RUNNING HEAD: TOUCH IN ATHLETICS

Construction and Validation of the Athletic Coaching Touch Utility Index

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Abstract

This thesis involved the construction and testing of an index used to examine observers' interpretations of how touch enacted by coaches affects athletes in a competitive sporting context. The results offered statistical support for the Revised Athletic Coaching Touch Utility Index (ACTUI-R) to be comprised of five components measuring the degree that observers interpret coaching touch to incite athlete's feelings of *appreciation, comfort, sexual arousal, skill building, and trust/respect*. The findings also suggested that coach-enacted touch influences the emotional and relational messages exchanged between coaches and athletes. That is, gender along with the type of touch statistically impacted how observers perceived the messages conveyed from coaches to athletes after watching web videos of coaches touching athletes before competitions. Moreover, the ACTUI-R showed promise as an instrument to examine coaching touch in a sporting context.

Table of Contents

Table of Figures

Chapter One: Literature Review

Introduction

Athletes are drawn to sports for a number of different reasons. Sport participation can be physically and mentally rewarding. It is a healthy means of having fun and getting in shape. As the competition and stakes of sport participation increase, coaches and athletes often tend to shift their focus more toward performance outcomes (i.e., is the athlete getting faster, stronger, or scoring more points). Subsequently, as athletes strive to pursue better performances, coaches spend a great deal of their time and effort trying to teach them the appropriate skills and direct their behavior in productive ways. Although it would make their jobs easier if coaches could simply "force" athletes to behave the way they want, coaches rely on verbal and nonverbal communication tactics and skills to guide athletes toward performance goals. For example, coaches can regularly be observed pulling athletes aside during practices and talking with them (or shouting at them) in order to try and motivate and/or teach the athletes. Coaches can also be seen placing their hands on athletes during breaks in competitions, as a way to help calm their nerves or incite some type of reaction. Coaches use many forms of verbal and nonverbal communication to direct and teach athletes and look to achieve a variety of different goals while communicating. This study will focus upon how touch initiated by coaches relates to athlete performances.

Hertenstein et al. (2006) point out in a review of science literature pertaining to touch between humans, primates, and rats that the modality of touch has seen far less attention from researchers than the visual and auditory modalities. More specific to this study, a perusal of three sport-psychology textbooks (Anderson, 2000; LeUnes & Nation,

2002; Weinberg & Gould, 2003), along with a library search of communication, exercise and psychology journals (search examples: touch communication and athletics; athletic touch, tactile communication and sports), revealed a dearth of research relating to the use of physical touch between coaches and athletes.

The remainder of this introduction will outline the current trends, potential biases, and lack of research pertaining to touch communication in athletics. Following that, Symbolic Interaction Theory will be suggested as a means to examine the process by which coach-to-athlete touch interacts with athletes' sense of selves and their perceived relationships with coaches. Next, research highlighting relational and emotional "mediators" of athlete performances will be discussed along with the potential of touch communication to influence them. Lastly, the creation of an index to measure the performance utility of coach-enacted touch will be proposed.

Touch Trends in Academics and Athletics

A serious consideration of the usefulness of touch between athletes and coaches may be hindered by the many contemporary policies in sports and academics that characterize all touch as problematic or equate many forms of touch to sexual harassment. For example, a middle school in Virginia banned all touch (even high fives) at their school and subsequently suspended a student for sharing a brief hug in the school cafeteria (Glod, 2007). Middle schools in Oregon and Illinois have implemented more specific no-hugging policies resulting in detention for students caught hugging friends (FoxNews, 2005). The no-hugging policy for Percy Julian Middle School in Illinois was developed by extending a basic school "affection" policy stating that: "Displays of affection should not occur on the school campus at any time. It is in poor taste, reflects

poor judgment, and brings discredit to the school and to the persons involved" (Chicago Tribune, 2007). Although no-touch policies can appear somewhat drastic, more and more schools are turning to these types of policies for legal protection and in some cases safety.

No- or low-touch policies have shown to also be prevalent in day care, nursery and other school facilities in Europe. Researchers from Manchester Metropolitan University surveyed 1,000 councils, nurseries, and schools in the UK. The research, headed by Dr. Heather Piper, is featured in the book "Don't Touch! The Educational Story of a Panic." The research for the book indicates that the fear of touch has grown. Dr. Piper contends that, "The problem has become worse over the last five years. It's sad that people who are professionals feel unable to act in a professional way and instead behave in this cautious, defensive way, assuming that they themselves and those they work with are not to be trusted (with touch)" (Harris, 2007).

More applicable to the sporting world, Australian Olympic swimming coaches have made vocal their concern for the Australian Sports Federation's movement toward less or no touch between coaches and athletes, a movement that is said to be a response to an increase in sexual harassment allegations in sports (Bowden, 2003). Coach Phil King states that, "You almost have to put a brick wall between yourself and the athlete when you're involved with young athletes… any arm around the shoulder, any tapping on the back or patting on the head can be seen as being the wrong thing to do… a successful coach these days who wants to be bulletproof, (should) cut out all touch completely" (Bowden, 2003). In addition, data from a study regarding the phenomenological experiences of touch between NCAA Division III coaches and athletes illustrate the

prevalent apprehensions that coaches have (based on legality, social norms, spectators and athlete perceptions) toward the use of touch (Miller, Franken & Kiefer, 2008). A male swimming coach summarizes what may represent a common perception of touch in sports, stating, "Cultural norms are almost physically stifling sometimes; there are literally a million directions you shouldn't go with touch" (Miller, Franken, & Kiefer, 2008; p.26).

Commenting on the state of touch research in athletics and touch trends is not meant to suggest that touch is not being used enough in athletics, or that simple touch episodes may in some way have a profound, hidden impact on coaches' abilities to communicate with athletes. It simply points out that an exploration of touch enacted by coaches toward athletes is lacking and may possibly be stunted by an overly negative characterization and fear of using touch in coach-to-athlete and coach-to-athlete-like contexts. What makes this problematic is that the sporting world slowly may be moving away from what could be a potentially useful form of communication, and worse, doing so in the absence of systematic, empirical research.

Symbolic Interaction Theory

The Theory of Symbolic Interaction offers a useful model for examining how touch communication affects athletes in a sporting context. According to the Theory of Symbolic Interaction (Mead, 1934), human beings come to evaluate each other and understand themselves through communication. The act of interpreting communication becomes the very vehicle for how individuals will enact and respond to new communication episodes between one another in the future (Blumer, 1969). In a sense, people build perceptions and relationships together simply by communicating and

interpreting. For example, as coaches touch athletes, both the athletes and coaches (simultaneously) interpret and respond to what they perceive to be the meaning behind the touch. Through this process, they come to interpret how they feel about themselves and in turn their relationship with one another. This process (especially when touch is involved) can open the door for misinterpretation when the intentions behind messages are not in accord with the perceptions of them (Burgoon, Buller & Woodall, 1994). In a coach-athlete relationship, this can be very problematic, diminishing the relationship, diminishing an athlete's sense of self, and potentially leading to allegations of sexual harassment.

Relational and Emotional impact of Touch in Coach-Athlete Dyads

Touch research across the last five decades has illustrated that adult human touch can be a vehicle for both emotional and relational messages. Thus, in order to place touch communication into the context of coaches and athletes, it is important to understand how coaches and athletes interact relationally and emotionally. More specific to this study, in order to understand the performance utility of touch between coaches and athletes, one must understand how and why coaches exchange relational and emotional messages, and how those messages interact with athlete performance.

Jowett and Meeks (2000) offer a four-component model (4 Cs) that emphasizes the importance of *closeness, commitment, complementarity*, and *co-orientation* in coach-athlete relationships. In terms of athlete emotions, the concepts of self-efficacy and self-esteem combine to illustrate how athletes see themselves in sports based on their feelings of competency and worthiness. The emotional and relational models overlap and are derived from a combination of sport psychology, communication, and psychology

research. In addition, all three models have been shown to be positively related to athlete performance. In general, the models suggest that coach-enacted touch which shares a positive relationship with the 4 Cs, self-esteem, and self-efficacy will likely also share a positive relationship with athlete performance.

A point of consideration that hinders the generalizing of touch theories to athletic contexts is that much of the research pertaining to adult human communication has been drawn primarily from work-related, romantic, marital, or familial dyads. In their coach-athlete relational research, Jowett and colleagues (Jowett & Cockerill, 2003; Jowett & Timson-Katchis, 2005) address the desirability of drawing from non-sport-specific research in two ways. First, they point out the similarities and differences between coach-athlete dyads and other related dyads. For example, they illustrate the inclusion of trust in both coach-athlete and husband-wife dyads, but also illustrate the distinct levels of intimacy between those dyads. They move forward in developing their sport-specific, relational constructs by utilizing interviews with professional and non-professional athletes and coaches, using their assessments of research in non-sport-specific dyads as a guide.

This study looks to move touch literature into the realm of athletics in a similar fashion by examining the alignment of general touch literature with athlete-coach relational and "self" literature to assert research questions regarding the impact of various kinds of touch (independent variables) on athlete relational and emotional states (dependent variables). Unlike the Jowett and Meek (2006) example, though, this study looks to collect quantitative rather than qualitative data.

In its entirety, this thesis aims to explore touch communication in athletics with an unbiased lens utilizing systematic and empirical research methods. In an effort to achieve a balanced conception of touch in athletics and in an effort to quantify touch utility based on performance outcomes, this study will generate a measure of the "performance utility" of touch initiated by coaches (Athletic Coaching Touch Utility Index). More specifically, this study proposes an index designed to examine how observers interpret the relational and emotional impact of coach-to-athlete-touch in a competitive sporting context.

A valid and reliable index of this nature can help researchers begin answering more contextual questions regarding touch between athletes and coaches. In other words, if researchers can consistently ascribe a value or performance utility to touch exchanged between coaches and athletes, they can then begin to test the mediating effects of contextual factors, such as age, gender, how much athletes like or respect their coaches, and duration of touch (based on observers' evaluations). In addition, the index may also open the door for researchers and coaches looking to develop and test the performance utility of less conventional forms of touch.

Literature Review

The literature review examines and describes the theoretical underpinnings behind this study, variables of interest, and the proposed relationships between the variables. More specifically, the review begins by describing the Theory of Symbolic Interaction and its usefulness in modeling the process of touch communication between coaches and athletes. Following that, athlete-coach-relationship, self-esteem, and self-efficacy models are presented, along with their relationships to athlete performance. Next, literature illustrating the power of touch to convey relational and emotional messages is examined.

More specifically, touch-communication research is presented that focuses on arousal, instrumental touch, intimacy, commitment, power relating, and the perceptual similarity and differences of touch participants, highlighting the theoretical similarity of those six elements with athlete self-esteem/ self-efficacy and the four Cs of athlete-coach relationships -- *closeness, commitment, complementarity* and *co-orientation*. The literature review sets up the framework for a proposed index based on the hypothesized relationships between touch communication and athletes' perceptions of worth, confidence, and how they relate to their coaches.

Symbolic Interaction Theory and Touch Communication

The Theory of Symbolic Interaction works as a model to explain how humans form meaning and structure (relational and social) through their varied communications and it also describes the processes by which humans form a sense of self (Blumer, 1969; Mead, 1934). Symbolic Interactionism (commonly referred to as Interactionism) was initially coined by Blumer (1969), working from theories asserted by Mead (1934). Blumer explores three major threads of Interactionism: meaning, language, and thought. First, humans create and use symbols to name and assign value or meaning to everything, even themselves. The second major component of Interactionism is the idea that meaning is achieved via language and that meaning and knowledge exist as a result of language. Lastly, Blumer (1969) explains that thought (based on language) modifies individuals' perceptions of meaning.

