has shown women to be superior in a variety of aspects ranging from perception, facilitation, understanding, and total score. Some studies have found that women are superior in all dimensions of the MSCEIT (Day & Carroll, 2004; Extremera & Fernandez-Berrocal, 2009; & Palmer, Gignac, Manocha, & Stough, 2005). Overall, the differences in the means found in each of the four subscales were slightly higher for men. Typical to the findings of other research, the differences between the strengths found in EI whether it is for men or women are very small (e.g. Day & Carroll, 2004; Livingstone & Day, 2005; Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005). On the contrary, there is research that attempts to explain a contrasting idea to women being more emotionally intelligent. Baron-Cohen (2002) even proposed the "extreme male brain theory of autism" which looks to explain the masculine brain and why it predominantly seeks to understand and construct systems which links to why men are taught to minimize certain emotions related to sadness, guilt, vulnerability and fear (Brody & Hall, 1999). Even though this study showed results that differ from past research (Ciarrochi et al., 2001; Day & Caroll, 2004; Mayer et al., 1999; Palmer et al., 2003; Van Rooy et al., 2004), further research on gender differences in EI is warranted.

Practical Application

Although this research failed to show any significance in determining whether EI could predict performance in the pentathlon and/or heptathlon as well as whether EI was more important for females than it is for males, there are some practical applications for the findings. Since EI is not more important for either gender in predicting performance, these results suggest the importance of understanding an athlete as an individual. It is extremely important for coaches and practitioners to get to know their athlete and refrain from coming to any conclusion about them simply based on gender. The more a coach and/or sport psychologist understands their athlete as an individual, the better able they are to help them improve performance. When looking at overall means, it is evident that both males and females had high levels of EI in this study, which leads to another practical application.

Results in this study show that both pentathletes and heptathletes have high EI levels. This information suggests that pentathletes and heptathletes tend to have high EI traits. Although results did not suggest that EI is a predictor of performance, perhaps it is important for pentathletes and heptathletes to have high EI since they are competing in an individual sport that does not always have the support of their teammates. For this reason high EI would allow them to have control over their emotions and regulate them during competition. With this information coaches can assess the levels of EI in their incoming freshman to determine if they are good candidates for the pentathlon or heptathlon. However, all hope does not fail in those athletes with low or moderate EI levels. If a coach still sees potential in an athlete who scored low on an EI assessment, they can help to increase those athletes' EI because EI can be learned (Goleman, 1998).

Limitations and Future Research

One possible limitation is the use of personal records to determine athletes' performance. Not only was PR used to determine performance but the athletes PR of the current year. There are many external variables that can have an effect on one's PR for the season. Some of these variables are, but are not limited to, injury and lack of participation in meets that provide the pentathlon and the heptathlon. Another limitation with using PR to determine one's performance is that it only explains one meet, in other words an athlete could have performed poorly in all but one meet which may give him a high PR even with a poor season. A more effective alternative way to determines one's performance could be to calculate an average score from all meets combined. This would allow performance to be determined through multiple performances as opposed to one (PR). Future research should continue to investigate this population to determine the effects EI plays on performance while using athletes' average score for the season to determine performance.

Another limitation of this study is that the WLEIS was used to determine EI in multi-eventers. However, this scale was not designed specifically for athletes and lacks validity. In fact, it has never been used in a study that investigated athletes. Although this scale has not been used before, the researcher used this measurement because it showed internal consistency in a pilot study performed by the researcher of this current study. However, the pilot study investigated recreational runners while this current study aimed to investigate pentathletes and heptathletes. The differences in populations (athlete vs. non-athlete) could explain why the scale was not valid when using it in the present study. Perhaps, a validated EI scale designed specifically for athletes may have provided

different results. To the researchers knowledge there is only one scale that was developed to measure EI in the athletic population. Lane et al. (2009) created a 19-item version of the Emotional Intelligence Scale (EIS: Schutte et al., 1998) that would measure EI in athletes. However, this study failed to report Cronbach Alphas, and no other study that has investigated the effects on EI and performance has used this scale as a way to measure EI in the athletic population. For this reason, it is important for future researchers to create a valid and reliable measure to assess EI in the athletic population. With an accurate way to measure EI in an athletic population, interested researchers will be better able to investigate EI and its effect on athletic performance.

