

SPORT SPECIALIZATION STATUS AND ATHLETE BURNOUT, ENGAGEMENT, AND MOTIVATION

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Early sport specialization, in which athletes compete in one sport nearly year round at a young age, is common in today's athletic culture. Several national sport organizations advise against early specialization due to its potentially increasing the risk of burnout and maladaptive motivation outcomes (Côté et al., 2009; CSFL, 2016; NASPE, 2010). However, the few empirical studies that have examined the association of specialization with burnout, engagement, or motivation have found mixed results (Gould et al., 1996; Russell & Symonds, 2015; Strachan et al., 2009). This might be in part due to researchers not differentiating between early and late specialization. Theoretically, early specialization creates greater risk of maladaptive outcomes compared to late specialization based on the Developmental Model of Sport Participation (Cote & Vierimaa, 2014). **Purpose:** This study examined if differences existed between early, late and non-specializers on burnout, engagement, and motivation. **Methods:** Two samples of athletes participated in this study. The first sample was comprised of 276 female club soccer players with an average age of 14.94 (SD = 1.39). There were 112 early, 22 late, and 113 non-specializers. The second sample consisted of 106 wrestlers and swimmers (70 male and 36 female) with an average age of 15.67 (1.38) years. Of the sample, 30 were early, 25 were late, and 51 were non-specializers. Athletes completed a sport-specific demographic survey that included questions assessing their sport involvement and specialization status. In addition, athletes completed the Athlete Burnout Questionnaire (Raedeke & Smith, 2001), the Athlete Engagement Questionnaire

(Lonsdale et al., 2007b), and the Behavioral Regulation in Sport Questionnaire (Lonsdale, et al., 2008). A series of one-way ANOVAs were used to examine differences between early (i.e., 13 or younger), late, and non-specializers on burnout, engagement, and motivation. Cohen's d was used to measure effect size. **Results:** For the soccer athletes, ANOVAs found no significant differences between specialization groups and burnout ($p < .05$). For the engagement subscales, the three groups did not differ on any subscale other than vigor ($p = .04$) with early specializers having higher scores ($M = 4.56$, $SD = .52$) than late specializers ($M = 4.36$, $SD = .66$). No differences existed between specialization groups on self-determined motivation. They did, however, differ on non self-determined motivation with non-specializers reporting significantly higher introjected (Cohen $d = .37$) and external regulation (Cohen $d = .42$) than early specializers. For the second sample, ANOVA results revealed no significant differences between specialization groups on burnout, engagement, or motivation subscales at $p < .05$ with effect sizes all small in magnitude. **Conclusions:** In contrast to position statements advising against specialization, findings from the current study do not support that early specialization is associated with increased risk of burnout, lower engagement, and maladaptive motivation. However, it is important to recognize that the current samples were young in age and the impact of specialization may not occur later in athletes' sport careers. In addition, athletes experiencing maladaptive outcomes may have discontinued sport and thus not have been sampled. Finally, rather than being seasonal athletes, the non-specializers were equally involved in the amount of time they devoted to their primary sport as the early specializers which may have impacted results.

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Chapter 1. Introduction

One issue that has received a lot of recognition in youth sport is early specialization which is comprised of four different parameters: (1) an early start age, (2) involvement in one sport instead of playing many different ones, (3) emphasis on high intensity training/practice, and (4) involvement in competition (Baker, Cobley, & Fraser-Thomas, 2009). Although the prevalence of sport specialization has not received much empirical investigation, it is believed to be on the rise over the past couple of decades (e.g., Côté, Lidor & Hackfort, 2009; Fraser-Thomas, Côté & Deakin, 2005; Hedstrom & Gould, 2004). In a survey study of 152 high school athletic directors, 70% believed that early specialization was increasing (Hill & Simons, 1989). While it is believed that specialization is on the rise, the exact number of athletes who specialize at a young age is currently unknown.

Associated with the belief that athletes are specializing at young ages, there have been ongoing debates within the sport community on the pros and cons of sport specialization. Researchers have pointed out some potential benefit of early specialization including that it can facilitate skill development and can be the foundation of success in sports (Baker & Robertson-Wilson, 2003; Law, Côté & Ericsson, 2007). For example, a common belief is that children need to spend 10 years or 10,000 hours in deliberate practice, which can be facilitated by sport specialization (Ericsson, Krampe, & Tesch-Romer, 1993). Parents and coaches may encourage early specialization to provide a competitive advantage and as a route for a young child to acquire an athletic scholarship or to advance in competitive level (Gould, 2010). Critics suggest that early specialization can have a negative impact on athlete development, motivation, and well-being (Côté, et al., 2009; Gould, 2010; Wiersma, 2000). They also suggest that diverse sport experiences by participating in multiple sports will facilitate motor skill development and

provide more problem-solving experiences for athletes than those who specialize (Côté, et al., 2009; Gould, 2010; Wiersma, 2000).

Given the potential impact on athlete skill development and well-being, national sport organizations have developed position statements on specialization (Côté et al., 2009; CSFL, 2016; NASPE, 2010). Within the position statements, it is commonly recognized that early specialization is needed in certain sports, such as gymnastics and figure skating, where peak performance is achieved in middle to late adolescence (Carson, Rian, Landers & Bonnie, 2010; Côté et al., 2009; CSFL, 2016; NASPE, 2010). Although early specialization in sports where top level performance occurs at young ages has advantages, national organizations caution against early specialization in other sports referred to as late specializing sports, such as soccer and swimming, where peak performance is achieved in adulthood (Côté et al., 2009; CSFL, 2016; NASPE, 2010). These position papers note that early specialization in these sports can hinder the development of fundamental skills, hinder positive youth development, lead to overuse injuries and overtraining, result in maladaptive motivational outcomes and burnout, ultimately cause youth to discontinue sport (ISSP; Côté et al., 2009). It is also noted that success at young ages does not predict later sport success. Given that, it is recommended that athletes should sample a variety of sports (Côté et al., 2009).

Although sport specialization is commonly discussed in both the media and sport organization position statements, the empirical data on specialization is not well developed as few studies have examined this issue. Given that, the impact of specialization on athletes is not well understood. Thus, research is needed that examines whether specialization impacts athlete well-being, especially considering the trend toward early specialization at young ages.

One framework that has been used as the foundation for understanding sport specialization is the Developmental Model of Sports Participation (DMSP)(Côté, Baker & Abernethy, 2007; 2003; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002). This model was first developed through research on the family dynamics of talented children athletes throughout their sport development (Côté, 1999; Côté & Hay, 2002). The DMSP was developed using qualitative interviews from elite, junior, rowing and athletes to identify three sport specific developmental stages. It has been further refined over the years and presents variables and concepts that offer guidance in structuring sport to facilitate athlete development at each stage (Côté & Fraser-Thomas, 2007; Côté, et al., 2007; 2003 and Côté & Hay, 2002).

The DMSP is comprised of three stages: sampling, specializing, and investment years (Côté, 1999, Côté et al., 2003, and Côté & Fraser-Thomas, 2007). Each stage varies in the number of sport athletes participate in as well as the balance of deliberate play and practice. For athletes who participate in sports that do not require peak performance at a young age the sampling years are when young children, between the ages of 6 and 12, become interested in sport participation and sample a variety of sports. During this stage, the main emphasis is deliberate play, which is structuring sport experiences to be fun and exciting while developing basic skills (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002). Adults will modify the rules of the sport to be age and skill appropriate with a focus on making sure the sport experiences are fun and exciting. Following the sampling years, athletes enter the specialization years between the ages of 13 and 15 years of age. In this stage there is a balance between deliberate play and deliberate practice while focusing on one or two sports. Unlike deliberate play, deliberate practice activities are not meant to be enjoyable, they are more serious minded and focus on developing sport specific skills to help athletes progress in their sport (Côté, 1999;

Côté & Fraser-Thomas, 2007; Côté & Hay, 2002;). These practices are structured to improve skills in the most efficient way possible, such as focusing more on drills to develop skills specific to that sport. At the age of 16 and older, athletes transition from the specialization into the investment stage. It is here where athletes focus solely on one sport. In contrast to the specialization stage, the athletes go from a balance of deliberate practice and play to a high frequency of deliberate practice and a low frequency of deliberate play (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002).