For example, consider the case of a 40-year-old male basketball coach hugging a 16-year-old female athlete during a practice. The female athlete will assign some sort of meaning to the hug based on her past experiences with this type of touch in similar

contexts. She will do this through an intrapersonal dialogue, which may involve role taking or imagining different kinds of views (Blumer, 1969). The hug might make her feel as though her coach thinks she is a great athlete and reaffirm her sense of self-worth. During the hug episode the athlete will communicate some form of response or response to the coach, which instantly affects or alters his perceptions regarding the meaning and impact of the touch (filtered through his past experiences with hugging athletes). Her response could cause the coach to react in any number of ways; he may pull away, begin talking, or pat the athlete on the back while hugging them.

An entire episode involving touch between coaches and athletes would entail each participant reading the other's actions and intentions, thinking, and then responding accordingly (Goffman, 1959). In this way, individuals' perceptions of self and their relationships to others are "built" and constantly in flux as a result of communication experiences and the assigning of symbols and values to the components of those experiences.

What makes Symbolic Interaction Theory useful for this study is that it shows how touch between coaches and athletes can affect their sense of self and their perceptions of relationships. From a broader methodological standpoint, Symbolic Interaction Theory sets up the framework for this study's proposed method of using a sample's collective perceptions to determine the performance utility of touch communication between coaches and athletes. To begin probing the link between touch communication and performance, the following section examines what factors within the scope of coach-to-athlete communication have a strong likelihood to influence the performance outcomes of athletes.

Linking Emotional and Relational Messages with Athlete Performance

Athletes benefit from having a "self" that generates strong feelings of worth and confidence in their abilities. A significantly high measure of either of these has shown to be correlated with higher performance for athletes in various tasks (Lane, Jones & Stevens, 2001; Salomon, Famose, & Cury, 2005). The measures that address "individual worth" and "confidence" are derived from theoretical conceptions of self-esteem and self-efficacy.

The definition of self-efficacy, a theory pioneered by Bandura (1977), is: "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave" (Bandura, 1993, pg. 72). When applied to athletes, self-efficacy addresses how confident they are in their ability to perform required tasks (e.g., running, jumping, and staying calm).

The definition of self-efficacy is similar in nature to the definition of self-esteem, which is stated by Branden (2006, pg. 238) as: "The disposition to experience oneself as being competent to cope with the basic challenges of life and of being worthy of happiness." Both self-efficacy and self-esteem appear at face value to have similar underpinnings and some researchers have suggested that self-efficacy may be a component of self-esteem (Branden, 2006) or that self-esteem may be a component of self-efficacy (Lane, Jones, & Stevens, 2002). However, useful distinctions can be drawn between the two concepts. Self-esteem as opposed to self-efficacy more readily describes one's feelings of worthiness and general self worth whereas self-efficacy points

more clearly toward how "confident" someone is in their capabilities to meet challenges, simple and complex.

One of the more studied and influential mediators of performance in sport psychology is athletes' feelings of self-efficacy, or their belief in their capabilities (Gernigon & Delloye, 2003). As Gernigon and Delloy (2003) point out, narrative (Feltz & Lirgg, 2001) and meta-analytic (Moritz, Feltz, Kyle, & Mack, 2000) reviews drawn from sporting contexts show clear evidence of a significant relationship between self-efficacy beliefs and performance outcomes.

Since the defining and operationalizing of the self-efficacy construct by Bandura (1977), studies have examined the influence of self-efficacy in athletics. Studies spanning the last two decades provide examples of how self-efficacy has been shown to be related to performance in sports. For example, Escarti and Guzman (1999) conducted research that examined students' performances jumping hurdles set at various heights. Their study utilized structural equation modeling to generate a model that, when tested, helped confirm the contention that self-efficacy is a cognitive variable that mediates the relationship between feedback, performance, and task choice. A study by Lane, Jones, and Stevens (2001) reveals how competitive athletes use coping strategies to mediate both their mood and confidence levels, which in turn affects their performance outcomes. More specifically, the study shows that athletes who rated themselves as having high self-efficacy displayed stronger performance outcomes than those with a lower sense of self-efficacy (Lane, Jones & Stevens, 2001). In addition, research involving equestrian riders indicated that riders' self-efficacy evaluations were important indicators of their performances in intermediate dressage (horse routines such as trotting and turning with

precision) competitions. Although many studies come together to suggest that self-efficacy is an important variable for mediating performances in sports, there are some that do not offer support or only offer weak statistical support.

As an example, Geisler and Leith (1997) examined the effects of self-efficacy, self-esteem, and audience presence on soccer penalty shot performance. Their results did not provide any significant statistical support for a relationship between self-efficacy and performance. Some researchers argue that a discrepancy between studies arises due to the manner in which performance is defined and operationalized. Treasure, Monson, and Lox (1996) use Social Cognitive Theory to emphasize the importance of measuring performance as a process rather than an absolute outcome (e.g. win-loss). Based on their findings, it can be argued that relationships between self-efficacy and performance are not supported in studies like the soccer penalty-shot study because the measurement of performance (number of goals scored) was not a process measurement. Nonetheless, both studies are important because they caution researchers about blindly equating self-efficacy with all performance outcomes.

Athletes' self-esteem has also been shown to be related to performance, albeit in a slightly different manner than self-efficacy. Researchers have shown that self-esteem may play a role in the formation of psychological states such as self-efficacy, thus self-esteem may share a relationship with performance due to its connectedness with self-efficacy (Lane, Jones, & Stevens, 2002). In addition, self-esteem is considered to play a part in helping athletes cope with failures in either a problem- or emotion-focused manner (Folkman & Lazarus, 1985). More specifically, athletes with lower self esteem have been shown to suffer greater negative consequences (emotional and self-image)

when they fail or come up short in performances (Lane, Jones, & Stevens, 2002). This process of ineffectively dealing with situations that exceed or tax the resources of athletes may draw significantly from future performances.

Gotwals and Wayment (2002) examined self-perceptions of intercollegiate athletes and found that higher self-esteem (as reported by athletes) was associated with better athletic performance. They also found that athletes who used negative performance information from the past performed more poorly in proceeding tasks. Another, similar study involved athletes performing bimanual coordination tasks to evaluate speed-precision compromise associated with sport performance (Salomon, Famose & Cury, 2005). The results from the study indicated that self-esteem was positively correlated with mastery goals, preparation time, and performance of athletes. Both of these studies suggest the way athletes emotionally and mentally cope with performance outcomes may impact their ability to perform in future events.

Examining the relationship between self-efficacy and self-esteem with athlete performance is useful in that it helps illustrate how athletes' performance outcomes might be affected by the way in which they process communication episodes with their coaches. However, utilizing only these two constructs negates the unique relationships that coaches and athletes form and the potential for different types of relationships to interact with the way messages between coaches and athletes are exchanged and received. The next section will examine research that not only provides a model of coach-to-athlete relationships but also illustrates the association that components of that model share with athlete performances.

Initial efforts to generate a model of coach-athlete relationships consisted of drawing from interpersonal theories that were derived from various fields of study. Theorists like Jowett and Meeks (2000) drew primarily from social and cognitive-psychology studies that show how cognitions, emotions, and behaviors come together in various types of interpersonal relationships to begin framing a model specific to coaches and athletes. Through interviews with coaches and athletes, along with surveys, Jowett and colleagues (Jowett & Cockerill, 2003; Jowett & Timson-Katchis, 2005) have generated and refined a model of the coach-athlete relationship that emphasizes four interrelated cognitive, emotional, and behavioral components. The four components (referred to as the four Cs) -- closeness, commitment, complementarity, and co-orientation -- are theorized as being the most critical to coach-athlete relationships.

Closeness in athlete-coach relationships describes how they feel and express emotions such as interpersonal liking and trust and respect toward one another (Jowett, 2006). *Commitment* represents the long-term orientation that coaches and athletes have toward each other. Examples of commitment can be found in the way coaches and athletes show appreciation for each other's sacrifices and in the way they exchange and understand ideas (communicate) (Jowett, 2006). *Complementarity* centers on the actions of coaches and athletes that are co-operative. Complementary actions tend to entail feelings of being comfortable and competent and concerned when in the presence of the other person (Jowett, 2006). The fourth "C," *co-orientation,* represents athletes' and coaches' shared background knowledge and understanding of the other three Cs (Jowett & Clark-Carter, 2006).

Jowett and colleagues created a model of coach-athlete relationships that emphasizes their levels of *closeness, commitment*, and *complementarity*, along with how similar their perceptions of those three factors are (*co-orientation*). A quote from Jowett and Clark-Carter (2006) addresses the potential of communication within coach-athlete relationships to interact with athlete performances: "An interpersonal approach to sports coaching is important…because of the impact of coaching on individual athletes' performance" (pg. 618).

Phillippe and Seiler (2006) conducted interviews with international athletes that offer insight into the link between athlete performance and the 4 Cs of athlete-coach relationships. Through a content analysis of the interviews they showed that the athletes tended to form both personal and caring relationships with their coaches. The athletes also indicated that they felt these relationships played a central role in improving their performances. Research preceding the 4 Cs model by Horne and Carron (1985) also provides backing for the impact of coach-athlete relationships on athlete performance. Horne and Carron (1985) utilized scales to evaluate athletes' perception of their coaches' leadership, relationship with their coach, preference for coaches' behavior, and performance perceptions. The findings from their study indicated that the sole variable that predicted athletes' perceptions of performance was the discrepancy between how they perceived their coaches' leadership style and their preferences for coaching behavior. In essence, their research suggests that compatibility in coach-athlete relational expectations may play a role in athlete performance outcomes.

This section helps illustrate how athletes' perceptions of self-esteem and self-efficacy and their relationship with their coaches potentially interact with and affect

performance. The following section examines the potential of coach-enacted touch to affect athletes' feelings of self-esteem, self-efficacy, and their relationship to their coaches. More specifically, it examines the theoretical links between human touch communication research and self-efficacy, self-esteem, and coach-athlete relational factors (4 Cs).

Relating Coaching Touch with Athlete Self-Efficacy

Self-efficacy is a multifaceted conception of athletes' feelings about their ability to perform well in tasks. Research indicates that there are six primary sources of athlete self-efficacy: performance accomplishments, vicarious experiences, verbal persuasion, imaginal experiences, physiological states, and emotional states (Bandura, 1977). This study will focus on vicarious experiences, physiological states, and emotional states of athletes, as these three components share the most direct relationships with touch-communication research and are presumably the most readily affected by coach-enacted touch.

Vicarious experiences and instrumental coaching touch

Vicarious experiences entail athletes modeling the tasks that they will be performing in competitions. A form of touch, dubbed instrumental touch by Jones and Yarbrough (1985), involves one person helping another perform a task and build skills via physical contact. Instrumental touch can be broken down into two classifications, instrumental ancillary and instrumental intrinsic. Both refer to touch that is used to accomplish a task; however, ancillary touch is considered an unnecessary part of accomplishing the task. To better picture the difference, imagine a tennis coach trying to teach a student how to hit a ball by touching them. If the coach were to use an intrinsic

touch, they might take the athlete's arm and help them actually swing and hit the ball, whereas if they were using an ancillary touch they might give the athlete a shove toward the ball and tell them to hit it.

Instrumental intrinsic touch is often a necessary component of many coaches' instructional regimens; the common practice of coaches helping model technique by touching athletes and guiding them through the required movements stands as an important manner in which touch might influence athlete self-efficacy via vicarious experiences. Research question one asks:

RQ1 – How do observers perceive athletes' feelings about how instrumental (skill-building) a coach-enacted touch episode is?

Physiological states and sexually arousing touch

Physiological states, for athletes, center on the idea of controlling and balancing arousal during performances. A host of communication and psychology studies relay the significant relationship between touch and biological, cognitive, and feeling states (Anisfeld et. al., 1990; Heslin et al., 1983; Hewitt & Feltham, 1982; Lee & Gurerro, 2001). As Burgoon, Walther, and Baesler (1992) put it, "touch is highly arousing and leads to intense evaluations" (as cited in Lee & Guerrero, 2001, p.198). Touch communication in general has a significant potential to affect athlete arousal states in either a positive or negative way.