Lastly, another limitation in this study is the vague understanding of the differences between trait and ability EI. It is difficult to fully understand the role EI plays on pentathletes and heptathletes until trait EI is more concretely defined and distinguished from ability EI. Perhaps one of the largest areas of discrepancy in studying EI has been the recent differentiation of how to accurately measure and quantify EI. There are two conceptualizations that make up EI: trait EI and ability EI (Petrides & Furnham, 2003). Due to the slight degree of difference found in the two terms, restating the definitions will assist in understanding the role that these two constructs played in this study. Trait EI is defined as "a constellation of emotion-related self-perceptions and dispositions located at the lower levels of personality hierarchies which encompasses emotion-related behavioral dispositions and self-perceived abilities measured via self-report" (Petrides, Perez-Gonzalez, & Furnham, 2007, p. 264). Ability EI is defined as "the ability to perceive and express emotion assimilate emotion in thought understand and reason with emotion and regulate emotion in the self and others" (Myer & Salvoy

1997, p. 396). Understanding these two constructs have both complicated as well as attempted to isolate the complete understanding of EI. This may have been one of the underlying reasons that there was no statistical significance found in this study, simply because the incorrect construct and measurement scale was used. Petrides and Furnham (2000, 2001) noted this was problematic because different measurement approaches would almost certainly produce difference results, even if the underlying model being operationalized were one and the same. It has since been demonstrated, in empirical studies investigating this issue, that the two constructs used in the measurement of EI are very different (Van Rooy, Viswesvaran, & Pluta, 2005; Warwick & Nettelbeck, 2004) and that it is imperative to draw a distinction between self-reports and maximal performance tests in the field (Freuenthaler & Neubauer, 2007). As research has suggested, these two constructs are extremely important to differentiate in order to correctly measure and interpret their results. Trait EI and ability EI together create EI but their differences are important to understand because of how they are measured. Trait EI uses questionnaires that are mainly used to personally measure emotional experience whereas ability EI uses maximum performance tests and tasks to objectively score emotional experience. The measurement of ability EI is problematic because as previously mentioned emotional intelligence is difficult to score on a truly objective basis (Matthews, Zeidner, & Robers, 2007; Robinson & Clore, 2002). However, if ability EI tests are not objective the maximum performance tests will not work. Whereas trait EI does not attempt to remove the subjectivity of the personal experience as it relates to emotion, it heavily relies on self-reports, which leaves the researcher to heavily rely upon the honesty and understanding of the participants. In summary, the two separate

constructs that make up EI, study the same subject but do it through very different avenues of measurement, which has an impact on the findings.

Future research should attempt to better understand these two constructs, so that we are better able to understand EI within itself, which will eventually help to understand how EI effects the athletic population. In addition, the use of other research designs may help to explain the relationship between EI and sport performance. A qualitative research design could provide a useful avenue to investigate the relationship of EI and sport performance that may not be found through quantitative research. This would allow the researcher to ask specific questions in order to fully understand how the different aspects of EI (i.e., self- emotional appraisal, others emotional appraisal, use of emotions & regulation of emotions) and how they impact sport performance.

Conclusion

In every major aspect of life whether it be a leadership role, career development, mental or physical health, social functioning and academia, emotional intelligence (EI) has proven to be a relevant factor in one way or another (e.g., Brackett, Rivers, & Salovey, 2011; Hervas, 2011; Mayer, Rovers, & Barsade, 2008; O'Boyle, Humphrey, Pollack, Hawyer, & Story, 2010). The purpose of this study was to investigate whether EI was a predictor of performance in heptathletes and pentathletes as well as to investigate if gender impacted this relationship. Even though hypotheses were not supported, results revealed several important aspects of emotional intelligence. The current findings further suggest that a more comprehensive approach should be taken to accurately measure the two different conceptual forms of EI (Brannick, Wahi, Arce &

Johnson, 2009). In addition, this research parallels Goleman (1995) in providing further evidence that both men and women have their strengths and weaknesses as it pertains to EI. The research from this study also supported results from outside data that also nullified gender differences in EI (Petrides & Furnham, 2000a; Petrides, Furnham, & Martin, 2004), but more importantly, expanded the field of research in EI to include a sport that had previously never been studied before.