For sports where peak performance is needed at a young age, the years spent in each stage varies. Early specializers would not enter the sampling stage at all, but rather head straight into the specialization stage between the ages of six and eight. They would then enter the investment years around the age of nine and remain until they no longer participated in the sport. Athletes who exclusively focus on one sport before the age of 13 where peak performance is not needed at a young age are defined as early specializers. It is thought that early specialization in sports where peak performance is not needed at a young age is linked to negative outcomes.

In evaluating the impact of specialization, several researchers have examined its impact on injury and physical well-being. For example, some studies have shown that specialization in a singular sport can lead to higher risks of overuse injuries compared to those who do not specialize (Hall, Barber Foss, Hewett, & Myer, 2015; Jayanthi, LaBella, Fischer, Pasulka & Dugas, 2015; Jayanthi, Pinkham, Dugas, Patrick & Labella, 2013; Malina, 2010; Myer, Jayanthi, Difiori, Faigenbaum, Kiefer, Logerstedt & Micheli, 2015). Researchers have also found that athletes who acquired injuries while specializing in a particular sport were more at risk for injury reoccurrence than non-specializers (Hall et al., 2015). In comparison when evaluating the impact

of sport specialization on athlete development and well-being, researchers have focused more on physical well-being to a greater extent than mental well-being.

Several studies have noticed that kids who specialize are more likely to dropout of sports and discontinue sports as young adults. (Russell, 2014; Russell & Symonds, 2015; Wall & Côté, 2007; Wiersma, 2000). A study conducted on 143 specializers and 83 non-specializers by Russell & Symonds (2015) showed that specializers (36%) were less likely to participate in sports as young adults than non-specializers (11%). These results were found to be statistically significant ($p < .001$) showing that sport specializers were less likely to participate in sports when they became young adults than non-specializers. Results from a survey taken by 200 former youth athletes, 113 specializers and 87 non-specializers, found that 67 of the specializers discontinued sports as young adults (Russell, 2014). Another study conducted by Wall and Côté (2007) examined current and former high-level minor hockey players and found that the hockey players who started off-ice training at earlier ages, 12-13, dropped out compared to those who are currently active and started off-ice training at later ages.

Research done by Gould, Tuffey, Udry & Loehr (1996) studied competitive junior tennis players who had burned out from the sport and comparable players who had not burned out. They found that the burned out athletes had reported that they felt they had less of a say in their training, played on their high school team, played in higher age divisions in tournaments, as well as feeling that they had played in too many tournaments than the comparison players (Gould et al., 1996). These burnout players discontinued their sport participation because they were emotionally withdrawn from it due to all of the expectations and stress. These results of youth sport specializers were less likely to participate in sports as young adults supports previous work

that specialization may be detrimental to long-term sports involvement (Gould et al., 1996; Russell, 2014; Wall & Côté, 2007).

One reason why sport specialization may result in early sport discontinuation is because it has a negative effect on athletes' motivation. Studies have also examined the association of specialization with motivation levels in athletes. From the Self-Determination Theory perspective, motivation is comprised of three categories: amotivation, intrinsic motivation, and extrinsic motivation. Amotivation is lacking the intention to act, meaning they have no perceived reason to participate. Doing something because it is found to be enjoyable or interesting refers to intrinsic motivation (Ryan & Deci, 2000; 2002). Extrinsic motivation is when sports are done for a separable outcome, i.e., athletes play sports for reasons other than enjoyment (Ryan & Deci, 2000; 2002). There are four different types of extrinsic motivation; including external, introjected, identified, and integrated regulation (Ryan & Deci, 2000; 2002). External regulation occurs when a person is externally controlled, this can be through rewards or punishments. Introjected regulation is when an athlete participates to gain internal rewards or self-worth based on achievements as well as avoid internal punishments/disapproval like guilt or anxiety. Identified Regulation is when a behavior is done out of free choice, because the behavior is valued, but for extrinsic reasons. For example if an athlete wants to improve their fitness level so he or she does not skip a work out in the off-season even though he or she might not enjoy the workouts themselves (Ryan & Deci, 2000; 2002). Lastly, integrated regulation occurs when a sport is assimilated into an athlete's lifestyle and goals (Ryan & Deci, 2000; 2002). Self-determined extrinsic motivation is associated with many positive outcomes and is comprised of integrated regulation, and identified regulation (Deci & Ryan, 1985). Non self-determined

motivated behaviors are connected with negative outcomes and are comprised of introjected regulation, external regulation and amotivation (Deci & Ryan, 1985).

Position papers and studies have noted that early specialization can weaken and transform intrinsic motivation to more extrinsic motivation (Fraser-Thomas & Côté, 2006; Gould, 2010; Law et al., 2007). A position paper by Fraser-Thomas and Côté (2006) mentioned that athletes who are involved in a number of activities and play in their childhood have higher levels of competence and enjoyment, which in turn leads to continued motivation for sport participation. Gould (2010) also wrote a position paper on specialization and motivation. He mentioned that early specialization leads to burnout and motivation loss. Gould (2010) points out that there have not been a lot of direct comparisons between children who specialize and those who sample a variety of sports. He continues with most of the conclusions about the benefits and detriments of sport specialization mostly come from general sport literature about competition intensity or survey assessments of athletic administrators and coaches. A study done on rhythmic gymnasts by Law et al. (2007) found that the elite gymnast group had less enjoyment in their sport than the sub-elite gymnast group.

If sport specialization is associated with a decrease in self-determined motivation and an increase in non self-determined motivation, it then may also make burnout more likely as considerable research has shown a relationship between motivation type and burnout. Athletes who have less self-determined motivation report higher burnout and lower well-being (Holmberg & Sheridan, 2013; Langan, Lonsdale, Blake & Toner, 2015; Lemyre, Treasure & Roberts, 2006; Moen, Federici, Skaalvik, 2014).

Burnout is typically associated with three concepts: emotional and physical exhaustion, sport devaluation, and low sense of personal accomplishment. Emotional and physical

exhaustion is defined as fatigue stemming from physical and psychosocial demands that are linked with training and competing (Raedeke & Smith, 2001). Sport devaluation reflects athletes having negative attitudes or resentment towards their respective sports (Raedeke & Smith, 2001). Lastly, the lack of power to produce a desired effect as well as negative views towards one self in regards to their performance and accomplishments in sports comprises reduce sense of accomplishment (Raedeke & Smith, 2001).

Several position papers articulate that there is a relationship between burnout and specialization. A position paper written by Callender (2010) referenced the International Society of Sport Psychology's (ISSP) stance on career development and transitions of athletes (Stambulova, Alfermann, Statler & Côté, 2011) and highlighted that athletes who sampled a variety of sports had less burnout in sports that do not require an athlete to focus solely on it at a young age, such as soccer, than early specializers. Malina (2010) also examined specialization & burnout from a position stance and how overtraining can lead to burnout. Overtraining could lead to sport devaluation, which is a subscale of burnout. Very few studies have examined the relationship between specialization and burnout. One of the few studies to have done so was by Gustafsson, Kenttä, Hassmén, Lundqvist et al. (2007) who did a qualitative study to examine three elite cross-country skiers who specialized and competed at the national level. They noticed that there was a link between overtraining and burnout as the athletes were training at a high intensity to very high intensity level for a considerable amount of time than what was considered common practice in cross-country skiing (Gustafsson et al., 2007).

A study done by Strachan et al. (2009) examined the similarities and differences of sport experiences, such as enjoyment and burnout, as well as personal development between early specialization athletes and sampling athletes. Their study was comprised of 74 athletes who were

between the ages of 12 and 16. The specializing group was comprised of 40 participants, who were recruited from swimming, artistic gymnastics, rhythmic gymnastics and diving. These are sports, which require early specialization. The other participants were 34 non-specializers who were recruited from sport camps, junior high and high schools and other such sport programs and were involved in at least three sports. Via discriminant function analysis of data collected from the athlete burnout questionnaire they found that specializers had significantly higher scores in sport emotional/physical exhaustion 2.70 ($p < .05$), which is a subscale of burnout, when compared to non-specializers 2.03 ($p < .05$) (Strachan et al., 2009). This significant result shows that specializers are more at risk of exhaustion, but not the other burnout dimensions, than non-specializers. Interestingly enough, none of the measures that investigated sport development or enjoyment in youth were found to be statistically significant. A limitation to this study, however, is that their specialization sample was from sports where specialization was necessary compared to the non-specializers who were from sports where specialization was not thought to be required. There is the possibility that early specialization could have a different impact on athletes who specialized in sports that are not typically thought to require specialization. Another limitation would be that since this study is not measuring deliberate play and practice. Early specializers spending more time in deliberate practice than other specialization types could possibly account for risk of burnout and decreased motivation. With this being the case, it is not possible to speak to the amount of time non-specializers and specializers are participating in deliberate play or deliberate practice.