In nearly all professional contexts there is a potential for touch to be interpreted as inappropriate. A study of cross-sex touch in workplaces offers insight into the potential effects of arousing touch between coaches and athletes. In this study, Lee and Gurrero (2001) ask observers to evaluate the appropriateness of touch interactions between co-

workers and make judgments regarding whether or not they felt the interaction involved sexual harassment. Their study addresses the power, ambiguity, and the negative perceptions that follow overly arousing touch. Coach-to-athlete touch communication is not so different from coworker touch communication, in that there is a need to exchange emotional and relational messages, there is a power/ status dynamic, and there are degrees of ambiguity that can arise from overly arousing touch and can lead to sexual-harassment incidents and allegations. Research question two asks:

RQ2 – How do observers perceive athletes' feelings of being sexually harassed during various coach-enacted touch episodes?

Emotional states and emotional touch

Emotional states have been linked to athlete's feelings of self-efficacy. In particular, research has shown that positive emotional states such as happiness, exhilaration, and tranquility are more likely to enhance efficacy judgments than negative emotional states such as sadness, fear, and depression (Feltz & Weiss, 1982). In a study regarding how well humans can distinguish basic emotions conveyed by touch, Hertenstein et al., (2006) focused their attention on only one party involved in a touch episode. For their study they had subjects on one side of a curtain touch the arms and shoulders of subjects on the other side who had placed their appendages on the "touchers'" side of the curtain. The goal was for the subjects touching to try and convey certain emotions through a blind touch (Hertenstein, et al., 2006). The results indicated that subjects who were touched were able to distinguish the emotions of anger, fear, disgust, love, gratitude, and sympathy at better-than-chance-levels (Hertenstein, et. al., 2006). This type of unidirectional study illustrates the potential to communicate

emotional information via simple, brief touches.

In regard to athletes and their emotional states, the notion that they may be able to distinguish the types of emotions that their coaches are trying to convey suggests that coach-enacted touch may influence athletes' emotional states in either a negative or positive fashion. Therefore, research question three asks:

RQ3 – How do observers perceive the positive or negative emotional states of athletes during coach-enacted touch episodes?

According to self-efficacy research in athletics, coaching touch that centers on modeling (instrumental touch), arousal regulation, and instilling or maintaining positive emotional states has potential to interact positively with athlete performance. In contrast, touch that is overly arousing, incites negative emotions, or does not have a clear instrumental purpose may likely share a neutral or negative relationship with performance.

Relating Coaching Touch with Athlete Self-Esteem

Strong self-esteem is theorized as developing through "realistic and accurate self-appraisal, meaningful accomplishments, overcoming adversities, bouncing back from failures, and adopting such practices as assuming self-responsibility and maintaining integrity which engenders one's sense of self-worth" (Reasoner, 1983).

Self-Esteem and comforting touch

When humans touch to comfort one another, they are ultimately communicating that they care. Gleeson & Timmins (2004) express the idea of comforting by relating the notion that all humans have the desire to feel loved and to belong. They further state that all humans require some form of attention or recognition to maintain strong mental

health. In their study of caretakers in homes for the elderly, touch fulfilled the aforementioned needs of the clients (Gleeson & Timmins, 2004). More specifically, a significant portion of the clients from the sample reported positively about physical touch by nurses, perceiving it to be not only a source of comfort, but essential to their care (Gleeson & Timmins, 2004).

Because athletes face difficult challenges that can affect their sense of self-worth, coaches benefit from being able to console and/or connect with athletes who have just experienced a disappointing performance. In these instances, coaches are enacting touch to comfort their athletes, and through this form of touch communication, stand to affect athletes' perceptions of self-esteem. The theoretical link between comforting touch and athlete self-esteem prompts research question four:

> RQ4 – How do observers perceive athletes' feelings of being comforted during coach-enacted touch episodes?

Relating Coaching Touch with Athlete-Coach Relationships

One of the unique aspects of touch rests in its ability to help individuals define thoughts and feelings pertaining to their relationships. It is powerful in that it has the potential to instantly alter perceptions within relationships. Ferch (2003) speaks eloquently to the unique way humans relate to each other through touch by stating that,

> Touch is an experience fundamental to humanity. From the enfolding touch experienced in the womb to the touch of another's hand before death, touch accompanies, reflects, and speaks to the reality of our lives. Touch is among the most meaningful ways we come to experience and

> know our world, and in the context of relationships touch can be a potent reflection of connection (pg. 156)

Moreover, a growing body of research suggests that factors like intimacy, trust, power, dominance, affection, and attraction play significant roles in how individuals form relationships together when communicating with touch (Hertenstein et al., 2006).

This section will extend the work of Miller, Franken, and Kiefer (2007) by asserting research questions based upon their analyses of the theoretical similarity of athlete-coach relational variables (four Cs -- *closeness, commitment, complementarity* and *co-orientation*) and interpersonal variables that have been shown to be affected by different types of touch (intimacy, commitment, power relating, and perceptual similarity and differences of touch participants).

Closeness and trust/ respect building touch.

Several research experiments have utilized observers to interpret the degree of intimacy in touch episodes and then used those findings to infer how intimate relationships are based on the associations between degrees of intimacy and touches observed (Burgoon, 1991; Burgoon & Hale, 1984; Floyd & Voludakis, 1999; Pisano, Wall, & Foster, 1986). These particular studies had participants either view photographs or watch videos of individuals touching one another and then looked to quantify the participant's perceptions of intimacy levels. Studies like the one conducted by Burgoon et al. (1992) involved participants in a real-world settings interacting with confederates who enacted different types of touch. Other studies utilized experimental touch settings.

The findings from the experimental and real-world studies have shown that touch compared to no-touch conditions carry with them greater levels of affection, trust, and

express various predictable degrees of intimacy. For example, face touching and hand touching have been shown to be more intimate than other forms of touch, like placing an arm around a shoulder or placing a hand on a back (Burgoon, 1991; Hertenstein et al., 2006; Lee & Guerrero, 2001). Research by Fisher et al. (1976) and Lee and Guerrero (2001) both suggest that touch can convey positive relational messages and increase liking in various contexts. The aforesaid studies via multiple methods of inquiry show that various types of touch can foster and express intimacy, liking, and trust in multiple dyads.

Closeness, according to Jowett and Clark-Carter (2006) encapsulates the interpersonal liking and trust/respect that athletes and coaches have for one another. The overlap between the athlete-coach relational conception of *closeness* and the body of research that portrays touch as a vehicle for affecting interpersonal intimacy variables (e.g., liking and trust) suggests that touch enacted by coaches toward athletes' may be an important facilitator or impeder of *closeness.* Based on this theoretical link, research question five asks:

RQ5 – How do observers perceive athletes feelings of trust and respect for their coaches during coach-enacted touch episodes?

Commitment and appreciative touch

Another group of touch communication studies examine positive affective and relational messages that touch conveys, such as affection, attraction, and commitment (Guerrero & Anderson, 1991; Johnson & Edwards, 1991). As Miller, Franken, and Kiefer (2007) point out, the work of Johnson and Edwards (1991) aligns well with Jowett and Clark-Carter's (2006) conception of *commitment*, in that it focuses on how

individuals ascribe varying levels of commitment to different kinds of touch. Johnson and Edwards (1991) showed that along a touch spectrum that ranged from intimate to non-intimate, commitment shared a positive relationship with the degree of intimacy of touch. That is, the more intimate the touch presented to observers, the higher they rated the commitment between the individuals involved in the touch. Although the research focused on romantic touch, it does prompt exploration into whether or not touch and commitment share a relationship in other, more professional relationships.

Relational *commitment* between athletes and coaches, according to Jowett and Clark-Carter (2006) reflects the long-term orientation of coaches and athletes and encapsulates their general accommodating behaviors, like showing appreciation, communicating, and understanding one another. Through interviews with NCAA coaches and athletes, Miller, Franken, and Kiefer (2007) illustrated that touch from coaches was used to show appreciation and that this form of touch was considered by athletes to be an important component of their relationship with coaches. Touch-communication research highlights the likelihood of touch to interact with perceptions of relational *commitment* and coach-athlete interviews illustrate the potential importance of appreciative touch in athletics. Thus research question six asks:

RQ6 – How do observers perceive athletes' feelings of being appreciated during coach-enacted touch episodes?

Complementarity and power relating touch

The coach-to-athlete dynamic often entails a coach having power over an athlete. This power can stem from their role as coach, their age, gender, or other contextual factors specific to their relationship with a particular athlete. This section will focus on

the power that stems from the role and status of being a coach and the instructional touch that often accompanies that role. The instructional touch that coaches use (i.e., moving athletes around, helping them position their bodies, or showing them how to bend), according to research by Major and Heslin (1982) could be perceived by athletes as dominant. In terms of coaching role or status, research focused on exploring the relationship between touch, power and social status generally conforms to the idea that those with a higher social status have greater power and thus more approach-related tendencies (i.e., they touch others more freely) (Henley, 1973; Keltner, Guenfeld, & Anderson, 2003). So in the case of coaches and athletes, the conceivably more powerful role (or status) of coaches may make them more likely to touch athletes and in turn make athletes feel subordinate and less likely to initiate touch.

Jowett and Clark-Carter's (2006) third C is labeled *complementarity* and refers to how comfortable coaches and athletes feel around one another. The research on dominating touch between those in positions of power and the potential perceptions of their subordinates suggests that *complementarity* between coaches and athletes could suffer due not just to an imbalance in power, but also to misperceptions pertaining to touch behaviors. That is, athletes may feel reserved toward enacting touch with a coach or feel dominated and uncomfortable when their coach touches them. Either of these potential perceptions indicates that *complementarity* (feeling comfortable around their coach) for athletes may be affected by various types of coach enacted touch. Research question seven asks:

RQ7 – How do observers perceive athletes' feelings of being dominated during coach-enacted touch episodes?

Co-orientation, touch & contextual differences

A significant portion of the aforementioned studies on touch communication have paid at least some attention to the potential mediating affects of gender in touch episodes. Studies regarding gendered dyads in touch episodes have traditionally focused on the gender asymmetry between males and females, examining the idea (initially proposed by Henley, 1973) that males are inherently held at a higher status in society and thus initiate touch more often than females (Major et al., 1990; Willis & Briggs, 1992; Hall & Friedman, 1999; Hall & Veccia, 1990). Hertenstein et al. (2006) in a review of literature pertaining to touch, power, and status utilize a meta-analysis by Major et al. (1990) to summarize the current body of research pertaining to how gender affects touch initiation in various contexts. Their summary states that "the data indicate that there is a significant gender asymmetry favoring men in cross-sex dyads when the dyads (a) are young, (b) are in the early stages of a romantic relationship or are casual acquaintances, (c) are touching in public, nonintimate settings, and (d) are touching in an intentional manner with the hand" (Hertenstein et al., 2006, p. 91). In the situation of coaches touching athletes there can be any number of dyads that exist in terms of age, sex, relationship, setting and intentionality.

Jowett (2006) proposed a fourth C, *co-orientation*, to account for the similarities and dissimilarities in how athletes and coaches perceive their levels of *closeness, commitment*, and *complementarity* based upon sex, power/role, relational stage, and interpersonal differences. In an effort to continue exploring the mediating effects of sex in touch episodes, research question eight asks:

RQ8 – Does athlete and coach gender affect observers' perceptions of athletes' feelings about coaches' touching behaviors?

The first seven research questions come together to assert a basic model for the utility of coach-athlete touch. More specifically, they suggest that coach-enacted touch perceived as skill-building, comforting, appreciative, emotionally positive, or building trust/ respect, advance a positive utility (performance-based). Touch that is perceived as sexually harassing or dominating carries a negative touch utility (performance-based). Figure 1 illustrates the proposed model for examining the utility of coach-enacted touch in a competitive athletic context.