Appendix B

BARRY UNIVERSITY

11300 NE Second Avenue
Miami Shores, FL 33161-6695
phone 305-899-3020
800-756-6000, ext. 3020
fax 305-899-3026
www.barry.edu

OFFICE OF THE PROVOST

Research with Human Subjects
Protocol Review

Date:	December 11, 2013
Protocol Number:	131125
Title:	Emotional Intelligence as a Predictor of Performance in Pentathletes and Heptathletes
Meeting Date:	November 20, 2013
Researcher Name:	Ms. Marissa Norman
Address:	1951 NW South River Drive Apt 2107 Miami, FL 33125
Faculty Sponsor:	Dr. Gualberto Cremades

Dear Ms. Norman:

On behalf of the Barry University Institutional Review Board (IRB), I have verified that the specific changes requested by the IRB have been made. Therefore, I have granted final approval for this study as exempt from further review.

As principal investigator of this protocol, it is your responsibility to make sure that this study is conducted as approved by the IRB. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request by completing a protocol modification form.

It is a condition of this approval that you report promptly to the IRB any serious, unanticipated adverse events experienced by participants in the course of this research, whether or not they are directly related to the study protocol. These adverse events include, but may not be limited to, any experience that is fatal or immediately life-threatening, is permanently disabling, requires (or prolongs) inpatient hospitalization, or is a congenital anomaly cancer or overdose.

The approval granted expires on May 1, 2014. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the IRB with and IRB Application for Continuing Review (Progress Report) summarizing study results to date.

If you have questions about these procedures, or need any additional assistance from the IRB, please call the IRB point of contact, Mrs. Barbara Cook at (305)899-3020 or send

an e-mail toLBacheller@mail.barry.edu . Finally, please review your professional liability insurance to make sure your coverage includes the activities in this study.

Sincerely,

Linda Bacheller, Psy.D., J.D.
Chair, Institutional Review Board
Barry University
Box Psychology
11300 NE 2nd Avenue
Miami Shores, FL 33161

Cc: Dr. Gualberto Cremades

Appendix C

Participation is entirely voluntary and you may at any time withdraw from participation... I am asking you to complete the attached electronic survey. More specifically, you will asked to answer some demographic questions, state your personal record (PR) in the pentathlon or heptathlon, as well as answer some questions about yourself during this indoor season. The completion of the survey and demographics information involves no foreseeable risk to you. Participation in this study may not benefit you in any way. However, participation will assist me in understanding the effects of emotional intelligence on pentathlon and heptathlon athletes, ultimately benefiting coaches and sport psychologists.

Responses to all questions will be kept confidential; however, there can be no guarantee of absolute anonymity due to the medium of this second party - SurveyMonkeyTM Nevertheless, SurveyMonkeyTM emphatically declares “Our privacy policy states that we will not use your data for our own purposes." In addition, I will request that SuveyMonkeyTM "disable the SSL" before data collection.

The entire processes of completing this survey will take about 10 minutes. Your responses will be automatically compiled in a spreadsheet format. All data will be stored in a password protected electronic format. In addition, SurveyMonkeyTM employs multiple layers of security to ensure that my account and the data associated with the account are private and secure. In addition, a third-party security firm is consistently utilized by the survey tool administration (SurveyMonkeyTM) to conduct audits of security. The company asserts that the latest in firewall and intrusion prevention technology is employed. Hence, any concerns regarding potential invasion of your privacy and access to your responses other than I, the investigator should be allayed due to these protections. I trust you feel confident to answer the attached survey questions as honestly and accurate as you can.

“By clicking on the “I agree” button below and by submitting a completed survey, you are giving permission to use your data record in this study. Participant must click on either the “I agree” button or “I do not agree” button to confirm consent or refusal. Once the “I agree” button is clicked, participant is directly linked to the Survey. If you click on the “I do not agree” button, you will immediately exit this site.

As a research participant, information you provide is confidential, that is, no names will be collected. SurveyMonkey.com allows researchers to suppress the delivery of IP addresses during the downloading of data, and in this study no IP address will be delivered to the researcher. However, SurveyMonkey.com does collect IP addresses for its own purposes. If you have concerns about this you should review the privacy policy of SurveyMonkey.com before you begin.

Again, you are free to withdraw your participation at any time without penalty. Thank you for your participation in advance. If you have any questions, feel free to contact me at (norman_marissa@yahoo.com) or the Institutional Review Board point of contact, Barbara Cook, at (305) 899-3020 or bcook@mail.barry.edu.