In addition to examining burnout researchers also recognized the importance of looking at positive psychological states, one is athlete engagement. This is the antithesis or opposite of burnout so theoretically while early sport specializing may contribute to burnout, late or non-

specialization may facilitate athlete engagement. Directly opposite of burnout, engagement is defined as athletes experiencing high levels of vigor, enthusiasm, dedication, and confidence. Vigor is defined as liveliness or physical, mental, and emotional energy (Lonsdale, Hodge, & Raedeke, 2007a). Feelings of excitement and high levels of enjoyment characterize the subscale enthusiasm (Lonsdale, Hodge, & Jackson, 2007b). Dedication is seen as a desire to invest time and effort towards achieving goals that are seen as important (Lonsdale et al., 2007a). Finally confidence is characterized by the belief of obtaining desired goals and attaining a high level of performance (Lonsdale et al., 2007a). While there has not been much research on athlete engagement, some work has found that there is a positive relevant relationship between engagement and elite athletes' participation, which could help promote positive sport environments (Lonsdale et al., 2007a). It is plausible that early specialization may have a negative impact on engagement while participating in multiple sports may enhance it.

The problem with specializing in a specific sport at a very young age is the number of possible psychological issues that can impact these young children. Issues include the risk of burnout from sports and athletes' having lower levels of motivation. Many studies have examined these issues and others, but an issue that has not been looked into that great of detail is if there are differences in burnout, engagement, and motivation levels, between children who specialize in one sport at an early age or if they specialize at a later time in their athletic careers. This study is going to look at the difference of young adolescents who specialize in a specific sport early or late to evaluate whether early and late specializers differ from non-specializers on burnout, engagement, and motivation.

The void this thesis is filling is very few studies have examined specialization in burnout/engagement/motivation and those who have done so have not differentiated early versus

late specializers in sports where early specialization is not required. Rather they have simply categorized athletes as specializers or non-specializers or have evaluated the impact of specialization in sports where early specialization is necessary. Although numerous position statements argue against early specialization, the data evaluating the psychological impact is sparse and has mixed results. The reason why they have mixed results is that they have not differentiated between early and late specializers. Theoretically based on the DMSP (Côté, Baker & Abernethy, 2007; 2003; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002) sport model, early specialization may have greater negative effects on athletes' psychological well-being than late specialization.

Purpose

The purpose of this study is to compare differences in burnout, engagement, motivation between early, late and non-specializers. It is an attempt to notice if an athlete's specialization type can be related to burnout and motivation type.

Hypothesis

Using the Developmental Model of Sport Participation to classify early and late specializers and non-specializers, it is hypothesized that early sport specialization will be associated with higher levels of burnout and lower self-determined motivation type levels than late specialization. It is also hypothesized that late sport specialization will be associated with higher levels of burnout and lower levels of motivation than non-specialization.

Significance

Position statements have suggested that early specialization may be associated with a higher risk of burnout, lower engagement, and negative motivational outcomes. However, few studies have compared non-specializers to early and late specializers in sports in sports traditionally classified as not requiring early specialization (Russell, 2014; Strachan et al., 2009). Looking at whether early or late specialization is an important issue to address. If one form of specialization is more associated with higher levels of burnout or lower levels of motivation then young adolescent athletes can be steered away from this type of specialization and possibly reduce burnout or motivational risks.

Delimitations

1. Participants will be athletes between the ages of 13-18 years.
2. This study is limited to analysis of female soccer players, male and female club wrestlers and swimmers.
3. This study is not looking into the entirety of the Self-Determination Theory, only the continuum of motivation
4. Sample is comprised of soccer players from North Carolina, competitive wrestlers from club teams in Greenville, & New Bern, NC, and competitive swimmers from club teams in Cary, Greenville, Raleigh, and Washington, NC.

Limitations

1. Generalizability, looking at southern club teams, so burnout and motivation association levels may differ across regions.

2. Specialization type might not be the main problem, but quality of the coach or sport climate could play a more major factor

Operational Definitions

1. Early Specializers: athletes who solely focus on one sport before the age of 13 in a sport where you do not need a peak performance at a young age
2. Late Specializers: athletes who solely focus on one sport at the age of 13 or after in a sport where you do not need a peak performance at a young age.
3. Non-specializers: athletes who focus on one sport, but participate in at least two or more sports
4. Burnout: psychological syndrome consisting of emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation
5. Engagement: athletes experiencing high levels of vigor, enthusiasm, dedication, and confidence in sports
6. Self-Determined Motivation: is associated with many positive outcomes, it is linked with choice behaviors and is comprised of intrinsic motivation, integrated regulation, and identified regulation
7. Non Self-Determined Motivation: Connected with negative outcomes and is comprised of external regulation, introjected regulation and amotivation
8. Deliberate play: characterizing a form of sporting activity that involves early developmental activities that are intrinsically motivating, provide immediate gratification, and are specifically designed to maximize enjoyment (Côté, 1999)

9. Deliberate Practice: an activity done to achieve a future goal that is not the most enjoyable, adult involvement often required and takes place in specialized facilities (Côté, 1992)

Chapter 2. Literature Review

An issue that is debated in the sport community is the rising trend in sport specialization. Some argue that specialization is essential to develop the necessary skills to achieve sport excellence (Ericsson et al., 1993). Others argue that early specialization may cause more harm than good and may not be necessary for most sports (Côté et al., 2009; Jayanthi et al., 2013; Moesch, Elbe, Hauge, & Wilkman, 2011; White & Oatman, 2009). This chapter will provide an overview of (a) frameworks that highlight the pros and cons of specialization including deliberate practice and the Development Model of Sports Participation, (b) review what is known about specialization and athlete development and well-being, and (c) describe the potential relationship of specialization with motivation quality and burnout.

Types of Specialization in Sports

Several models exist that describe the specialization process. Some of the models and concepts describe the benefits of specialization whereas others focus on negative outcomes. Ericsson et al. (1993) discuss a theoretical framework that clarifies expert performance through extended deliberate practice. One concept that advocates for sport specialization is based on the concept of deliberate practice. Ericsson et al.'s (1993) framework is comprised of four parts; the first part requires an individual's available energy and time. Second participating in deliberate practice is not characteristically enjoyable, and it is specifically designed to improve one's current level of performance. The third part is deliberate practice can only be done for a limited time each day due to how much energy is needed (Ericsson et al., 1993). The last part is that one

needs to have done at least ten years of deliberate practice to prepare for international-level performance (Ericsson et al., 1993).

Ericsson et al. (1993) argue that accumulating numerous hours of deliberate practice will lead to superior levels of performance. They mention that early specialization will facilitate sport success due to athletes developing sport specific skills at younger ages. (Ericsson et al., 1993). If an athlete started to specialize in a sport at a later age, these researchers felt that they would be unable to acquire the necessary skills in time with someone who started earlier. They based this argument off of studying 12 expert violinists the Hochschule der Kuenste, a Berlin music academy and 12 amateurs recruited from newspapers and campus ads. For data collection, the researchers had the participants recall the estimated average amount of time they had practiced alone for each week for every year of their lives since they started practicing. Next they had each participant complete the complex movement coordination task. This challenged each subject's manual movement coordination by playing a series of nine key-strokes with either one hand or simultaneously with both hands (Ericsson et al, 1993). To manipulate the hand coordination complexity, the subjects performed with either hand, mirror image movements for both hands, or different movements for opposite hands. A Yamaha CB-300 Clavinova electronic keyboard and a MacII computer were used for monitoring experiments and collected data. The results found that the experts had started at 5.8 years of age, had more than 14 years of experience and 19.1 years of formal instruction from 4.7 teachers. The amateurs had started at an average age of 9.9 years and had between 5 to 20 years of experience, and received 9.9 years of instruction from 3 different teachers (Ericsson et al., 1993). The diaries showed that during the week the experts had spent 56.75 hours on music-related activities while the amateurs only spent 7.02 hours. There was a reliable interaction with skill level, $F(1, 22) = 5.91, p < .05$ (Ericsson et al., 1993).