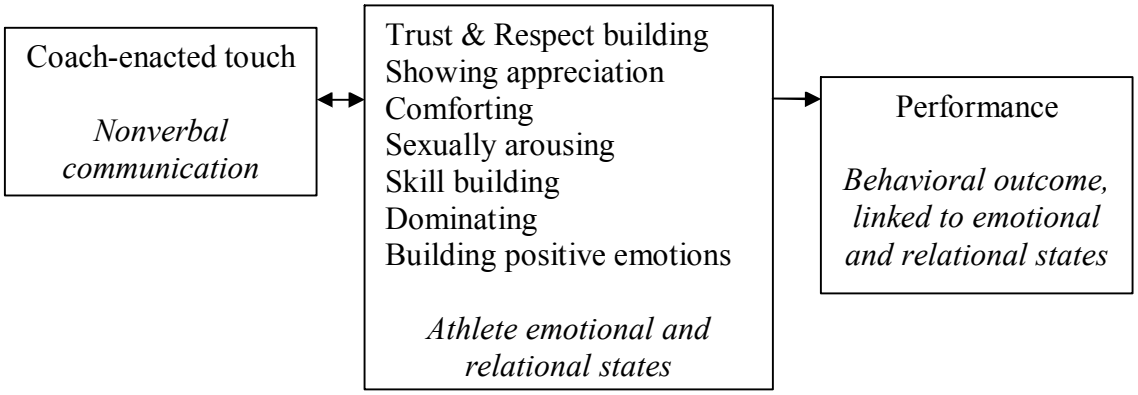

Figure 1. Athletic Coaching Touch Utility Index (ACTUI) Conceptual Model

Theoretically Examining the Properties of the ACTUI

This study uses the concept of Symbolic Interactionism to theoretically draw together actual acts of coach-enacted touch with observers' ideas or thoughts about the acts. The measurement tool is designed to expose those who use it to actual acts of touch, such as a hug, then engages their thoughts and ideas about that particular touch and ultimately looks to explore their feelings about the touch. Essentially, the index will measure how observers think about and symbolize touch enacted by coaches toward

athletes, based on the seven research questions and proposed model of touch utility. In addition, since the items of the index were based upon several existing measures, the following are hypothesized to be true of the proposed Athletic Coaching Touch Utility Index (ACTUI) (H1-H5):

1. Categories of the ACTUI are valid, orthogonal and reliable;
2. Items on the ACTUI will result in moderate to high internal validity;
3. The ACTUI categories of *dominant*, *comforting*, *appreciative* and *emotionally positive* will be positively correlated with the Relational Communication Scale (Burgoon & Hale, 1987) categories of *dominance*, *composure*, r*eceptivity*, and *affection*, respectively;
4. Correlations between the ACTUI category of *sexually arousing* will be consistent theoretically with categories of *sexual harassment* and *inappropriate touch* generated by Lee & Gurerro (2001) to study touch in the workplace (i.e., sexual arousal will be positively correlated with both categories);
5. The ACTUI categories of *skill building* and *showing trust/respect* will be positively correlated with the Athlete Coachability Scale (Giacobbi, 2000) categories of *openness to learn* and *trust and respect*.

Chapter Two: Method

The following methodology section relates the item and category construction of the Athletic Coaching Touch Utility Index (ACTUI). In addition, an explanation of how stimulus materials were created, how respondents were selected, and the procedures involved in administering the stimulus materials to respondents is explained.

Category and Item Construction of the ACTUI

The ACTUI is comprised of seven categories that focus on how observers interpret the effects of coach-enacted touch upon athletes. The categories stem from the seven hypothetical relationships asserted in the literature review and share a potential relationship with athlete performance outcomes. Each category relates to how observers interpret athletes' experiences of touch enacted by coaches.

The items for the ACTUI were developed based on the seven categories of *dominant, comforting, appreciative, emotionally positive, sexually arousing, skill-building, and showing trust/respect*. In addition, qualitative data from a study of NCAA coaches and athletes regarding their phenomenological experiences of touch were also used to help generate seven base questions for the Athletic Coaching Touch Utility Index (Miller, Franken & Kiefer, 2008). The base questions represent each of the seven categories of the ACTUI and are as follows: Is a coach's touch perceived by observers as 1) making an athlete feel dominated and/or imposed upon, 2) helping an athlete feel comfortable and/or relaxed, 3) helping an athlete feel noticed and/or valued for their efforts, 4) helping an athlete feel happy and/or positive, 5) making an athlete feel their coach is being overly intimate, 6) helping an athlete learn a specific skill and/or strategy, and 7) helping an athlete build trust and respect for their coach?

From the aforesaid seven questions, 28 items were developed, four for each category. The 28 items of the ACTUI ask respondents to make judgments regarding the implications of various touches enacted by coaches. In addition, items from established comparison scales were modified so that the wording addressed the individuals being observed in the stimulus movies. For example, one item from the Athletic Coachability Scale states, "I try to remember all of the specific strategies taught to me by my coach" This item was modified to state "This athlete will try to remember all of the specific strategies taught to her by her coach." Items from all scales are rated on a 7-point, Likert-type scale to help generate adequate response variance (see Appendix A).

Stimulus Materials

For this study, a series of 30-second web videos were created illustrating four different touch conditions: hand on shoulder, arm around waist, helping stretch arm, and no touch (control condition). These touches were selected because previous research has shown that observers were able to distinguish differences between them in terms of how much they expressed various relational and emotional elements (Burgoon, 1991; Lee & Gurerro, 2001). In addition, each of the types of touch have potentially discernable links to the aforementioned uses of coaching touch (i.e., helping stretch presumably relates more closely to the categorization of skill-building touch than the other forms of touch). Four actors were selected (two males and two females) for the study. Sixteen interactions were videotaped and converted into web videos that represent four combinations of gender for each touch condition. For example, in the "stretch" condition, a male coach will stretch a female athlete and a male athlete; while a female coach will stretch both a male and female athlete.

An initial series of sixteen movies was piloted with a group of graduate-student evaluators, and it was determined that variances in the apparel between athletes in the touch conditions and variations in the emotional tone of the coaches speaking could potentially skew observers' perceptions of the videos.

As a result, for the second and final round of videos, all of the actors were dressed exactly the same for each role and in modest athletic attire, as described in research exploring the effects of athlete attire on sexual harassment in sports (Fasting, Brackenridge, & Sundgot-Borgen, 2004). Across all four of the touch conditions the dialogue (See Table 1) and tone for the actors remained the same and the touches were enacted at the same times in an effort to make sure that variations in observer perceptions are due mostly to the type of touch being enacted. The videos depict a swimming coach walking up to talk with a student athlete before a race. The coach and athlete have a brief conversation; the coach enacts a touch, and then walks off. The script is intended to express neutrality and mild indifference by the coach and athlete, so as not to lead observers toward any one particular category or use of touch.

TABLE 1
Script for videotaped Interactions

C: Hi (athlete's name).
A: Hey coach.
C: It's a big meet today. *touch*
C: Be sure you're using your whole body out there.
A: Yeah, I know.
C: Well, I just wanted to stop by and say hi. *coach exits*

Respondents

The sample examined in this investigation consisted of 458 undergraduate students and student athletes. All subjects were volunteers from thirty-four sections of a

basic Communication course at a Midwestern university in the Spring 2008 semester. Every participant in each of the thirty-four sections was offered extra course credit to participate in the study. Respondent surveys were examined initially for completeness of data. Those surveys with missing data (N=134) were dropped from subsequent analyses.

Table 2 illustrates the different sporting backgrounds of respondents.

Table 2. Sport Participation of Respondents

Type of Sport	Frequency	Type of Sport	Frequency
No Sport	42	Badminton	6
Volleyball	41	Rugby	6
Basketball	37	Wrestling	6
Track	35	Cross Country	5
Soccer	24	Archery	4
Softball	21	Bowling	3
Swimming	17	Fencing	3
Tennis	17	Lacrosse	2
Ice Hockey	16	Skiing	2
Football	15	Equestrian	1
Baseball	11	Field Hockey	1
Golf	9		

In addition, the last time respondents played their listed sports was N/A (N=42), More than 4 years ago (N=34), 4 years ago (N=11), 3 years ago (N=22), 2 years ago (N=21), 1 year ago (n=72), Less than 1 year ago (N=77), and Currently playing (N=45). The level of competition for respondents was N/A (N=54), NCAA Div I (N=1), NCAA Div II (N=2), NCAA Div III (N=37), High School Varsity (N=122), High School J.V (N=41), Middle School Varsity (N=11), Before Middle School (N=2).

The average age of respondents was 19.74 years (SD=1.4). Their college status was Not in College (N=2), Freshman (N=212), Sophomore (N=70), Junior (N=24),

Senior (N=16). Females comprised 56.8% of the sample, while males made up the remaining 43.2%. Caucasians made up 92.9% of the participant pool, followed by Asians 3.4%, Hispanics 1.5%, Others 1.5%, African Americans .3% and Native Americans .3%.

This sample of college participants was chosen because it encompassed both student athletes with current or recent athlete-to-coach experiences and non-athletes. Choosing a sample of both athletes and non-athletes allowed for groups with potentially different sporting perspectives and were considered to generalize adequately to the larger body of students at universities across the nation.

Survey Procedures

The surveys for this study were administered via the World Wide Web to respondents who were randomly assigned to one of the 16 video segments (types of touch) by utilizing permuted block randomization. That is, the sequence that subjects were assigned to experimental conditions was prearranged. More specifically, blocks of respondents were directed via e-mail to view specific web addresses. This form of restricted randomization was used in order to enforce a participant balance within each experimental group. The sample for this study was large enough to ensure that at least 10 participants viewed and responded to each of 16 experimental conditions (mean number of respondents to view each condition was N=20.76).

To begin the study, the participants were informed on the Web page that their responses were anonymous and were required to click on and view an online consent form. The consent form informed them that they could withdraw from the study at any time. Following that, they were instructed to watch short videos showing coaches

interacting with athletes before a competition. They were asked to observe the videos carefully so that they could respond to statements regarding their impressions of the interactions. In addition they were informed that they could click on the video controls to rewind, pause, and watch the video again if necessary.

After viewing the videos, each respondent was asked to respond to statements found directly below the movie clip. The statements involved respondents rating their impressions of the coach-athlete interactions on 7-point, Likert-type scales. The survey statements were presented in four different orders. Each ordering contained the 28 items from the proposed ACTUI scale, 6 items from the Athlete Coachability Scale (Giacobbi, 2000), 20 questions from the Relational Communication Scale (Burgoon & Hale, 1987) and 4 items generated by Lee and Guerrero (2001) to measure sexual harassment and inappropriate touch in the workplace (See Appendix A for all scale items). Halfway through each survey (regardless of form) respondents were encouraged to view the movie clip again (i.e,. the clip appeared a second time below the 26th statement in each survey).

Lastly, participants filled out online demographic information (age, gender, race, most recent sport played, level of competition, last time of competition, and year in school) located at the bottom of the webpage and were required to agree (in order to submit their data) that they read and understood the consent form at the top of the Web page.

Chapter Three: Results

The results are divided into two sections. The first section examines the psychometric properties of the ACTUI using factor analysis, Cronbach's alpha measurements, and Pearson's correlations with other related scale components to examine the validity and reliability of the index. The second section integrates the analysis from the first section to present ANOVA and post-hoc Tukey-B results that address the effects of varying gender-dyads and touch conditions (video stimulus) on responses to the emergent five ACTUI-R components (trust and respect, appreciation, comforting, sexually arousing, and skill building).

Factor, Internal Consistency (H1 & H2)

The following results pertain to the psychometric properties of the proposed Athletic Coaching Touch Utility Index and are broken down into three sections: a) descriptive statistics from each of the measurement components and proposed index (Relational Communication Scale (RCS) (Burgoon & Hale, 1987) categories of dominance, composure, receptivity, and affection; the combined categories of sexual harassment and inappropriate touch generated by Lee & Gurerro (2001) to study touch in the workplace (WT); Athlete Coachability Scale (ACS) (Giacobbi, 2000) categories of openness to learn and trust and respect; and the ACTUI); b) factor and internal-consistency analyses of the ACTUI, and c) correlation analysis between the emergent ACTUI components and the associated RCS, ACS, and touch in the workplace components. Essentially, the descriptive results for all scales, indexes, and components except the ACTUI are presented along with an analysis of reliability. Next a statistical analysis of the validity and reliability of the ACTUI is presented. These results are

followed by Spearman's RHO correlations between the emergent ACTUI and presumably related scale components.