Appendix D

Dear Coach _____,

My name is Marissa Norman and I am currently a second year sport, exercise and performance psychology master's student at Barry University, FL. I completed my bachelor's at the University of Rhode Island (D1- A10s conference) where I was member of the women's track and field team as a multi athlete in both the pentathlon and heptathlon. I am looking for participants for my thesis. The goal of my research is to find out if emotional intelligence predicts success in both pentathlon and heptathlon athletes. Athletes will be asked to complete an online survey using Survey Monkey. I would appreciate if you could forward this email to all of your multi athletes. The online survey, you will complete, is strictly confidential; as you should not put your name anywhere in the survey. This survey will take about 10 minutes of your time and will benefit the research on the emotional, intelligence effect on both pentathlon and heptathlon athletes. Participation will assist me in understanding the effects of emotional intelligence on pentathlon and heptathlon athletes. To participate in this study you must be 18 years of age. You have the option to withdraw from the study at any time. Individual answers will not be published. No coach at any time will see results from the survey, in addition only the researcher will have access to your PR. In order to get to survey please click hyperlink (insert link here).

Thank you very much for your time and participation!

If anyone has any questions after completion of the study, please feel free to contact me at norman_marissa@yahoo.com, my thesis advisor at gcremades@barry.edu, or the Institutional Review Board point of contact, Barbara Cook, at (305) 899-3020 or bcook@mail.barry.edu.

Sincerely,
--
Marissa Norman
Barry University
Sport, Exercise, and Performance Psychology
(401)742-9837

Appendix E

What is your current age? _____

What is your sex?

- Male
- Female

How do you describe yourself? (Please check the one option that best describes you)

- American Indian or Alaska Native
- Hawaiian or Other Pacific Islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino
- Non-Hispanic White

What year are you in school?

- Freshman
- Sophomore
- Junior
- Senior

What division is your program in?

- D1
- D2
- D3

Women answer this question only!
What is your personal record score in the Pentathlon in this current track year (If you can not remember click this link which will allow you to look up your PR http://www.directathletics.com/search.html)

Men answer this question only!
What is your personal record in the Heptathlon in this current track year? (If you can not remember click this link which will allow you to look up your PR http://www.directathletics.com/search.html)

Appendix F

Complete each question in reference to your performance in either the pentathlon (females) or heptathlon (males) in this current indoor season.

WLEIS

Self-emotion appraisal (SEA)

1. I have a good sense of why I have certain feelings most of the time.
2. I have good understanding of my own emotions.
3. I really understand what I feel.
4. I always know whether or not I am happy.

Others' emotion appraisal (OEA)

5. I always know my friend's emotions from their behavior.
6. I am a good observer of other's emotions.
7. I am sensitive to the feelings and emotions of others.
8. I have good understanding of the emotions of people around me.

Use of emotion (UOE)

9. I always set goals for myself and then try my best to achieve them.
10. I always tell myself I am a competent person.
11. I am a self-motivated person.
12. I would always encourage myself to try my best.

Regulation of emotion (ROE)

13. I am able to control my temper and handle difficulties rationally.
14. I am quite capable of controlling my own emotions.
15. I can always calm down quickly when I am very angry.
16. I have good control of my own emotions.

Appendix G

Combined Event Table - Men's 55/60 Meter Hurdles
This table to be used exclusively for fully automatic times