This is an indication that bimanual coordination complexity had more of an impairment on the amateurs' performance than the experts' performance. They wanted to show that it was not so much innate talent that comprised many of the characteristics that led to success, but rather practicing intensely for at least 10 years (Ericsson et al., 1993). A limitation of this study would be that the sample size was comprised of musicians rather than athletes. Another limitation would be that although deliberate practice from a young age may produce favorable performance results, it could come at a cost of the athlete's well-being. We do not know whether the findings would generalize to athletes due to contextual differences between sport and music. The experts in this study had started at much earlier ages than their amateur counterparts. There are specific sports that consider starting deliberate practices at a young age paramount if the athlete wants to be successful at the elite level.

An example of one of these sports is rhythmic gymnastics, especially for female youth participants. Rhythmic gymnastics is considered to be an early entry sport, meaning it has an earlier age of peak performance than other sports. Athletes in this sport have shorter careers, so to capitalize on these narrow windows, athletes need to focus on this sport entirely at a younger age (Ferguson & Stern, 2014). In rhythmic gymnastics, athletes are competing at the international level as early as 12 years of age so early specialization would be important in order to compete at the highest level. Law, et al. (2007) compared two groups of gymnasts, an elite group and a sub-elite group, who made full-time commitments to excel, but have had different levels of success. The elite (Olympic) group consisted of six gymnasts who were ranked second in the world in rhythmic gymnastics group competition at the time of the interview. The sub-elite (International) group consisted of six gymnasts who competed internationally, were ranked first in their country, have not placed higher than 10th in the world, and was ranked 13th in the world

at the time of the interview (Law, et al., 2007). Structured interviews were used if differences in their early activity involvement, hours spent in training activities, and ratings of health and training resources would be able to help explain the differences in the two groups success (Law et al., 2007). Results revealed that Olympic caliber gymnasts spent more time practicing activities that would help them excel than the sub-elite group. On Table 1, between the ages of 6 to 8, the Olympic caliber gymnasts spent an average of 693 hours in training activities. The International level athletes, however, only had an average of 135 hours spent on total practice. Their results found that by the age of 16, the Olympic athletes spent an average of 2,609 hours spent in total practice compared to international level athletes, who only practiced 859 hours. The Olympic level athletes devoted three times as many hours to overall practice than their international counterparts. This is important as the results show that the more hours they spent in practice, the more success the Olympic level athletes had. Both groups reached the international level of competition, but the more times spent in training activities could help explain why the Olympic gymnasts had more success. The more time spent training may partially have led to more opportunities to develop the skills necessary to reach the highest rhythmic gymnastic levels.

In addition, the Olympic athletes started competing at the regional level at a much significantly earlier age ($M = 7.3$) than the sub-elite group ($M = 8.8$) (Law et al., 2007). Their results also discovered that the Olympic gymnasts won their first international competition around the age of 15.3 years of age. None of the sub-elite gymnast in this study, on the other hand, had ever won such a competition (Law et al., 2007). This study showed that it is not always innate characteristics that bring an athlete to the top, but rather intense practice to develop sport expertise. These results help show that if Olympic rhythmic gymnastics were to not start

such an intense training regime at an early age, as Ericsson et al. (1993) pointed out, they may not be able to acquire the necessary skills fast enough to compete with gymnasts who specialized at an early age. This type of specialization may be necessary for sports that have peak performances at young ages, but for sports that do not have such an early peak performance, early specialization may not be necessary if at all beneficial.

In contrast to deliberate practice, the Developmental Model of Sports Participation (DMSP) suggests that early specialization can have negative impacts on athlete development and well being in sports other than those where peak performance occurs at a young age. There are very few sports that have elite peak performances at a young age, but young adolescents in other sports are still specializing at an early age. For sports that require later peak performances, such as soccer and swimming, sampling a number of different sports has not been shown to be a hindrance (Côté et al., 2009; Jayanthi et al., 2013; Moesch et al., 2011; White & Oatman, 2009). These studies had a common theme in that they wanted to see what made the highest-level athletes so successful, but all used different approaches. A study compared the careers of elite athletes, either they placed top ten at a world championship level event or won a medal at a European championship level, and near-elite, athletes who hadn't met either criteria. Logistic regressions were used to notice if differences in main sport practice hours, other sports involvement, and career development data would predict membership in the elite athlete group. The results found that the elite athletes specialized at a later age than the near-elite (Moesch et al., 2011). Involvement in other sports did not predict success between groups so participating in multiple sports may not be detrimental to becoming an elite athlete. Descriptive statistics from 71 university football and field hockey players had similar findings (White & Oatman, 2009). The results from their surveys found that the average age of specialization for these athletes was

17 to 18, showing that one does not need to specialize at the age of three or four to be successful in sports (White & Oatman, 2011). Jayanthi et al. (2013) and Côté et al. (2009) used another approach and combed through numerous studies for their conclusions. They also noticed the common theme that for sports that do not require peak performance at an early age, athletes do not need to specialize at a young age, but sampling a variety of sports can be beneficial to long-term sport involvement.

For example, a sport like golf has a peak performance age that can extend to as late as an athlete's fourth or fifth decades of life (Ferguson & Stern, 2014). Thus resulting in longer careers so early specialization would not be optimal for this sport since they have more time to train and acquire the necessary skills to compete. Moesch, et al. (2011), compared 148 elite and 95 near-elite Danish athletes that participated in sports where performance was measured in centimeters, grams, or seconds. They used questionnaires to gather data on differences in accumulated practice hours during the early stages of the career and other sports involvement, career development. Using this information they wanted to notice if these variables helped predict membership into the elite group. Overall they found that the elite athletes specialized at a later age and did not train as much in their childhood compared to the near elite athletes. These elite athletes intensified their training during their late adolescent years. It was also noticed that participating in other sports did not differ nor predict future success between the two groups (Moesch et al., 2011). This study points out that not every sport may need athletes to start intensive training at a young age. It could be in some sports that elite performance may not be needed till later in life.

The Developmental Model of Sports Participation is comprised of several categories that make up different pathways that may lead to optimal performance based on certain sports. Each

category type differs on the amount of years spent sampling, specializing, and investment as well as the amount of time spent in deliberate play or practice. Individuals categorized, as non-specializers would begin to participate in numerous sports between the ages of 6-12 and past those ages do not enter the specializing or investment years (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002). For late specializers, between the ages 6-12 are spent in the sampling years, ages 13-15 are spent in the specialization years and at age 16 onwards time is spent in the investment years (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002). Early specializers do not spend any time in the sampling years, but instead head straight into the specializing years between the ages of 6-8. The investment years begin for early specializers after the ages of 8 and continue till the athlete no longer participates in his or her sport (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hay, 2002).

The DMSP also differentiates between deliberate practice and deliberate play. Characteristics of deliberate practice are that it is done for achieving a goal in the future, they are not the most enjoyable, seriously carried out, the outcome of the behavior is the main interest, there are explicit rules, and often require adult involvement (Côté et al., 2007). Deliberate play, on the other hand, is a form of sporting activity that involves early developmental activities that provide immediate gratification, are intrinsically motivating, and are specifically designed to maximize enjoyment (Côté, 1999). Characteristics of deliberate play are that it's done for its own sake, are enjoyable, interest on the behavior, are flexible, enjoyable, play quality, and are not requiring adult involvement (Côté et al., 2007). Examples of deliberate play could simply be running, climbing or rough-and-tumble type of play.

Based on the balance of time spent in deliberate play and practice the non-specializers, early, and late specializers were further defined. During the sampling years, young children

would spend 80% of their activity time in deliberate play and 20% in deliberate practice. During the specializing years athletes would spend 50% of their time in deliberate play and 50% in deliberate practice. In the investment years, athletes would spend 20% of their time in deliberate play and 80% in deliberate practice (Côté & Fraser-Thomas, 2008).