Descriptive Statistics

Item means and standard deviations for the seven comparison components were: RCS affection (M=3.9, SD=.8), receptivity (M=5.1, SD=.9), composure (M=4.9, SD=1.1), dominance (M=4.2, SD=1), ACS openness to learn (M=4.1, SD=.9), trust/respect (M=4.6, SD=.9), and WT sexual harassment (M=2.5, SD=1.1). Cronbach's (1951) alpha reliabilities were calculated for each of the seven components; RCS affection (α=.23), receptivity (α =.67), composure (α =.86), dominance (α =.60), ACS openness to learn (α =.68), trust/respect (α =.76), and WT sexual harassment (α =.79).

Table 3 shows the individual item means and standard deviations for all of the original 28 items from the ACTUI (see appendix B). Item means ranged from between 2.02 (SX14) and 5.73 (EP2) and all standard deviations were greater than one. Overall, the data indicate that respondents utilized all choices within the 7-point Likert-like index.

Preliminary Analysis ACTUI

Bartlett's Test for Sphericity was used to test the hypothesis that the correlation matrix was an identity matrix (all correlations = 0). The p-value for this test was <.001 so the hypothesis was rejected. Next, the results of the Kaiser-Myer-Olkin (KMO) measure of sampling adequacy showed that the magnitude of the observed correlations with the partial correlations was .856. In addition, an examination of the correlation matrix showed a consistent pattern of correlations between many of the ACTUI items. As a result, factor analysis for these data was deemed appropriate (Kaiser, 1974).

Principal Component Analysis ACTUI

Both principal components and principal-components' factor analysis with a varimax rotation were used to examine the dimensionality of the ACTUI. As shown in Table 4 (see appendix B), principal-components analysis resulted in six components with eigenvalues greater than one, accounting for 61% of the response variance. In accordance with Kaiser's (1974) rule of retaining components with eigenvalues greater than one, all six components were initially conserved.

Priciple Factor Analysis Results ACTUI

A six-factor principal component factor analysis with a varimax rotation was performed to transform the initial matrix to orthogonal simple structure. The varimax-rotated principal factor analysis resulted in six interpretable components that accounted for 61.2% of the response variance. Table 5 (see appendix B) shows the item loadings on each of the six components while table 6 (see appendix B) shows the component labels, eigenvalues and the percent of variance explained by each component. Component I (items 9, 10, 11, 12, 13, and 25 of the ACTUI, see appendix A) was comprised of items pertaining to how much athletes trusted and respected their coaches and negatively loaded items that reflected athletes perceiving dominance or sexual arousal from a coach. Component I accounted for 20% of the response variance and was labeled "trust and respect." The second component (II) accounted for 15% of the response variance and contained items (1, 17, 19, 20, 21, and 22). This component was most heavily loaded upon by the original four items constructed to reflect athletes' feelings of appreciation and was therefore labeled "appreciation." Component III (items 6, 15, 16, 27, and 28) was labeled "comforting and relaxing" and was a combination of the two original

proposed categories of comforting and positive emotional state. Items in this component reflect an athlete's perception of how much coach enacted touch influences their general state of comfort and well-being. Component III accounted for 8.7% of the response variance. Component IV (items 3 and 18), which accounted for 7.2% of the response variance, was labeled "sexual arousal" because two items intended to load upon that category clearly loaded together on component IV. Component V (items 4,5, and 10) accounted for 5.9% of the response variance and was labeled "skill building." Component VII had only one marginally significant item that loaded upon it (17). Item 17 already loaded on component II and accounted for only 4% of the response variance. As a result, component VII was eliminated, leaving five components reflecting 57.2% of the total response variance.

Individual items with non-unique item loadings were considered for item elimination. Items 7, 11, 14, 19 and 20 were dropped from the ACTUI. In addition, items 8, 9, 10, and 26 were modified. Their modification is explained in detail in the discussion section.

Internal Consistency ACTUI-R

Measures of internal consistency were analyzed for the Revised Athletic Coaching Touch Utility Index (ACTUI-R) by calculating Cronbach's (1951) alpha coefficients. Alphas were computed for the five components that emerged during factor analysis, resulting in alpha reliabilities for trust and respect (α =.87), appreciation (α =.75), comforting and relaxing (α =.74), sexual arousal (α =.66), and skill building (α =.58). The overall scale alpha for the ACTUI-R was 0.73.

Correlation Analysis (H3, H4 & H5)

A series of five Pearson correlations were computed to assess relationships between: a) the emergent ACTUI-R component scores of appreciation and comforting with the Relational Communication Scale (RCS) (Burgoon & Hale, 1987) components of receptivity and composure, b) the combined categories of sexual harassment and inappropriate touch generated by Lee & Gurerro (2001) to study touch in the workplace (WT) with the emergent ACTUI –R component of sexual arousal, c) and the Athlete Coachability Scale (ACS) (Giacobbi, 2000) categories of openness to learn and trust and respect with the emergent ACTUI-R components of skill building and trust and respect. The correlation results are illustrated in Table 7 below.

As the graph depicts, there were multiple significant statistical correlations between the ACTUI-R components and the comparison components. Each of the five ACTUI-R components correlated most strongly with their hypothesized comparison components. That is, moderate positive correlations existed between the ACTUI-R component of appreciation and RCS component of immediacy and affection, ($r(324) = .55$, $p<.01$); the ACTUI-R component of comforting and RCS component of composure, ($r(324) = .63$, $p<.01$); the ACTUI-R component of sexual arousal and the WT component of sexual harassment, ($r(324) =.64$, $p<.01$); the ACTUI-R component of skill building and the ACS component of openness to learn, ($r(324) =.41$, $p<.01$); and the ACTUI-R component of trust and respect with the ACS component of trust and respect, ($r(324) =.45$, $p<.01$). From a negative standpoint, each of the ACTUI-R components (other than sexual arousal) were all negatively correlated with the WT comparison component of sexual harassment. In addition, the ACTUI-R component of sexual arousal was

negatively correlated with all of the comparison components other than sexual harassment.

Table 7.

Pearson Correlations between ACTUI-R, RCS, ACS, & WT Components

ACTUI-R Components	RCS Immediacy & Affection	RCS Composure	ACS Openness To Learn	WT Sexual Harassment	ACS Trust and Respect
Appreciation	**.55***	.35*	.37*	-.17*	.24*
Comforting	.34*	**.63***	.24*	-.34*	.22*
Sexual Arousal	-.22*	-.23*	-.12	**.64***	-.23*
Skill Building	.32*	.16*	**.41***	-.17	.26
Trust and Respect	.24*	.22*	.18*	-.31*	**.45***

* Correlation is significant at the .01 level (1-tailed)

In summary, the results offer statistical support for the Revised Athletic Coaching Touch Utility Index (ACTUI-R) to be comprised of five components measuring the degree that observers interpret coaching touch to incite athlete's feelings of appreciation, comfort, sexual arousal, skill building, and trust/respect.

Linear Modeling and Comparisons of Mean Variances (RQ1-RQ8)

Touch Conditions (Type of Touch) and ACTUI-R Components

A main statistical combined effect for each of the four touch conditions on the emergent ACTUI-R component scores was examined by using a between-subjects univariate analysis of variance (ANOVA). More specifically, five ANOVAs were run (one for each ACTUI-R component) to examine if the four touch conditions contributed to significantly different mean scores for the ACTUI-R components. The ANOVA

results indicated that touch type had a moderate statistically significant impact on ACTUI-R appreciation scores ($F(3, 324) = 3.5$, $p<0.05$)), sexual arousal scores ($F(3, 324) = 3.2$, $p<0.05$)), and skill-building scores ($F(3, 324) = 3.3$, $p<0.05$)). For the categories of trust/ respect and comforting, no statistically significant difference between means scores in regards to type of touch was found.

The significant ANOVA results prompted further examination of the data using post hoc Tukey-B analyses to explore the statistical differences between each touch condition (rather than all four touches as a whole) in relation to the ACTUI-R component scores. The Tukey-B analyses indicated that the categories of trust, appreciation, sexual arousal, and skill-building all housed moderately significant patterns between touch conditions (illustrated in Table 8).

TABLE 8

Means Associated with Differences Among the Four Types of Touch

ACTUI-R Components	No Touch	Helping Stretch	Arm Around Shoulder	Arm Around Waist
Appreciation	4.72	4.99	5.14_a	5.15_a
Comforting	4.94	5.02	4.88	5.01
Skill Building	3.70	4.12_a	3.53	3.64
Trust & Respect	3.66	4.14_a	4.10_a	3.96_a
Sexual Arousal	1.81	1.97	2.30_a	2.17

Notes. Means with subscripts across rows are significantly different from those without subscripts ($p<0.05$). Standard deviations across groups were fairly homogenous and harmonic means were used to compare groups of unequal size.

The significant Tukey-B results are as follows: trust scores for the conditions of arm around shoulder, arm around waist and helping stretch were significantly higher than

the no-touch condition; appreciation scores for the conditions of arm around shoulder and arm around waist were significantly higher than the no-touch and helping-stretch conditions; sexual arousal scores were significantly higher for the arm-around-shoulder condition compared to the other three conditions, and for the condition of skill-building, the helping-stretch condition was significantly higher than the other conditions (all significance levels were $p<0.05$).

Touch Conditions within the Gendered Dyads

Further statistics to test the potential effects of the touch conditions within various gendered dyads were garnered by isolating each of the four athlete-coach dyads (female-female, male-male, female-male, and male-female) and testing the statistical effects of the touch conditions on the five ACTUI-R components within each dyad using ANOVAs. Results showed statistically significant differences within the female-athlete and male-coach dyad (FAFC), male-athlete and female-coach dyad (MAFC), and the female-athlete and male-coach dyad (FAMC). In particular within the FAFC dyad the category of skill building showed significantly different mean scores across the four touch conditions ($F(2, 84) = 4.4$, $p<.01$)), in the MAFC dyad mean scores for appreciation differed significantly across the four touch conditions ($F(3, 90) = 4.3$, $p<.01$)), and in the FAMC dyad mean sexual arousal scores varied significantly across the four touch conditions ($F(3, 90) = 4.3$, $p<.01$)).

Post hoc Tukey-B analyses were run for the three gendered dyads in order to assess patterns of significance between the four touch conditions. The Tukey-B results are illustrated in table 9 below.

TABLE 9

Means Associated with Gender Differences across the Four Types of Touch

ACTUI-R Components & Gendered Dyads	No Touch	Helping Stretch	Arm Around Shoulder	Arm Around Waist
Appreciation Male Athlete - Female Coach	4.28	4.06	5.09_a	4.87
Skill Building Female Athlete - Female Coach	3.60	4.38_a	3.04	4.30
Sexual Arousal Female Athlete - Male Coach	1.59	2.12	2.79_a	2.84_a

Notes. Means with subscripts across rows are significantly different from those without subscripts ($p<0.05$). Standard deviations across groups were fairly homogenous and harmonic means were used to compare groups of unequal size.

The significant Tukey-B results are as follows: appreciation scores within the MAFC dyad were significantly higher in the arm around shoulder condition compared to the other three conditions; skill building scores within the FAFC dyad were significantly higher in the helping stretch condition compared to the other three conditions; and sexual arousal scores within the FAMC dyad were significantly higher in the arm around shoulder and arm around waist condition compared to the no touch and stretch conditions (all significance levels were $p<0.05$).

In summary, the univariate ANOVA results indicated that the four touch conditions significantly impacted observers' mean ACTUI-R scores for the categories of trust, appreciation, sexual arousal, and skill building. In addition, observers' responses to the ACTUI-R categories of sexual arousal, skill building, and appreciation across the four touch conditions varied significantly based on the gender of the coaches and athletes being observed.