55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points
6.50	7.00	1249	7.10	7.64	1074	7.70	8.29	910	8.30	8.94	759	8.90	9.58	623
6.51	7.01	1246	---	7.65	1072	7.71	8.30	908	8.31	8.95	757	8.91	9.59	621
6.52	7.02	1243	7.11	7.66	1069	7.72	8.31	905	8.32	8.96	755	8.92	9.60	619
6.53	7.03	1240	7.12	7.67	1066	7.73	8.32	903	8.33	8.97	752	8.93	9.61	617
6.54	7.04	1237	7.13	7.68	1064	7.74	8.33	900	8.34	8.98	750	---	9.62	615
6.55	7.05	1235	7.14	7.69	1061	7.75	8.34	898	8.35	8.99	748	8.94	9.63	613
6.56	7.06	1232	7.15	7.70	1059	---	8.35	896	8.36	9.00	746	8.95	9.64	611
6.57	7.07	1229	7.16	7.71	1056	7.76	8.36	893	8.37	9.01	744	8.96	9.65	609
6.58	7.08	1226	7.17	7.72	1053	7.77	8.37	891	8.38	9.02	741	8.97	9.66	607
---	7.09	1223	7.18	7.73	1051	7.78	8.38	888	8.39	9.03	739	8.98	9.67	605
6.59	7.10	1221	7.19	7.74	1048	7.79	8.39	886				8.99	9.68	603
									8.40	9.04	737			
6.60	7.11	1218	7.20	7.75	1046	7.80	8.40	884	8.41	9.05	735	9.00	9.69	601
6.61	7.12	1215	7.21	7.76	1043	7.81	8.41	881	---	9.06	733	9.01	9.70	599
6.62	7.13	1212	7.22	7.77	1040	7.82	8.42	879	8.42	9.07	730	9.02	9.71	597
6.63	7.14	1209	7.23	7.78	1038	7.83	8.43	877	8.43	9.08	728	9.03	9.72	595
6.64	7.15	1207	---	7.79	1035	7.84	8.44	874	8.44	9.09	726	9.04	9.73	593
6.65	7.16	1204	7.24	7.80	1033	7.85	8.45	872	8.45	9.10	724	9.05	9.74	591
6.66	7.17	1201	7.25	7.81	1030	7.86	8.46	869	8.46	9.11	722	9.06	9.75	589
6.67	7.18	1198	7.26	7.82	1028	7.87	8.47	867	8.47	9.12	720	---	9.76	587
6.68	7.19	1196	7.27	7.83	1025	7.88	8.48	865	8.48	9.13	717	9.07	9.77	585
6.69	7.20	1193	7.28	7.84	1022	---	8.49	862	8.49	9.14	715	9.08	9.78	583
			7.29	7.85	1020	7.89	8.50	860				9.09	9.79	581
6.70	7.21	1190							8.50	9.15	713			
6.71	7.22	1187	7.30	7.86	1017	7.90	8.51	858	8.51	9.16	711	9.10	9.80	579
---	7.23	1185	7.31	7.87	1015	7.91	8.52	855	8.52	9.17	709	9.11	9.81	578
6.72	7.24	1182	7.32	7.88	1012	7.92	8.53	853	8.53	9.18	707	9.12	9.82	576
6.73	7.25	1179	7.33	7.89	1010	7.93	8.54	851	8.54	9.19	704	9.13	9.83	574
6.74	7.26	1176	7.34	7.90	1007	7.94	8.55	848	---	9.20	702	9.14	9.84	572
6.75	7.27	1174	7.35	7.91	1005	7.95	8.56	846	8.55	9.21	700	9.15	9.85	570
6.76	7.28	1171	7.36	7.92	1002	7.96	8.57	843	8.56	9.22	698	9.16	9.86	568
6.77	7.29	1168	---	7.93	999	7.97	8.58	841	8.57	9.23	696	9.17	9.87	566
6.78	7.30	1165	7.37	7.94	997	7.98	8.59	839	8.58	9.24	694	9.18	9.88	564
6.79	7.31	1163	7.38	7.95	994	7.99	8.60	836	8.59	9.25	692	9.19	9.89	562
			7.39	7.96	992									
6.80	7.32	1160				8.00	8.61	834	8.60	9.26	690	---	9.90	560
6.81	7.33	1157	7.40	7.97	989	8.01	8.62	832	8.61	9.27	687	9.20	9.91	558
6.82	7.34	1154	7.41	7.98	987	---	8.63	829	8.62	9.28	685	9.21	9.92	556
6.83	7.35	1152	7.42	7.99	984	8.02	8.64	827	8.63	9.29	683	9.22	9.93	554
6.84	7.36	1149	7.43	8.00	982	8.03	8.65	825	8.64	9.30	681	9.23	9.94	552
---	7.37	1146	7.44	8.01	979	8.04	8.66	823	8.65	9.31	679	9.24	9.95	551
6.85	7.38	1144	7.45	8.02	977	8.05	8.67	820	8.66	9.32	677	9.25	9.96	549
6.86	7.39	1141	7.46	8.03	974	8.06	8.68	818	8.67	9.33	675	9.26	9.97	547
6.87	7.40	1138	7.47	8.04	972	8.07	8.69	816	---	9.34	673	9.27	9.98	545
6.88	7.41	1136	7.48	8.05	969	8.08	8.70	813	8.68	9.35	671	9.28	9.99	543
6.89	7.42	1133	7.49	8.06	967	8.09	8.71	811	8.69	9.36	668	9.29	10.00	541
6.90	7.43	1130	---	8.07	964	8.10	8.72	809	8.70	9.37	666	9.30	10.01	539
6.91	7.44	1127	7.50	8.08	962	8.11	8.73	806	8.71	9.38	664	9.31	10.02	537
6.92	7.45	1125	7.51	8.09	959	8.12	8.74	804	8.72	9.39	662	9.32	10.03	535
6.93	7.46	1122	7.52	8.10	957	8.13	8.75	802	8.73	9.40	660	---	10.04	533
6.94	7.47	1119	7.53	8.11	954	8.14	8.76	800	8.74	9.41	658	9.33	10.05	532
6.95	7.48	1117	7.54	8.12	952	---	8.77	797	8.75	9.42	656	9.34	10.06	530
6.96	7.49	1114	7.55	8.13	949	8.15	8.78	795	8.76	9.43	654	9.35	10.07	528
6.97	7.50	1111	7.56	8.14	947	8.16	8.79	793	8.77	9.44	652	9.36	10.08	526
---	7.51	1109	7.57	8.15	944	8.17	8.80	791	8.78	9.45	650	9.37	10.09	524
6.98	7.52	1106	7.58	8.16	942	8.18	8.81	788	8.79	9.46	648	9.38	10.10	522
6.99	7.53	1103	7.59	8.17	939	8.19	8.82	786	8.80	9.47	646	9.39	10.11	520
7.00	7.54	1101	7.60	8.18	937	8.20	8.83	784	---	9.48	644	9.40	10.12	519
7.01	7.55	1098	7.61	8.19	935	8.21	8.84	781	8.81	9.49	642	9.41	10.13	517
7.02	7.56	1095	7.62	8.20	932	8.22	8.85	779	8.82	9.50	639	9.42	10.14	515
7.03	7.57	1093	---	8.21	930	8.23	8.86	777	8.83	9.51	637	9.43	10.15	513
7.04	7.58	1090	7.63	8.22	927	8.24	8.87	775	8.84	9.52	635	9.44	10.16	511
7.05	7.59	1087	7.64	8.23	925	8.25	8.88	772	8.85	9.53	633	9.45	10.17	509
7.06	7.60	1085	7.65	8.24	922	8.26	8.89	770	8.86	9.54	631	---	10.18	508
7.07	7.61	1082	7.66	8.25	920	8.27	8.90	768	8.87	9.55	629	9.46	10.19	506
7.08	7.62	1080	7.67	8.26	917	---	8.91	766	8.88	9.56	627	9.47	10.20	504
7.09	7.63	1077	7.68	8.27	915	8.28	8.92	764	8.89	9.57	625	9.48	10.21	502
			7.69	8.28	913	8.29	8.93	761				9.49	10.22	500