A review article done by Côté, et al. (2011) states that there are seven postulates that will lead to continued sport participation and elite performance. The first postulate is that sampling a variety of sports does not actually hinder an athlete's elite sport participation in sports where peak performance is not necessary at a very young age (Côté et al., 2009; Jayanthi et al., 2013; Moesch et al., 2011; White & Oatman, 2009). The second postulate is that sampling is linked to a longer sport career as well as positive long-term sport involvement. The third postulate is sampling allows for participation in a variety of contexts that does favorably affect positive youth development. An example would be that sampling a variety of sports allows athletes the opportunity to develop their social skills with others. The fourth postulate is about high amounts of deliberate play during the sampling years is able to build a strong foundation of intrinsic motivation through participating in activities that are enjoyable and promote intrinsic regulation. Participating in sports for this type of reason may help young athletes improve their overall motivation and willingness to partake in more externally controlled activities, such as deliberate practice. The fifth postulate is that a high amount of deliberate play during the sampling years can help establish a range of cognitive and motor experiences that young athletes can end up bringing to their main sport of interest. Deliberate play can serve as a way for young athletes to acquire skills, explore their physical capabilities in various contexts and at a small cost in terms of resources. The sixth postulate is that around the age of 13 children should have the option to either choose to specialize in their favorite sport or to continue on at a recreational level. It is at

this time that children around this age fully understand the effects of effort, practice, and ability has on their performances and competence. The seventh postulate is that those around the age of 16 have developed the emotional, social, physical, cognitive and motor skills that are required to invest their effort into highly specialized training in any one sport. Those who are around this age have the capability to understand the costs and benefits of intense focus on a singular sport. They are also able to make a decision on whether they want to invest in a particular sport or not.

Specialization and Athlete Development

There has been much research done on specialization and the impact it has on athletic development, in particular, its impact on injury risk and physical well-being. A clinical case-control study was conducted on data from surveys completed by 822 injured athletes and 368 uninjured athletes who had been to 1 of 2 university hospitals for a sports-related injury or to a clinic for a preparation sports physical examination (Jayanthi et al., 2015). The age range of the participants was between 7 to 18 years of age. Part of their study looked to notice if sports specialization, which was defined as year-round intensive training in a single sport, and weekly training volumes, number of hours per week spent in organized sports training related to the athlete's age, were associated with increased risk for injury and overuse injury. Their results noticed that there was a dose-dependent effect of the degree of sports specialization and the risk of injury; overuse injury, and serious overuse injury in comparison to uninjured participants (Jayanthi et al., 2015). Highly specialized athletes were at the greatest risk for serious overuse injury (OR, 2.25; CI, 1.27-3.99; $p < .001$) (Jayanthi et al., 2015). Their results also noticed that athletes who had serious overuse injuries had 1.70 times the odds of compiling twice as many organized sports hours to free play hours as participants without serious overuse injuries (CI,

1.12-2.56; $p < .01$). This could relate to early specialization leading to higher risk of injury as they are spending 80% of their time in deliberate practice and they are doing more of these types of practices than late specializers. This suggests that specializers are practicing more and this could lead to injury.

A retrospective cohort epidemiology study evaluated if there was an increased risk of patellofemoral pain (PFP), anterior knee pain, in female basketball, soccer, and volleyball players due to sport specialization. To be considered a sport specialist, an athlete who reported that they participated in only one sport were assigned to the sport specialized group. If an athlete reported that they participated in more than one sport were assigned to the multisport group. There were 357 multiple-sport and 189 single-sport athletes from five middle schools and four high schools in this research. The Anterior Knee Pain Scale (AKPS) self-report questionnaire, International Knee Documentation Committee (IKDC) form, physical examination administered by a physician and standardized history were used to test for the presence of PFP. Their results found that those who specialized in a single sport had an increased relative risk of PFP incidence 1.5 fold (95% CI 1.0-2.2, $p = .038$) (Hall et al., 2015). Their results show that female sport specializers had an increased risk of PFP when compared to their multisport counterparts. It may be that sport specialization could be related to a reduction in motor skill acquisition and proficiency that otherwise would be acquired through sport diversification. Doing the same types of movements over and over again may lead to increase wear and tear on the PFP. This in turn could lead to overuse injury that otherwise may have been prevented through sport diversification.

Position papers have also looked into sport specialization and the impact it has on injury risk. All of these position papers classify specialization as an athlete focusing on a singular sport

nearly year round to attain elite status (Jayanthi et al., 2013; Malina, 2010; Myer et al., 2015). A common theme throughout these position stances was that there was a higher risk of overuse injuries for those who specialized in a single sport (Jayanthi et al., 2013; Malina, 2010; Myer et al., 2015). One possible reason for this was that overuse injuries are a result of repeated micro-trauma in a bone, muscle or tendon associated with constant repetition of specific sport activities (Malina, 2010). It was noticed that specialized athletes had greater odds of acquiring a serious overuse injury than an athlete who was unspecialized (Myer et al., 2015). Athletes who were partaking in highly competitive level events or higher numbers of training sessions have higher injury risk than those who were not (Jayanthi et al., 2013; Myer et al., 2015). Early specialization emphasizes developing sport-specific skills for a singular sport at a young age through deliberate practice in order to compete at the highest events. As much as 80% of the athletes' time is spent in these intense deliberate practices, which can attribute to higher risk of injury as attempting to acquire these skills can eventually wear the body down and potentially lead to higher injury risk.

Motivation & Burnout

Compared to looking at overuse injuries and injuries, fewer studies have looked into the psychological impact of specialization. One study done by McFadden, Bean, Fortier, and Post (2016) investigated the possible psychological effects of sport specialization on athletes. They did this by looking at the relationships between 61 youth hockey players specialization level, psychological needs dissatisfaction (PND), psychological needs satisfaction (PNS), mental illness, and mental health. Through ANCOVAs, the results revealed that PND was significantly different ($p < .029$) across all levels of specialization with early specializers having the highest mean score ($M = 2.83$, $SD = .39$) when compared to late specializers ($M = 2.58$, $SD = .17$), and

recreational players ($M = 2.49$, $SD = .16$) (McFadden et al., 2016). There were no significant differences found across groups in regards to PNS, mental health, or mental illness. This may suggest that the early specialization structure may not fully satisfy the three psychological needs of autonomy, competence, and relatedness.

Position papers suggest that specialization might lower the quality of motivation. One framework to look at would be the Self-Determination Theory. The behavioral aspect of the Self-Determination Theory is composed of three different categories of motivation, they are: amotivation, intrinsic motivation, and extrinsic motivation. Doing a sport for pure enjoyment and the inherent satisfaction is intrinsic motivation (Ryan & Deci, 2000). Extrinsic motivation, on the other hand, compels athletes to participate in sports for separate outcomes (Ryan & Deci, 2000). Another way of saying this is that they are participating in sports for external reasons rather than because they enjoy it. External, introjected, identified, and integrated regulations are the four types of regulation that make up extrinsic motivation. Intrinsic motivation, identified, and integrated, regulation, or self-determined motivation, can be central to many positive outcomes, while extrinsic and introjected regulation, non self-determined extrinsic motivation, will be associated with negative outcomes in sport (Russell & Symonds, 2015; Ryan & Deci, 2000; Vlachopoulos, Karageorghis, & Terry, 2000). Athletes often start out with high levels of intrinsic motivation, but the key is to not let it wane and turn into extrinsic motivation during specialization.

A possible reason for why specializers may continue on with sports could be that they feel guilt or shame by not participating if their parents spent so much time and money investing in their sports career (Côté, 1999). A study was conducted by Russell & Symonds (2015) on 143 specializers and 83 non-specializers that examined how former youth athletes' remembered their youth sport motivation and youth sport motivational climates varied based on whether or not

they specialized in one sport. Their results found that specializers (36%) were more likely than non-specializers (11%) to no longer be participating in sports as young adults ($p < 0.001$). However, no significant differences were discovered between the two groups in regards to their motivations from their sport settings, which means other variables could be responsible for a decrease sports participation by specializers (Russell & Symonds, 2015). Athletic scholarships can also be a driving factor in levels of motivation. If a non self-determined motivated athlete acquires a scholarship than the constant pressure for a great performance can lead to increase pressure and lower levels of enjoyment (Medic, Mack, Wilson, & Starkes, 2007). This can lead to lower levels of motivation to succeed because if they lose their scholarship than the financial burden of attending college is solely put on them.

Prior research has also looked into mental toughness profiles and their relations with achievement goals and sport motivation in 16-18 year old male Australian footballers. Gucciardi (2010) wanted to identify mental toughness profiles in these footballers through cluster analysis. In addition, he wanted to look at the relations between these mental toughness clusters and achievement goals and sport motivation. The participants in this study have been playing competitive football for between two and 14 years and competed at a local junior football competition. Mental toughness was measured by the Australian football Mental Toughness inventory that assessed thrive through challenge, sport awareness, tough attitude, and desire success. The Achievement Goals Questionnaire-Sport measured achievement goals and it focused on athletes' levels of mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance. The Sport Motivation Scale-6 was used to assess sport motivation and it assessed athletes' intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation. Using cluster analysis results found that 45% of

the sample was a part of the first cluster; moderate mental toughness and 55% of the sample were part of the second cluster, high mental toughness. It was also noticed that external regulation was the highest form of motivation for these athletes, followed by identified regulation and intrinsic motivation (Gucciardi, 2010).