Chapter Four: Discussion

The revised athletic coaching touch utility index (ACTUI-R) aims to differentiate observers' perceptions of how coach-enacted touch affects athletes' emotional and relational states, and in turn, their performances. The components of the ACTUI-R represent separate aspects of athletes' "selves" and feelings of relatedness to their coach that are theoretically mediated by coach-enacted touch and related to performance outcomes. Therefore, it is expected that each category would be unique and also that categories share consistent and predictable relationships with valid measures of emotional and relational states. This next section will first examine the descriptive results of the demographic section of the ACTUI, then the validity and reliability of the emergent components of the ACTUI-R and their respective items. In addition the impact of the correlations between the ACTUI-R and the workplace touch measurements (WT), Athlete Coachability Scale components (ACS), and the Relational Communication Scale components (RCS) will be explored.

Summary of Descriptive Results

Assessment of the differences between respondent gender, age, year in school, sport participation, and race was not a focus of this preliminary index construction. However, there were several concerns regarding the generalizability of the sample for this study. The first concern was that the number of Caucasian respondents grossly outweighed all other racial backgrounds. Second, the vast majority of respondents were in their first year of college. These and other limitations will be addressed in the limitations and future research section following the discussion.

Summary of Principal-Component and Factor-Analytic Results

Principal-components analysis was used in this study to transform the set of correlated-response variables from the ACTUI into a smaller set of uncorrelated response variables or principal components. The principal components were used to estimate the number of underlying components to best represent the entire data set. A factor analysis was then used to explain the nature of the relationship between the variables by examining the patterns of correlations among the variables and items.

The principal-component analysis revealed that the dimensionality of the original 28 items could be reduced to six components accounting for 61% of the response variance. These six components were then analyzed using factor-analytic procedures, which resulted in partial support for the original seven component model which was based upon the alignment of general touch literature with athlete-coach relational and "self" literature and touch interviews conducted with NCAA athletes and coaches. More specifically, item loadings for the rotated component matrix offered support for five of the original seven proposed components, whereby items for component I reflected trust and respect, items for component II reflected appreciation, items for component III reflected comforting, items for component IV reflected sexual arousal, and items for component V reflected skill building.

Interestingly, component I (trust and respect) was significantly and negatively loaded upon by items intended to reflect dominance. The component was still interpretable, so it may be that for athletes, feelings of trust and respect are inversely related to their feelings of being dominated or controlled by coaches. Certainly, feeling dominated could negatively impact one's sense of trust or respect for another individual.

The theoretical underpinnings behind the index suggested that dominant touch was most likely to be related to relational complementarity and trust/respect was most likely to be related to relational closeness. However, instead of considering the impact of both dominant and trust/respect building touch on relational complementarity and closeness, it may be more efficient to simply consider the notion that trust/respect building touch affects both complementarity and closeness, since that category encompasses dominant touch in an inverse fashion. For these reasons, the category of dominance was removed from the ACTUI-R and integrated into the trust/respect category.

In a similar manner as the trust/respect and dominance components, the components of comforting and building positive emotions showed a great deal of overlap via factor-analytic procedures. In their case, however, they both positively loaded upon the same component. Due to the similarity of their theoretical underpinnings (i.e., both deal with the positive or at-ease emotional states of athletes), it was concluded that their categories were most likely not orthogonal (without overlap) to begin with. As a result, they were combined into component III (comforting), whereby the component of positive emotional states was removed and integrated into component III. The ACTUI-R thus defines and operationalizes comforting in a manner that includes athletes moving toward positive emotional states of being.

Since component six (as reflected by factor-analytic procedures) showed no discernable patterns, it was dropped from the ACTUI-R. In addition, a cursory examination of items from components IV (sexually arousing) and V (skill-building) resulted in two new items intended to load upon each component. In particular, two items were dropped from the sexually arousing component (items 9 and 26). Items 9 and

26 both used the word "attraction" in them and as a result may have loaded similarly into their own factor, independent of the sexual- arousal factor. Two new items that focus more on sexually arousing feelings were generated to replace items 9 and 26. In terms of component V (skill-building), items 8 and 10 did not load upon the category of skill-building and were thought to be too general in their wording. They were modified to more specifically address the idea of skill-building in athletics (see appendix A for a comparison of the revised ACTUI-R items and original ACTUI items).

The dimensions of coach-enacted touch utility were partially supported, as the five emergent components either came directly from the original proposed components or integrated the original components together. The five emergent components accounted for 57.2% of the response variance and integrated dimensions of all the original seven proposed categories.

The final 23-item scale (ACTUI-R) consists of the following components: trust/respect building (4 items), showing appreciation (4 items), comforting (5 items), sexually arousing (4 items), and skill-building (4 items). Figure 2 illustrates the emergent conceptual model of the ACTUI-R.

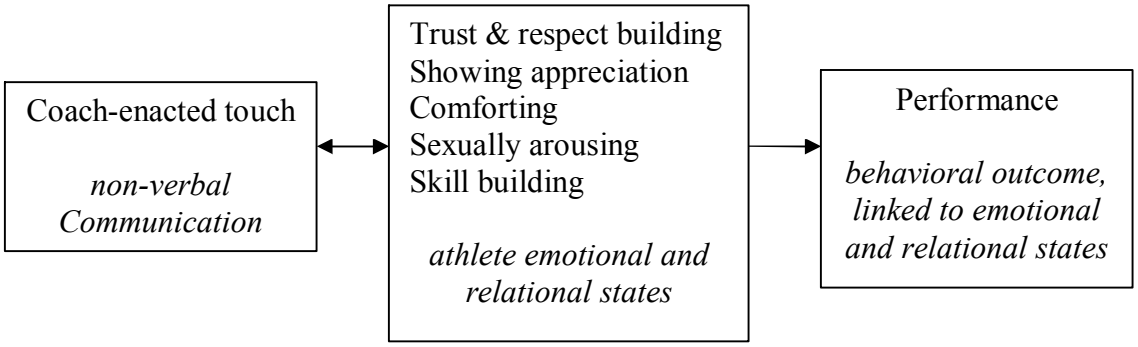

Figure 2 ACTUI-R Conceptual Model

Validity of the ACTUI-R

One form of validity evidence stems from demonstrating internal consistency of item responses from an index (Messick, 1989). The average Cronbach alpha estimate for the ACTUI-R components was .73 (overall scale alpha), which indicates that the instrument as a whole was shown to have adequate estimates of internal consistency.

Another common form of validity evidence for a new index and construct involves an assessment of relationships between the construct of interest (in this case scores on the ACTUI-R) and other established constructs and/or known behavioral indicators (Embrestson, 1983; Messick, 1989). The ACTUI-R showed multiple significant correlations with valid relational and emotional communication measures. Correlations ranged from weak to moderate. The following section will examine the moderate correlations.

The Relational Communication Scale (RCS) component of immediacy/affection describes the involvement of a person in a conversation or interaction (Rubin, Palmgreen, & Sypher, 1994). The moderate correlation between immediacy/affection and the ACTUI-R component of showing appreciation suggests that the component of appreciation not only garners an assessment of a relational communication element, but also reflects a degree of sincerity or involvement communicated in coach-athlete touch episodes.

Composure, according to the RCS represents how calm or poised an individual is during a communication episode (Rubin, Palmgreen, & Sypher, 1994). The ACTUI-R component of comforting showed a moderate correlation with the RCS component of composure, which may be an indicator that the comforting component reflects how

calming a touch episode is for athletes. However, since two items from this category were modified after testing, this correlation should be observed with caution.

An appropriate and significant correlation was revealed between the ACTUI-R component of sexual arousal and the combined categories of sexual harassment and inappropriate touch generated by Lee & Gurerro (2001) to study touch in the workplace (WT). Lee & Gurerro's (2001) measures were intended to reflect how sexual and how appropriate touch between individuals was perceived in a professional context. The moderate correlation between the (WT) component sexual harassment/inappropriate touch and ACTUI-R component of sexual arousal provides evidence that the sexual-arousal component reflects athletes' feelings of being touched inappropriately or sexually by their coaches.

The Athletic Coachability Scale (ACS) component of openness to learn represents the willingness of athletes to assimilate the instructional information presented to them by their coaches (Giacobbi, 2000). A moderate correlation was found between a modified version of the ACS component openness to learn and the ACTUI-R component of skill-building. This relationship suggests that the component of skill-building reflects skill-related information or knowledge that coaches convey to athletes via touch episodes. It should be noted that the original component of openness to learn was modified by changing the wording of items to focus less on how apt athletes are to accept instruction and instead on simply *if* they feel they are being instructed. The modified component garnered an acceptable alpha reliability (alpha=.68) but may be less bound theoretically to the original literature presented by Giacobbi (2000). In addition, the ACTUI-R component of skill building had two modified items after testing.

Lastly, the ACTUI-R component of trust/respect was most significantly (moderately) correlated with the ACS component of trust/respect. The ACS measure of trust and respect according to Giacobbi (2000) measures the trust in and respect that an athlete has for a coach and her or his training processes. Thus, this correlation was appropriate and indicates that the ACTUI-R component of trust/respect is indeed a measure that focuses on the relational trust between athletes and coaches within sporting or teaching contexts.

In summary, the moderate relationships between the comparison scales and the emergent ACTUI-R components suggest that the index is generally well focused on the intended constructs of interest. In addition, the index showed moderate to high internal consistency, which supports the correlation findings. Lastly, the measurement instrument showed promising reliability results and has potential to consistently represent the constructs of interest in future studies.

Since the index showed adequate levels of reliability and validity, it was used to test the proposed research questions RQ1-RQ8. RQ3 and RQ7 were based upon the original ACTUI components of dominance and positive emotional states. Their integration into the categories of trust/respect and comforting were discussed in the results section and therefore, those specific research questions will not be discussed in this section. The influence of both dominance and positive emotional states will be discussed in their respective new categories.

The following section will examine observers' interpretations of each of the five ACTUI-R categories (skill building, sexual arousal, comforting, trust, and appreciation)

across the three touch and no touch conditions. Limitations and future avenues of research will be mentioned briefly and discussed in greater detail in the following section.

Effects of Type of Touch on Skill Building Interpretations (RQ1)

RQ1 considers how observers interpret touch episodes between coaches and athletes in terms of how much the touch contributes to enhancing an athlete's sport-related knowledge or skill. Observers interpreted coaches helping athletes stretch as showing the highest levels of skill building when compared to the no-touch, arm-around-shoulder, and arm-around-waist touch episodes. This finding helps support the idea that the ACTUI-R category of skill building is a measure that targets how much a touch contributes to helping an athlete learn a skill vicariously. A type of touch theorized to show more skill building was interpreted by this group of observers as indeed showing more skill building than the other types of touch.

What adds to this finding is the idea that helping an athlete stretch is a less direct way of teaching an athlete an actual skill when compared to a coach actually using touch to show an athlete how to perform a particular movement or technique. This indicates that observers were able to perceive a subtle impact that modeling-related touch communication has on how an athlete assimilates and learns skills in athletics and that the ACTUI-R is sensitive enough to account for it.

Effects of Type of Touch on Sexual Arousal Interpretations (RQ2)

Research question two addressed the degree of sexual arousal that observers interpreted athletes feeling during touch interactions. The findings indicated that when coaches put their arms around athletes' shoulders, observers perceived the highest degrees of sexual arousal, in comparison to coaches placing their arms around athletes'

waists, helping them stretch, and not touching them at all. In contrast, previous research from Lee and Guerrero (2000) that examined touch between co-workers found that observers perceived an arm around the waist as more sexually harassing than an arm around the shoulder.