Appendix H

Combined Event Table - Women's 55/60 Meter Hurdles
This table to be used exclusively for fully automatic times

55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points	55mH	60mH	Points
7.00	7.53	1240	7.60	8.17	1091	8.20	8.82	948	---	9.46	816	9.40	10.11	692
7.01	7.54	1238	---	8.18	1088	8.21	8.83	946	8.80	9.47	814	9.41	10.12	690
7.02	7.55	1235	7.61	8.19	1086	8.22	8.84	944	8.81	9.48	812	9.42	10.13	688
7.03	7.56	1233	7.62	8.20	1084	8.23	8.85	941	8.82	9.49	810	9.43	10.14	686
7.04	7.57	1231	7.63	8.21	1082	8.24	8.86	939	8.83	9.50	808	9.44	10.15	684
7.05	7.58	1228	7.64	8.22	1079	8.25	8.87	937	8.84	9.51	806	9.45	10.16	682
7.06	7.59	1226	7.65	8.23	1077	8.26	8.88	935	8.85	9.52	804	9.46	10.17	681
7.07	7.60	1223	7.66	8.24	1075	---	8.89	933	8.86	9.53	802	---	10.18	679
---	7.61	1221	7.67	8.25	1073	8.27	8.90	931	8.87	9.54	800	9.47	10.19	677
7.08	7.62	1219	7.68	8.26	1070	8.28	8.91	929	8.88	9.55	798	9.48	10.20	675
7.09	7.63	1216	7.69	8.27	1068	8.29	8.92	927	8.89	9.56	796	9.49	10.21	673
7.10	7.64	1214	7.70	8.28	1066	8.30	8.93	925	8.90	9.57	794	9.50	10.22	672
7.11	7.65	1212	7.71	8.29	1064	8.31	8.94	922	8.91	9.58	792	9.51	10.23	670
7.12	7.66	1209	7.72	8.30	1061	8.32	8.95	920	8.92	9.59	791	9.52	10.24	668
7.13	7.67	1207	7.73	8.31	1059	8.33	8.96	918	8.93	9.60	789	9.53	10.25	666
7.14	7.68	1204	---	8.32	1057	8.34	8.97	916	---	9.61	787	9.54	10.26	664
7.15	7.69	1202	7.74	8.33	1055	8.35	8.98	914	8.94	9.62	785	9.55	10.27	662
7.16	7.70	1200	7.75	8.34	1052	8.36	8.99	912	8.95	9.63	783	9.56	10.28	661
7.17	7.71	1197	7.76	8.35	1050	8.37	9.00	910	8.96	9.64	781	9.57	10.29	659
7.18	7.72	1195	7.77	8.36	1048	8.38	9.01	908	8.97	9.65	779	9.58	10.30	657
7.19	7.73	1193	7.78	8.37	1046	8.39	9.02	906	8.98	9.66	777	9.59	10.31	655
			7.79	8.38	1044				8.99	9.67	775			
7.20	7.74	1190				8.40	9.03	904				---	10.32	653
---	7.75	1188	7.80	8.39	1041	---	9.04	902	9.00	9.68	773	9.60	10.33	652
7.21	7.76	1185	7.81	8.40	1039	8.41	9.05	900	9.01	9.69	771	9.61	10.34	650
7.22	7.77	1183	7.82	8.41	1037	8.42	9.06	897	9.02	9.70	769	9.62	10.35	648
7.23	7.78	1181	7.83	8.42	1035	8.43	9.07	895	9.03	9.71	767	9.63	10.36	646
7.24	7.79	1178	7.84	8.43	1032	8.44	9.08	893	9.04	9.72	765	9.64	10.37	644
7.25	7.80	1176	7.85	8.44	1030	8.45	9.09	891	9.05	9.73	763	9.65	10.38	643
7.26	7.81	1174	7.86	8.45	1028	8.46	9.10	889	9.06	9.74	761	9.66	10.39	641
7.27	7.82	1171	7.87	8.46	1026	8.47	9.11	887	---	9.75	759	9.67	10.40	639
7.28	7.83	1169	---	8.47	1024	8.48	9.12	885	9.07	9.76	758	9.68	10.41	637