Another study conducted by Wall and Côté (2007) wanted to determine whether the amount and nature of youth-organized sport, time spent in deliberate play and practice had an influence on athletes' decision to drop out or invest in organized sport. Data was collected via interview from parents of eight currently active ice hockey players and four dropout players. The hockey players were considered high-level participants as they participated in a sport for more than a year at high frequency and duration. The structure of the interview consisted of the parents providing a year-by-year account of the players' involvement in sporting activities from ages six to 13. They were also asked when their child started playing hockey, taking skating lessons, playing organized hockey, and off-ice training related to hockey. A 2 x 3 ANOVA was used to compare the number of sports the players participated in besides hockey and the number of hours spent in these sports. Another 2 x 3 ANOVA table was used to compare the players' involvement in each hockey-related activity. Overall, players participated in an average of 4.75 different organized sport activities other than hockey (Wall & Côté, 2007). In off-ice training, an independent t-test revealed a significant difference $t(10) = -2.31, p = 0.04, d = .49$, between the active group and the dropout group (Wall & Côté, 2007). What these findings show is that dropout players started at off-ice training at a younger age and participated in more off-ice training between the ages of 12 and 13 than their active counterparts (Wall & Côté, 2007). With the dropout players starting off-ice training at a younger age and spending more time in these deliberate practices, the results may indicate that early involvement in practice activities that are

not enjoyable may lead to decrease intrinsic motivation to continue on with a sport. Athlete's loss in his or her motivation has also been related to he or she feeling a sense of burnout.

Past research has noticed that the type of motivation can also be a predictor of athlete burnout (Curran et al., 2013; Holmberg & Sheridan, 2013; Vlachopoulos et al., 2000). When an athlete shows harmonious passion for a sport, i.e., inherent joy, he or she will freely chose participate in the sport, which can temper sport devaluation so the chance of burnout is lessened (Curran et al., 2013; Holmberg & Sheridan, 2013). In a cross-sectional study conducted by Holmberg & Sheridan (2013), wanted to examine the relationships between the degree of self-determination among college athletes and the dimensions of burnout in these athletes. Their sample consisted of 598 athletes from eight different NCAA Division I and Division III colleges. These athletes filled out surveys that measured their levels of self-determination and burnout subscales. If athletes in their study reported comparable scores of intrinsic motivation, integrated and identified regulation, it indicated that they participate in sports because they enjoyed them or they found that there were valued out-come benefits from participating in the sport. This resulted in more positive attitudes toward sports and long-term participation and they were less likely to report any symptoms of burnout as participants had low scores on physical/emotional exhaustion ($M = 2.63$, $SD = .94$), reduced sense of accomplishment ($M = 2.20$, $SD = .70$) and devaluation ($M = 2.12$, $SD = .88$) (Holmberg & Sheridan, 2013). These studies focus on a number of different sports, so it may be that different sports lead to different variation levels in motivation. What we will look into is if early specialization has a negative impact on motivational levels in a single sport.

Lemyre et al. (2006) conducted a survey study on motivation and its relationship with burnout. The aim of their study was to notice if shifts along the self-determined motivation

continuum, in addition to the variation in positive and negative affect in top athletes, would forecast susceptibility to burnout across the course of a competitive season using a sample of elite undergraduate college, international, as well as Olympian level swimmers (Lemyre et al., 2006). Data collection lasted for 20-28 weeks based on the length of each swimmer's season. Every third week self-determined motivation was assessed, every week the athletes completed a logbook so they record how they felt on a number of positive and negative affect states and burnout dimensions scores were assessed once a swimmer's season was complete. The scores from the motivation subscales were then integrated into a single score that corresponded to the participant's position on a self-determination continuum, this is known as the self-determination index (SDI). A motivational trend slope of the whole season was done for each swimmer.

Correlation analyses were used to examine the initial relationships between trends in self-determined motivation, positive and negative affect swings, and the dimensions in burnout. Athletes who had a negative motivational trend during the season had higher scores on all dimensions of burnout at the seasons end ($M = 2.7$, $SD = 2.1$ compared to the athletes who had a positive motivational trend ($M = 2.1$, $SD = .58$). These results were statistically significant at $p = .01$ (Lemyre et al., 2006). The findings from this study was able to show evidence that a shift in motivational focus over time may be a precursor to burnout as trends in motivation explained a significant amount of variance burnout scores at the end of the season. Burnout has not only been linked to motivation, but could possibly be linked to specialization type as well.

Position papers have also highlighted how specialization may lead to athletes burning out from their sports. Emotional & physical exhaustion, sport devaluation, and low sense of personal accomplishment make up the three concepts of burnout. Advocates for early specializers are going to make the argument that it is necessary for some sports, but what can occur is the

athletes are at risk for leaving the sport because of early specialization. More specifically, athletes may feel experiences of burnout from causes such as the intense training regime (Baker & Robertson-Wilson, 2003; Harris & Watson II, 2011; Gould, 2015; Callender, 2010; Malina, 2010). When looking at sport specializers and sport non-specializers, Strachan et al. (2009) found in their research that specializers had higher scores in emotional and physical exhaustion than non-specializers. This can be explained to the amount of time invested in a specializer's particular sport since they are dedicating so much more time than non-specializers, they can grow tired of the sport more quickly. Another explanation for this could be not allowing enough time for the body between workouts. If athletes are doing highly intense workouts and not letting their bodies recover, than it can lead to emotional and physical exhaustion, which they may not be able to recover from (Gustafsson et al., 2007).

Lack of enjoyment or meaning in sports is a common theme of devaluation of sports. Olympic caliber rhythmic gymnasts had reported experiencing lower levels of "fun" in practice (Law et al., 2007). This is a clear example of athletes devaluating their sport because they are no longer experiencing as much fun as they once did. This can be partially due to the intense number of hours spent focusing on a singular sport instead of having the opportunity to participate in more than one sport and sample them.

Burnout through reduced sense of accomplishment can occur in a variety of ways. Sometimes the worst thing for a young athlete is to give a successful performance against senior level competition. The logic behind this is if a successful performance occurs than there are going to be expectations put on them, which may result in burnout if these expectations are not achieved. If there are expectations other people put on athletes that certain accomplishments should be met and the athlete does not achieve them, then the athlete starts feeling a reduced

sense of accomplishment (Isoard-Gauthier, Trouilloud, Gustafsson, & Guillet-Descas, 2016b). This is resulting from the athlete feeling as if he or she let people down. Should an individual develop a strong athletic identity athlete that was tied to a performance-based self-esteem than the athletes could feel a reduced sense of accomplishment and burnout (Gustafsson et al., 2007). The reasoning behind this is if the accomplishments are hard to live up to and the athletes were unable to reach them, then the athletes would start to feel like failures (Gustafsson et al., 2007). This could very well lead them to burning out from their respective sports.

A longitudinal study examined the influence of burnout symptom profiles of 458 male and female, elite, young, handball players while they were associated with elite training centers on their playing status (Isoard-Gauthier, Guillet-Descas & Gustafsson, 2016a). They divided their sample into three clusters: lower burnout, higher exhaustion, and higher burnout. Their results found that elite athletes who were in the higher burnout cluster had the average risk of dropping out of 2.21 and 2.41 times higher than the lower burnout and higher exhaustion clusters (Isoard-Gauthier et al., 2016a). Their study also showed that those in the lower burnout cluster were, on average, 2.86 times more likely to have higher performance, such as playing at the national level, which supports their hypothesis that burnout scores are linked to performance (Isoard-Gauthier et al., 2016a). These results supports the assumption that a high burnout levels lead to higher risk of dropout. There is, however, limited information that compares each type of specialization's risk to burnout risk.

Summary

Early specialization is a rising trend that may not be necessary, if at all beneficiary, for most sports. The case for early specialization is that it allows competitors the time to develop

skills necessary to compete at the elite level. Very few sports actually require such early focus because most sports only require peak performance after an individual has gone through maturation. For sports like ice skating and rhythmic gymnastics, early specialization looks like a necessity for early specialization since they have shorter projected careers than majority of other sports. However, early specialization may not be the best thing for the majority of athletes.