Three explanations were developed as to why there was a discrepancy between the two studies. The first has to do with the actual stimulus videos depicting the athlete-coach arm-around-the-shoulder touch and arm-around-the-waist touch. In these videos, the coaches from each dyad visibly place their hand very close and almost onto the neck of the athletes during the shoulder-touch condition. A significant body of literature suggests that face touching is considered one of the most intimate forms of touch between individuals (Burgoon, 1991; Hertenstein et al., 2006; Lee & Guerrero, 2001) and it may be plausible that because the shoulder-touch condition involved touch that was unusually near the face, observer's scores for sexual arousal were skewed slightly. Also, in the present study, sexual arousal was measured as opposed to sexual harassment (in the workplace study), and although these two categories share a lot in common, their subtle differences may influence observers' interpretations of how each of them arise during interactions that involve touch. Although someone might find a certain type of touch to be more sexually arousing than another (such as a touch close to the face), they may not classify it as being more sexually harassing (such as an arm around the waist). Another possible explanation for the differences between the two studies is that touch norms in co-worker to co-worker interactions may be very different to the touch norms in coach-to-athlete interactions, and this may be affecting perceptions of sexual touch.

Scores for the category of sexual arousal were low compared to the other four ACTUI-R components, in part because none of the touch conditions were excessively sexual in nature. However, the fact that observers interpreted significant differences between touch conditions in terms of sexual arousal when they viewed coaches touching athletes under somewhat "normal," non-sexual conditions, suggests that very brief touches by coaches may trigger interpretations of sexual arousal for onlookers and potentially athletes.

Effects of Type of Touch on Comforting Interpretations (RQ4)

RQ4 looked to examine how comforting observers perceived the four different kinds of touches (including no touch) to be. The ACTUI-R category of comforting did not show any significant response variance across the three touch conditions and the no touch condition. It is possible that observers interpreted the videos holistically and considered the mere act of a coach taking time to talk to an athlete before a big event to be comforting in and of itself. It may also be that none of the touch conditions (including no touch) are more comforting than the others. Integrating a presumably high-comfort type of touch like hugging might help to draw out differences in observer's perceptions of comforting touch between athletes and coaches.

Effects of Type of Touch on Trust Interpretations (RQ5)

In response to RQ5, it was found that various types of touch led to different interpretations of trust and respect in coach-enacted touch episodes. Helping an athlete stretch, putting an arm around an athlete's shoulder and putting an arm around an athlete's waist were all judged as showing more trust and respect than not touching an athlete at all. A general willingness to enact any of the three types of touch in this study

was interpreted as needing and/or building some degree of trust between the athletes and coaches.

It is important to note that the videos did not include any of the athletes backing away or shying away from any of the types of touch enacted by coaches; as a result, observers may have taken to the idea that the athletes accepted the types of touch given by their coaches. In addition, scores between the no-touch condition and the other three touch conditions were similar and may indicate that relational trust and respect conveyed via touch is subtle. Although none of the touch conditions in this study were overly dominant, it would be useful in future studies to examine observer's interpretations of trust/respect during very dominant touch episodes to back the contention that dominant touch shares an opposite relationship with trust and respect-building touch.

Effects of Type of Touch on Appreciation Interpretations (RQ6)

The sixth research question targets observers' interpretations regarding the impact of coaching touch on athletes' feelings of being appreciated. The findings illustrated that when coaches put their arms around athletes' waists or on their shoulders, observers interpreted them as showing more appreciation when compared to helping them stretch or not touching them at all. The category of appreciation, according to the literature review, centers on the idea of building commitment relationally by showing another person that you value and understand them along with their efforts and achievements. In this study observers perceived that coaching touch varied in its capacity to express appreciation to athletes.

As is the case with the other four ACTUI-R component findings, speculating on a direct relationship between appreciative coaching touch and athlete performance at this

stage leaves many potential influences unaccounted for. What is most pertinent to extract from the following findings is that various forms of coach-enacted touch significantly influenced observers' interpretations of the appreciative, trusting, sexually arousing, comforting, and skill-building messages conveyed to athletes during touch episodes where all other factors were held relatively constant.

Touch Conditions within the Gendered Dyads (RQ8)

Research question eight targeted the impact of athlete and coach gender within the touch conditions on observer's perceptions of the five ACTUI-R components. In instances where observers viewed male coaches putting their arms around female athlete's shoulders and reaching around their waists, significantly higher levels of sexual arousal were perceived. Observers across the other three dyads did not interpret any significant differences in terms of sexual arousal between the three types of touch and no-touch scenarios. This finding supports qualitative research by Miller, Franken, and Kiefer (2007) whereby NCAA male coaches expressed trepidation toward interacting touch with female athletes for fear of what "others" might perceive. Their consternations articulated in the interviews may be well-founded, as the trends from this study illustrated that even touches of a presumably nonsexual nature can be interpreted as significantly more sexually arousing than others when male coaches are viewed touching female athletes.

Within the male-athlete and female-coach dyad (MAFC), observers perceived greater levels of appreciation when they viewed a coach placing her arm around a male athlete's shoulder. Strictly in terms of gender, the findings from this dyad indicate that it may be easier for observers to perceive touch between a female coach and male athlete as

more appreciative. This may be a result of two sport related touch perceptions. First, as stated in the previous paragraph, there is a presumption that male coach-enacted-touch, with female athletes, entails sexual arousal. Second, NCAA female athletes have indicated through phenomenological interviews that they sometimes feel obligated to reciprocate appreciative-type touch (Miller, Franken & Kiefer, 2008). Since both male coaches and female athletes have socially charged undercurrents associated with displays of appreciation, it may be the case that it is easier for observers to more readily perceive degrees of affection across touch conditions when it is displayed by a female coach toward a male athlete. However, speculation of this nature requires not only more research, but different experimental designs to support these findings and interpretations.

Finally, within the female-athlete and female-coach dyad (FAFC), observers indicated that skill building was significantly higher when coaches helped athletes stretch as opposed to not touching them, putting their arm around the athlete's waist, or putting their arm around the athlete's shoulder. Research by Miller, Franken and Kiefer (2008) addresses the possible skill building discrepancy between the FAFC dyad and FAMC dyad through a quote by an NCAA female athlete, who states, "it's funny, I'll be trying to learn something new and it'll be obvious that he needs to touch me to show me how to do it, but I almost have to say, hey you can touch me before he'll do it" (p. 21). This quote indicates that gender may influence how coaches use, and athletes perceive instrumental touch within a male coach and female athlete dyad. However, little research exists to explain why skill building touch was not perceived as significantly within the MCMA and FAMC dyads. More research is necessary to explain the influence of gender on skill building touch.

Discussion Summary

Results from this study support past findings (i.e. Burgoon, 1991; Lee & Guerrero, 2000) that illustrate the potential of a single touch to affect observers' interpretations of relational and emotional messages communicated between individuals (in this case coaches and athletes) and for gender (of coaches and athletes) to mediate those interpretations. The ACTUI-R essentially reflects (via five components) an overall performance utility of any touch being examined. Touch that entails greater appreciation, comforting, skill-building, and showing of trust and respect is purported to enhance overall utility, while touch that increases sexual arousal theoretically detracts from overall utility. It is important to understand however, that mean differences for total ACTUI-R scores were not calculated across the four touch conditions because no model exists for determining the strength of each component to weigh in on overall touch utility in any given context. Therefore, the utility information in this index rests in the levels of each of the five ACTUI-R components individually (in a given context), rather than in their cumulative effect.

Chapter Five: Limitations and Future Research

The limitations of this study coupled with the interpretations of the results indicate several avenues for future research. The first limitation is that the ACTUI-R is designed to examine the utility of coach-enacted touch within the framework of athlete performances only. Although the index makes a broad sweep of relational and emotional states by focusing on performance, it lacks the capacity to specifically represent how touch might influence other important aspects of athletic training such as athlete motivation. As a result, it may be beneficial to further explore the impact of coaching touch in other communicative and/or psychological paradigms.

Another important limitation of the present study stems from the demographic characteristics of the respondent pool that was used. In particular, the majority of respondents were Caucasian, first-year college students. This group of observers did house an eclectic blend of non-athletes and athletes from various sports and was considered a good group to observe and interpret touch interactions in a college sporting context. However, future research concerning touch in athletics would benefit from casting a more culturally diverse net. In particular, as Miller, Franken, and Kiefer (2007) point out, individual sports themselves may house unique touch cultures and norms and should be examined in isolation. For instance, cheerleading coaches, when helping athletes learn stunts, are sometimes required to touch athletes in areas of the body that would be considered inappropriate in other sports. Touch norms like this can quite possibly become ingrained in various sports and affect athletes' and coaches' perceptions of when to enact touch and what varying types of touch mean. The same may hold true for athletes and coaches of differing ethnic or racial backgrounds, and therefore also

bares investigation. The ACTUI-R could prove useful for, and benefit from, examining sport-specific and general cultural perceptions of touch utility in athletics.

This study utilized three different touch conditions and a no-touch condition in order to test for differences in observers' perceptions of how athletes might feel about touch received by a coach. The types of touch used in this study were somewhat similar and because observers were able to perceive differences between the conditions, the touch similarity actually helped to back the notion that even subtle differences in types of touch were discernable. In addition, as Bugoon (1991) indicates, touch that is perceived as sexual harassment is often only subtly different from touch that is not perceived as sexual harassment. The study would have benefited from using not only more types of touch, but also utilizing more drastically discernable types of touch. For example, the study did not use any types of touch that may have been construed as overly dominant, sexually arousing, or comforting. Future studies should integrate different and more drastic types of touch in order to probe the full spectrum of the ACTUI-R and to explore such topics as sexually harassing touch in athletics.

As mentioned in the discussion, the ACTUI-R is not able to generate an additive score to represent the overall utility of a touch, and thus requires those using it to interpret the ACTUI-R components individually. Future qualitative research investigating the relationships between the five components of the ACTUI-R and examining their combined impact on athletes and their performances could begin the processes of working toward a cumulative model of the effects of coach-enacted touch. A cumulative model could then be tested using structural equation modeling to determine statistically the accuracy of proposed relationships between the ACTUI-R variables and

performance. Although it is not imperative to understand the relationships between the ACTUI-R variables, understanding them could help to provide important insight. For example, some types of touch may be both highly sexually arousing and highly skill-building. It would be helpful to understand how degrees of skill building and sexual arousal impact trust/respect, comforting, appreciation, and in turn performance in order to determine acceptable levels of each. In other words, a touch that might be perceived as high in sexual arousal (such as helping a cheerleader perform a stunt by placing a hand on their inner thigh) may also be perceived as very high in skil- building and thus still carry with it an acceptable degree of utility based on the other three variables. Modeling and defining these relationships better would enable researchers to understand more clearly how touch can be used effectively by coaches to positively impact athlete performances.

More research is needed in the way of gendered studies pertaining to touch in athletics. The trends concerning gender differences in this study did not provide enough evidence or insight into how the gender of coaches and athletes mediates perceptions of touch. Interviews with NCAA coaches of both genders have indicated that gender does significantly influence the way they think about touch (Miller, Franken, & Kiefer, 2007). For example, male coaches indicated that they experienced dissonance when female athletes initiated touch with them too often and were less inclined to enact touch due to the fear of what others might perceive. In addition to exploring the impact of gender during coach-enacted touch episodes, future research will also benefit by targeting the impact of athlete-enacted touch across gendered dyads.

Lastly, while the ACTUI-R did garner acceptable levels of validity and reliability, it is in the very early stages of development and for that reason should be thought of as an

index to explore coach-enacted touch in athletics, rather than an instrument that accurately reflects the actual utility of touch in sports. Correlation data and ANOVA results were promising for the ACTUI-R; however, the strength of significance for many of the findings was only moderate. This indicates that more work still needs to be done to refine the ACTUI-R both theoretically and psychometrically.