7.29	7.84	1167	7.88	8.48	1021	8.49	9.13	883	9.08	9.77	756	9.69	10.42	636
			7.89	8.49	1019				9.09	9.78	754			
7.30	7.85	1164				8.50	9.14	881				9.70	10.43	634
7.31	7.86	1162	7.90	8.50	1017	8.51	9.15	879	9.10	9.79	752	9.71	10.44	632
7.32	7.87	1160	7.91	8.51	1015	8.52	9.16	877	9.11	9.80	750	9.72	10.45	630
7.33	7.88	1157	7.92	8.52	1013	8.53	9.17	875	9.12	9.81	748	---	10.46	629
7.34	7.89	1155	7.93	8.53	1010	---	9.18	873	9.13	9.82	746	9.73	10.47	627
---	7.90	1153	7.94	8.54	1008	8.54	9.19	871	9.14	9.83	744	9.74	10.48	625
7.35	7.91	1150	7.95	8.55	1006	8.55	9.20	869	9.15	9.84	742	9.75	10.49	623
7.36	7.92	1148	7.96	8.56	1004	8.56	9.21	867	9.16	9.85	740	9.76	10.50	621
7.37	7.93	1146	7.97	8.57	1002	8.57	9.22	865	9.17	9.86	738	9.77	10.51	620
7.38	7.94	1143	7.98	8.58	1000	8.58	9.23	862	9.18	9.87	737	9.78	10.52	618
7.39	7.95	1141	7.99	8.59	997	8.59	9.24	860	9.19	9.88	735	9.79	10.53	616
7.40	7.96	1139	8.00	8.60	995	8.60	9.25	858	---	9.89	733	9.80	10.54	614
7.41	7.97	1136	---	8.61	993	8.61	9.26	856	9.20	9.90	731	9.81	10.55	613
7.42	7.98	1134	8.01	8.62	991	8.62	9.27	854	9.21	9.91	729	9.82	10.56	611
7.43	7.99	1132	8.02	8.63	989	8.63	9.28	852	9.22	9.92	727	9.83	10.57	609
7.44	8.00	1130	8.03	8.64	987	8.64	9.29	850	9.23	9.93	725	9.84	10.58	607
7.45	8.01	1127	8.04	8.65	984	8.65	9.30	848	9.24	9.94	723	9.85	10.59	606
7.46	8.02	1125	8.05	8.66	982	8.66	9.31	846	9.25	9.95	721	---	10.60	604
7.47	8.03	1123	8.06	8.67	980	---	9.32	844	9.26	9.96	720	9.86	10.61	602
---	8.04	1120	8.07	8.68	978	8.67	9.33	842	9.27	9.97	718	9.87	10.62	601
7.48	8.05	1118	8.08	8.69	976	8.68	9.34	840	9.28	9.98	716	9.88	10.63	599
7.49	8.06	1116	8.09	8.70	974	8.69	9.35	838	9.29	9.99	714	9.89	10.64	597
7.50	8.07	1113	8.10	8.71	971	8.70	9.36	836	9.30	10.00	712	9.90	10.65	595
7.51	8.08	1111	8.11	8.72	969	8.71	9.37	834	9.31	10.01	710	9.91	10.66	594
7.52	8.09	1109	8.12	8.73	967	8.72	9.38	832	9.32	10.02	708	9.92	10.67	592
7.53	8.10	1107	8.13	8.74	965	8.73	9.39	830	---	10.03	706	9.93	10.68	590
7.54	8.11	1104	---	8.75	963	8.74	9.40	828	9.33	10.04	705	9.94	10.69	589
7.55	8.12	1102	8.14	8.76	961	8.75	9.41	826	9.34	10.05	703	9.95	10.70	587
7.56	8.13	1100	8.15	8.77	959	8.76	9.42	824	9.35	10.06	701	9.96	10.71	585
7.57	8.14	1098	8.16	8.78	956	8.77	9.43	822	9.36	10.07	699	9.97	10.72	583
7.58	8.15	1095	8.17	8.79	954	8.78	9.44	820	9.37	10.08	697	9.98	10.73	582
7.59	8.16	1093	8.18	8.80	952	8.79	9.45	818	9.38	10.09	695	---	10.74	580
			8.19	8.81	950				9.39	10.10	693	9.99	10.75	578