With the majority of sports having later ages for peak performance it may be more beneficial for young adolescents to sample a variety of sports before specializing. There are many more benefits for athletes to specialize late than there are for athletes to specialize at an early age. The DMSP provides a framework that allows for children to sample a variety of sports and then specialize into one or two. Fun and enjoyment are still highly emphasized in this model so when an athlete enters the investment years, they will just be entering a stage where fun is not as emphasized and they are choosing to primarily focus on that sport after sampling others.

Levels of motivation can be highly affected by the type of specialization trajectory an athlete experiences. Intrinsic motivation is when athletes continue participation because they find inherent pleasure in the sport. Extrinsic motivation is when athletes continue to participate in sports not because they enjoy them, but rather there are external forces that make the athletes feel compelled to continue on. Examples of this could be if a basketball player no longer enjoys playing, but he or she continues to do so because they have a scholarship and if they do not play then all the financial burden of paying for school falls onto them.

The amount of time spent in a sport can lead an athlete to burnout and leave the sport entirely. Early specializers are focusing on intense training before they are teenagers, which can cause them to be physical and emotionally exhausted from overtraining. They also can feel immense pressure to succeed and if they don't live up to the expectations then they may start to

have a decrease sense of personal accomplishment. Late specializers may be less prone to feelings of burnout sense they spend a longer time in areas where fun and enjoyment are still prioritized.

Chapter 3. Methods

Participants

The study consisted of two different samples. The first sample consisted of female North Carolina soccer data collected on a larger study on youth sport motivation. Data from the second sample consisted of wrestling and swim athletes collected specifically for this study. Sample 1 participants included 276 13 to 17 year old female soccer players who competed in the North Carolina Youth Soccer Association's local, regional, state, and national level. Athletes younger than the age of 13 as well as those in less competitive leagues (e.g., Challenge League) were not sampled. The reason for excluding younger athletes was that their reading level might not have been high enough to comprehend the questions. Athletes who were not fluid in the English language were not included since they may not have been able to understand the questions asked.

In the second sample of the study, 106 athletes in club sports, such as swimming and wrestling, who were 13-18 years of age, were included as participants. This part of the study included both male and female athletes. Wrestlers came from local club teams in Greenville and New Bern, North Carolina. In addition, wrestlers who attended a wrestling clinic at East Carolina University were sampled. The athletes who were swimmers came from clubs in Cary, Greenville, Raleigh, and Washington, NC.

Measures

Demographics

The Demographic Questions from the Reflection on Youth Soccer Experiences Questionnaire measured athlete demographics. This questionnaire was comprised of 11 questions. The first two questions on the questionnaire asked the participants to circle their age

and racial background. The third and fourth question asked them to fill in what age they started participating on a soccer team and how many years have they participated on a soccer team. The fifth question asked them to circle if they play on a high school (or middle school) soccer team to circle one and then circle YES or NO. The sixth question asked participants to circle YES or NO if they have played any other competitive sport other than soccer within the past year. If they circled NO, they answered sub question 6a, which asked them to fill in the age they first specialized and competed in just soccer. If they circled yes they were asked to answer sub question 6b, which asked them to list which sports and at what level they participated in. Sub question 6c. asked them to circle YES or NO if any of those sports listed were currently in season. Question seven asked them to fill in how many times a week they attended soccer practice. The eighth question asked them to fill in the number of months per year they participate on a soccer team, including teams such as club and high school. The ninth question asked them to fill in the number of years they have been with their current group of athletes/team. The 10th question asked them to circle their primary position on the team. The last question simply asks them their name.

For the wrestling and swimming samples, the same questionnaire was used, but some of the questions were modified to the specifics of an individual's sport. The demographics assessed how many months per year an athlete trained in a sport, but it will not refer to soccer experiences. It will instead refer to wrestling experiences if they were wrestlers and swimming experiences if they were swimmers.

Specialization

For the soccer sample, specialization questions came from questions three, six, eight, and nine of the Reflection on Youth Soccer Experiences Questionnaire. For the wrestling and swimming sample questionnaires, the survey was modified to the athlete's specific sport, whether it was wrestling or swimming. An athlete was considered an early specialist if she focused exclusively on soccer before 13 years of age. She was considered a late specialist if she exclusively focused on soccer between the ages of 13 to 15 years. If an athlete participated in more than two sports past the age of 12, then he or she was considered a non-specializer.

Motivation

Motivation type was measured using the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge & Rose, 2008). It is a 24-item questionnaire, which included six, four-item subscales assessing intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation. An example amotivation question was, "I participate in my sport, but I wonder what's the point." An example external regulation question was, "I participate in sport because people push me to play." An example introjected regulation question was, "I participate in sport because I would feel ashamed if I quite." An example identified regulation question was, "I participate in my sport because I value the benefits of my sport." An example integrated regulation question was, "I participate in my sport because it's a part of who I am." An example intrinsic motivation question was, "I participate in my sport, because I enjoy doing something to the best of my ability." Participants responded to statements like these using a 7-point Likert scale (1 = *not at all true*, 4 = *somewhat true*, and 7 = *very true*). Answers of 2 or lower indicated low motivation, answers between 3.5 and 4.5

indicated moderate motivation, and scores 6 or higher indicated high motivation. The developers of the BRSQ have found strong levels of internal consistency, test-retest reliability, and factorial validity; nomological validity was also supported (Lonsdale et al., 2008).

Burnout

The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) measured burnout. This questionnaire consisted of 15 items that measured the three subscales of burnout: 1) emotional/physical exhaustion, 2) reduced sense of accomplishment, and 3) sport devaluation. The questionnaire allows the researcher to modify the questionnaire to a specific sport, such as soccer, since the questionnaire includes blanks to add sport-specific references and terms. An example question of emotional/physical exhaustion was, “I am exhausted by the mental and physical demands of [*sport*].” An example question of reduced sense of accomplishment was, “It seems that no matter what I do, I don’t perform as well as I should.” An example question of sport devaluation was, “I’m not into [*sport*] like I used to be.” Athletes responded to statements using a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). Answers of 2 or lower indicated low burnout, scores between 2.5 and 3.5 indicated moderate levels of burnout, and scores of 4 and higher indicated high levels of burnout. The ABQ has been indicated as a reliable and valid scale to measure athlete burnout through internal consistency analysis based on research with 208 college athletes conducted by Raedeke & Smith (2001).

Engagement

The Athlete Engagement Questionnaire (AEQ; Lonsdale et al., 2007b) was used to measure athlete engagement. This questionnaire consisted of 16 items measuring the four

subscales of athlete engagement: 1) vigor, 2) enthusiasm, 3) dedication, and 4) confidence. This questionnaire allows the researcher to modify the questionnaire to a specific sport, such as soccer, wrestling, or swimming, since the questionnaire includes blanks to add sport-specific terms and references. An example question of vigor was, “I feel energized when I participate in [sport].” An example question of enthusiasm was, “I feel excited about [sport].” An example question of dedication was, “I am dedicated to achieving my goals in [sport].” An example question of confidence was, “I believe I am capable of accomplishing my [sport] goals.” Athletes responded to statements using a 5-point Likert scale (1 = *almost never* to 5 = *almost always*). Answers of 2 or lower indicated low burnout, scores between 2.5 and 3.5 indicated moderate athlete engagement and scores of 4 or higher indicated high athlete engagement. The AEQ has been indicated as a reliable and valid scale to measure athlete engagement through internal consistency analysis based on research from three studies with elite athletes from New Zealand ($n = 382$ and 343) and Canada ($n = 201$) conducted by Lonsdale et al., (2007b).

Procedures

The participation in this study was voluntary. For the soccer participants, data had already been collected. For the wrestling and swimming participants, their coaches and head of the organizations were contacted first in order to get permission to administer the questionnaire. We first emailed them and then followed up the email with a phone call. Once permission from them was granted, we contacted coaches and team managers from wrestling and soccer clubs within a three-hour drive of Greenville, North Carolina. For teams that agreed to participate, I attended a practice to administer a 10 to 15 minute survey. Participants did not need to sign a consent form before taking the questionnaire. Each participant was given a letter that provided

informed consent information about the questionnaire to keep for his or her records. It emphasized and assured that all identities were kept anonymous and confidential. Participation in answering the questionnaire was voluntary in nature. An athlete had the right to discontinue completing the survey at anytime or not take it at all. Before participants handed in the questionnaires, the questionnaires were checked for completion to make sure that there was no missing data. The principle investigator's contact information was provided in the event an individual has any questions in their involvement of the study. Following survey completion, I asked the coaches if they knew of additional coaches in the area who had athletes that would take the survey as well.