Conclusion

The results from this study offer support for a five-component conceptualization of the performance utility of coach-enacted touch, whereby utility is characterized by how much coach-enacted touch builds trust and respect, shows appreciation, helps build skills, comforts, and limits sexual arousal. The instrument used to measure the aforesaid five components (the Athletic Coaching Touch Utility Index) showed adequate levels of validity and reliability. This index was used to examine observers' interpretations of four different types of touch (and no touch) viewed in web videos. The videos and ACTUI-R survey were designed to not cue observers in to the fact that touch was the construct of interest. The video script, along with all other conditions, was kept constant so as to make touch the most likely proponent of variation in survey responses. Observers indicated that helping an athlete stretch showed the most skill building, while placing an arm around an athlete's shoulder showed the highest degree of sexual arousal. Trust and respect was interpreted as being highest when coaches helped athletes stretch or placed their hands on their shoulders or waists, and lowest when coaches didn't touch athletes at all. Observers reported that more appreciation was shown through coaches putting their hands on athletes' shoulders and waists as opposed to helping them stretch or not touching them at all. Lastly, the gender of coaches and athletes in the videos appeared to

mediate observers' interpretations of sexual arousal levels during touch episodes. As an example, observers indicated that sexual arousal between a male coach and female athlete was highest when a coach put his arm around the athlete's shoulder or waist, whereas in all other dyads, none of the types of touch (including no touch) were perceived to be significantly more sexually arousing than the others.

The findings suggest that coach-enacted touch does indeed influence the emotional and relational (performance-associated) messages exchanged between coaches and athletes. In addition, gender along with type of touch may also influence how and what messages are conveyed.

Moreover, the ACTUI-R, an index designed to reflect the performance utility of touch enacted by coaches, shows promise as an instrument to examine coaching touch in a sporting context.

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Appendix A

Athletic Coaching Touch Utility Index (ACTUI)

Appreciation 1) This athlete feels important. 2) The coach is showing that he cares for the athlete. 3) This coach appreciates the athlete. 4) The athlete pictured feels that her coach values her. Comforting 1) The coach is comforting the athlete. 2) The athlete in this video is relaxed. **3) The coach is making the athlete nervous.** **4) The athlete feels tense.** Skill Building 1) This athlete is being taught a specific skill. 2) The athlete above is learning a sports strategy. **3) The athlete is not being given any sport instruction.** 4) The coach is trying to teach the athlete something sport related. Emotionally Positive 1) The coach is making the athlete feel happy. **2) The coach is making the athlete feel sad.** **3) This athlete is depressed.** 4) This athlete is content. Showing Trust/Respect 1) The athlete trusts her coach. 2) This athlete respects her coach. 3) This athlete has confidence in her coach. **4) The athlete does not value her coach's judgment.** Sexual Arousal 1) This athlete thinks the coach is sexually attracted to her. 2) The coach is acting in a sexual way toward the athlete. 3) The athlete thinks the coach is trying to be romantic. 4) This coach is attracted to the athlete. Dominance 1) The athlete feels imposed upon. 2) The athlete feels trapped. 3) This coach is making the athlete feel overpowered. 4) The coach is acting more dominant than the athlete.	Test Item Order 1. This athlete feels important 2. The athlete feels imposed upon 3. The coach is acting in a sexual way toward the athlete 4. This athlete is being taught a specific skill 5. The athlete above is learning a sports strategy 6. The coach is making the athlete feel happy **7. The coach is making the athlete feel sad** **8. The athlete is not being given any sport instruction** **9.** This athlete thinks the coach is sexually attracted to her **10.** The coach is trying to teach the athlete something sport related **11.** The athlete feels trapped **12.** The athlete trusts her coach **13.** This coach is making the athlete feel overpowered **14.** The coach is comforting the athlete **15. This athlete is depressed** **16.** The athlete in this video is relaxed. **17.** The coach is showing that he cares for the athlete **18.** The athlete thinks the coach is trying to be romantic **19.** This athlete respects her coach **20.** This athlete has confidence in her coach **21.** This athlete feels important **22.** The athlete pictured feels that her coach values her **23. The coach is making the athlete nervous** **24.** The coach is acting more dominant than the athlete **25. The athlete does not value her coach's judgment** **26.** This coach is attracted to the athlete **27. The athlete feels tense** **28.** This athlete is content ** Bold indicates reverse ordered items.

Revised Athletic Coaching Touch Utility Index (ACTUI-R)

	Test Item Order
Showing Trust/Respect The athlete trusts her coach **The athlete does not value her coach's judgment** **This coach is making the athlete feel overpowered** **The athlete feels trapped** Appreciation This athlete feels important The coach is showing that he cares for the athlete The athlete pictured feels that her coach values her This coach appreciates the athlete Comforting & Relaxing The coach is making the athlete feel happy **This athlete is depressed** The athlete in this video is relaxed. **The athlete feels tense** This athlete is content Sexual Arousal This athlete thinks the coach is being sexual* The athlete thinks the coach is trying to be romantic The coach is acting in a sexual way toward the athlete This coach is interacting sexually* Skill Building This athlete is being taught a specific skill The athlete above is learning a sports strategy The coach is trying to teach the athlete a skill* **The athlete is not being given sporting instruction*** ** An asterisk (*) indicates a modified item. ** Bold indicates reverse ordered items.	1. This athlete feels important 2. The athlete feels imposed upon 3. The coach is acting in a sexual way toward the athlete 4. This athlete is being taught a specific skill 5. The athlete above is learning a sports strategy 6. The coach is making the athlete feel happy **7. The athlete is not being given sporting instruction*** **8.** This athlete thinks the coach is being sexual* **9.** The coach is trying to teach the athlete a skill* **10.** The athlete trusts her coach **11.** This coach is making the athlete feel overpowered **12. The athlete feels trapped** **13. This athlete is depressed** **14.** The athlete in this video is relaxed. **15.** The coach is showing that he cares for the athlete **16.** The athlete thinks the coach is trying to be romantic **17.** This athlete feels important **18.** The athlete pictured feels that her coach values her **19. The coach is making the athlete nervous** **20.** The coach is acting more dominant than the athlete **21. The athlete does not value her coach's judgment** **22.** This coach is interacting sexually* **23. The athlete feels tense** **24.** This athlete is content

This scale is measured on a 7-point Likert-type scale

Example:

1	2	3	4	5	6	7
Strongly Agree	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Disagree	Strongly Disagree

Relational Communication Scale
(Burgoon & Hale, 1987)

Affection
The coach was intensely involved in the conversation
The coach was attracted to the athlete
The coach communicated coldness rather than warmth
The athlete felt that the coach wants a deeper relationship
The athlete felt that the coach was bored

Receptivity
The coach was sincere
The coach was interested in talking with the athlete
The athlete felt her coach was honest
The athlete felt her coach was willing to listen
The coach wanted the athlete to trust him

Composure
The athlete felt very tense talking to her coach
The athlete was calm and poised
The athlete seemed nervous in her coach's presence
The coach made the athlete feel very relaxed talking with him
The athlete was comfortable interacting with the coach

Dominance
The coach was attempting to persuade the athlete
The coach tried to control the interaction
The coach had the upper hand in the conversation
The athlete felt like the coach tried to win favor from her
The athlete felt like the coach was trying to influence her.

** Bold indicates reverse ordered items.

Five questions were selected from the four categories based on Burgoon & Hales (1987) suggestion to select at least four items from each category.

Athletic Coachability Scale
(Giacobbi, 2000)

Openness to Learn
This athlete will try to remember all of the specific strategies taught to her by her coach
The athlete is likely to try and learn the history and rules of her sport
The athlete will want to make changes based on her conversation with the coach
This interaction will not help the athlete remember techniques for her sport

Trust and Respect
This athlete respects her coach completely and without question
This athlete places all her trust in what this coach says and does.

** Bold indicates reverse ordered item.

Types of Touch in Cross-Sex Relationships Between Coworkers:
Perceptions of Relational and Emotional Messages, Inappropriateness,
and Sexual Harassment
(Lee & Gurerro, 2001)

Sexual Harassment
The coach was sexually harassing the athlete
The athlete felt that the interaction was sexual harassment

Inappropriate Touch
The coach's behavior was inappropriate
The athlete felt that the coach was not acting appropriately

Appendix B

Item Statistics

	Mean	Std. Deviation	N
a	4.83	1.254	324
d	4.12	1.604	324
sx	2.13	1.387	324
sb	3.12	1.548	324
sb 2	4.37	1.628	324
ep	5.73	1.124	324
ep 2	3.88	1.173	324
sb 3	5.03	1.397	324
sx 2	3.49	1.889	324
sb 4	3.00	1.666	324
d 2	3.43	1.543	324
t	4.07	1.684	324
d 3	4.11	1.523	324
c	3.76	1.527	324
ep 3	5.16	1.355	324
c 2	4.77	1.496	324
a 2	5.42	1.152	324
sx 3	2.02	1.187	324
t 2	5.27	1.097	324
t 3	4.85	1.234	324
a 3	5.21	1.204	324
a 4	4.57	1.455	324
c 3	3.63	1.499	324
d 4	3.70	1.645	324
t 4	3.67	1.874	324
sx 4	3.58	1.855	324
c 4	4.73	1.494	324
ep 4	4.41	1.542	324

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.857	20.917	20.917	5.857	20.917	20.917	5.651	20.182	20.182
2	5.288	18.887	39.804	5.288	18.887	39.804	4.239	15.139	35.321
3	2.076	7.415	47.219	2.076	7.415	47.219	2.441	8.718	44.039
4	1.551	5.538	52.757	1.551	5.538	52.757	2.024	7.228	51.267
5	1.351	4.826	57.583	1.351	4.826	57.583	1.657	5.918	57.185
6	1.032	3.684	61.267	1.032	3.684	61.267	1.143	4.082	61.267
7	.963	3.439	64.706						
8	.802	2.865	67.570						
9	.768	2.744	70.315						
10	.754	2.694	73.008						
11	.684	2.443	75.451						
12	.661	2.361	77.812						
13	.610	2.178	79.990						
14	.595	2.127	82.116						
15	.553	1.976	84.093						
16	.510	1.820	85.912						
17	.492	1.759	87.671						
18	.482	1.722	89.393						
19	.405	1.445	90.838						
20	.385	1.377	92.214						
21	.373	1.332	93.547						
22	.335	1.196	94.742						
23	.310	1.107	95.850						
24	.282	1.008	96.858						
25	.259	.926	97.784						
26	.214	.765	98.549						
27	.208	.744	99.293						
28	.198	.707	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
a	-.031	.691	.185	.048	.061	.026
d	-.019	.021	-.406	.371	-.132	.012
sx	.076	-.009	-.126	.831	-.085	.043
sb	.090	.272	-.016	.033	.745	-.129
sb 2	-.025	.145	.122	-.167	.780	.166
ep	-.012	.361	.454	-.260	-.143	.116
ep 2	.078	.573	.254	.017	.088	.103
sb 3	-.125	.503	.121	-.102	.215	.406
sx 2	-.778	-.088	.063	.208	.171	.159
sb 4	.666	.131	-.044	.181	.342	.134
d 2	-.603	.066	-.075	.169	.333	.010
t	.802	.149	-.107	.196	.026	-.020
d 3	-.798	.190	-.218	.040	-.032	-.078
c	.592	-.068	.179	.221	.017	.447
ep 3	.023	.404	.513	-.229	-.125	.110
c 2	-.088	.172	.676	-.251	.139	.349
a 2	-.035	.582	-.084	-.098	-.022	.553
sx 3	.003	-.206	-.080	.750	.044	-.088
t 2	.009	.641	.102	-.207	.108	-.186
t 3	.030	.795	.117	-.097	.081	-.064
a 3	.034	.780	.094	-.013	.068	.139
a 4	.306	.624	.053	.021	.199	.001
c 3	.710	.014	-.237	.098	.018	-.019
d 4	-.828	-.007	-.150	.042	.000	.103
t 4	.809	.180	.036	.217	.083	-.080
sx 4	-.752	-.013	.305	.293	-.134	-.078
c 4	-.181	.402	.610	.057	.020	-.028
ep 4	.148	.228	.713	.073	.084	-.358

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Components and Labels

Component	Initial Eigenvalues			
	Total	% of Variance	Cumulative %	Total
1 Trust & Respect	5.857	20.917	20.917	5.857
2 Appreciation	5.288	18.887	39.804	5.288
3 Comforting & Relaxing	2.076	7.415	47.219	2.076
4 Sexual Arousal	1.551	5.538	52.757	1.551
5 Skill Building	1.351	4.826	57.583	1.351
6	1.032	3.684	61.267	1.032