Appendix I

2013/2014 CROSS COUNTRY RULES

MEN'S AND W

Applicable Rules

a. Each competitor shall be allowed only three attempts in the Long Jump and throwing events. These attempts must be taken one at a time in the listed order of competition.

b. In the running events and hurdles, competitors shall be disqualified in any event in which they have made two false starts.

c. For hand timing, each competitor shall be independently timed by at least three timers, and the times shall be recorded in accordance with Rule 5-12.2. When FAT is used, it is suggested that two timing systems be used throughout the competition.

d. If both FAT systems fail, hand times for all competitors in that event shall be used.

e. If both FAT systems fail in any section of the 800 Meters or 1500 Meters, the use of all hand times or a conversion is not required. The results for competitions timed electronically or timed manually for these events are strictly comparable.

f. If separate but equal facilities are available for the Pole Vault, High Jump or Long Jump within a combined event competition, the games committee shall make the final determination for use of the facilities.

g. In the High Jump, each competitor shall be allowed two minutes between consecutive attempts even when they are the only remaining competitor.

h. In the Pole Vault, each competitor shall be allowed three minutes between consecutive attempts even when they are the only remaining competitor.

i. In the High Jump and Pole Vault, the starting height of the crossbar shall be determined by the competitors. Each increment rise shall be constant and followed throughout the competition regardless of the number of competitors. The increment for the High Jump shall be 3 centimeters and for the Pole Vault shall be 10 centimeters.

Note 1: It is recommended that all performances be measured with a device acceptable for record purposes.

Note 2: See Rule 6-1.2 through Rule 6-1.5 and reference chart for full details on time allowances...