Statistical Analysis

A one-way ANOVA design was used to examine differences between early specializers, late specializers, and non-specializers, on burnout, engagement, and motivation. If there were significant differences between the groups we ran tukey Post-Hoc tests. Cohen's *d* measured the effect size with 0.12 or lower considered as having almost no effect, 0.2 had a small affect, 0.5 had a moderate effect, and 0.8 had a large effect. The statistical significance was $p < 0.05$. The size sample should have sufficient power to detect a moderate effect size. The statistical program that was used in this research was SPSS.

Chapter 4: Results

Sample 1: Female Club Soccer Athletes

Demographic Information

Overall, 289 soccer players participated in the study by completing the survey. Thirteen athletes did not meet the minimum age requirement of thirteen years so their data was excluded from all analyses resulting in a final sample size of $N = 276$. Prior to data analyses, the data was inspected for missing survey information. Of the entire sample, 61 participants had missing data on burnout, engagement, or motivation type, all of whom missed fewer than three items. In all cases, participants never missed more than a single item for a particular subscale. Consequently, if a participant missed a single item, the remaining items for that subscale were averaged and that number was inserted for the missing item. In addition, twenty-nine participants had missing specialization data and consequently were excluded from the data analysis comparing specializers to non-specializers. This resulted in a final sample size of 276 for descriptive statistics and 247 for the comparison of early specializers, late specializers, and non-specializers.

To ensure that each scale demonstrated strong reliability or internal consistency, Cronbach's alpha values were computed for each subscale. As shown in Table 1a., each subscale, except for identified regulation, had a Cronbach's alpha coefficient greater than .70 indicating acceptable reliability. Identified regulation's alpha coefficient was .65 and was deemed sufficiently close to the cut off of .70 to retain in subsequent analyses.

Next the descriptive statistics for the entire sample of soccer athletes were examined. As seen in table 2a., 21 teams participated in the survey. Of those clubs, two teams competed at the local level, two at the regional level, 13 teams at the state level, and the remaining four competed at the national level. A majority of the participants were Caucasian, 85.9% (237) with the

remaining either other/mixed (8%), African-American (3.3%), Hispanic (1.8%), or Asian (.7%). One participant did not identify her race.

The mean age of the participants was 14.94 (SD = 1.39) years. On average, participants started soccer participation at a young age (M = 4.71, SD = 1.80) and had extensive soccer experience. They competed in soccer an average of 10.19 (SD = 2.03) years with an average of 3.19 (SD = 2.34) years with their current club. They also trained an average of 3.53 (SD = 1.08) days per week for 10.62 (SD = 1.41) months per year. (SD = 2.34) In regards to competing on their high school team, 83.7% said they did while 16.3% reported not being affiliated with their high school's program. In terms of specialization, 113 athletes (41%) said they participated in multiple sports while 134 (59%) reported they participated in only soccer. Of the specializers, 112 of the athletes were categorized as early specializers and 22 were identified as late specializers.

Descriptive Statistics: Burnout, Engagement & Motivation

Next descriptive statistics on burnout, engagement, and motivation, were examined to describe the sample as a whole. For burnout the sample had moderately low exhaustion levels (M = 2.35, SD = 0.91) Participants also had low scores on reduced sense of accomplishment (M = 1.94, SD = 0.70) and devaluation (M = 1.60, SD = 0.74). In contrast to low burnout the scores, participants reported high engagement indicating that they had positive soccer experiences. Specifically, the sample had high levels of vigor (M = 4.611, SD = 0.59), enthusiasm (M = 4.71, SD = 0.52), dedication (M = 4.67, SD = 0.57), and confidence (M = 4.35, SD = 0.62).

For motivation type, participants reported high scores on self-determined motivation and moderate to low levels of non self-determined motivation. They reported high intrinsic

motivation levels ($M = 6.64$, $SD = 0.62$), identified regulation ($M = 6.00$, $SD = 0.89$) and integrated regulation ($M = 5.98$, $SD = 1.0$). For the non self-determined motivation, scores become progressively lower as motivation type became less self-determined. Specifically, they reported moderate levels of introjected regulation ($M = 3.40$, $SD = 1.81$), moderately low levels of external regulation ($M = 2.28$, $SD = 1.32$), and low levels of amotivation ($M = 1.77$, $SD = 1.12$).

Thus, the sample reported positive soccer experiences overall. Burnout scores were generally low and high scores in engagement. Self-determined motivation was high whereas non self-determined motivation scores were lower.

Given that 29 athletes were missing specialization data, descriptive statistics and effect sizes were calculated to examine whether those with missing data were similar to those participants with complete data. As shown in table 3. participants with missing data had slightly higher burnout scores across all three subscales with effect sizes in the small range (d range from $-.17$ to $-.32$). In comparison, those with missing specialization data reported lower vigor, dedication, and confidence than those with complete data with effect sizes small in the small range (all Cohen's $d \leq -.32$). Those with missing specialization data did however report slightly higher enthusiasm with the effect size being small in magnitude thus the differences between groups were not very meaningful ($d \leq .14$).

The overall theme on the motivation subscale results was that athletes who had complete specialization data had slightly higher self-determined and lower non self-determined motivation compared to those with missing data (see Table 3b). Inspection of the self-determined motivation type effect sizes showed moderate differences in intrinsic motivation ($d = .40$), moderately low differences in identified regulation ($d = .27$), and small differences in integrated regulation ($d =$

.21) between those with complete versus missing data. For non self-determined effect sizes showed that there were moderate differences between the two groups in introjected regulation ($d = -.46$), external regulation ($d = -.49$), and amotivation ($d = -.36$).

ANOVAs: Results by Specialization Status

To compare early specializers, late specializers and non-specializers, a series of ANOVAs were ran with burnout, engagement, and motivation as dependent measures. Overall, as shown in Table 4a., there were no significant differences between specialization groups on any of the burnout subscales at $p < .05$. Further supporting ANOVA results, inspection of mean scores and effect sizes show only small differences between the three groups on burnout (all Cohen $d < .22$). Similar to burnout, there were no significant differences between specialization groups on the engagement dimensions of enthusiasm, dedication, and confidence (Table 4a.). However, ANOVA results revealed there were significant differences between groups in vigor. Post hoc analysis showed that on average early specializers ($M = 4.56$, $SD = .52$) had higher vigor scores than non-specializers ($M = 4.36$, $SD = .66$). Inspection of Cohen d effect size revealed that difference between early specializers and the other two groups was fairly small in magnitude ($d = .29$ and $.34$).

Similar to burnout and engagement, there were no significant differences between specialization groups on the self-determined motivation types including intrinsic motivation, identified regulation, integrated regulation ($p > .05$). The differences between specialization groups on self-determined motivation types were small in magnitude with effect sizes all being less than $.22$. However, group significant differences existed on the non self-determined motivation types (See Table 4a.).

Follow up post hoc comparisons and inspection of mean scores revealed that non-specializers had higher non self-determined motivation than did early specializers, however, differences in effect sizes were moderately low in magnitude. Specialization types did not differ on amotivation with effect sizes being small in magnitude. This showed that early specializers had better overall motivational profiles than non-specializers.

Correlations: Relationships between Age and Outcome Variables

Given that most of the sample of early specializers were young in age, it is possible that early specialization might not have a negative impact until later in athletes' sport career. Supplementary correlation analyses were used to examine this possibility. Late specializers were excluded from these analyses due to only 22 athletes falling into this category. For the early specializers' burnout components, there were small positive correlations between age and exhaustion ($r = .03$), accomplishment ($r = .20$), and devaluation ($r = .26$). However the correlation results were small in magnitude so there was not a strong relationship between age and burnout. In contrast to burnout, small negative correlations existed between age and engagement for early specializers. Specifically, there was a small negative correlation between age and vigor ($r = -.25$), enthusiasm ($r = -.19$), dedication ($r = -.18$), and confidence ($r = -.13$). For non-specializers there was no significant relationships between age and burnout or engagement (see Table 5.). For the early specializers, age and motivation type were unrelated for the most part. There was, however, a positive correlation between age and external regulation, but the correlation was small in magnitude ($r = .19$). For non-specializers correlations between age and motivation type found only one significant correlation at $p = .01$ between age and integrated regulation, but was small in magnitude ($r = -.29$).

Chapter 5: Results

Sample 2: Wrestling and Swimming Club Athletes

Demographic Information

The data was also inspected for the second sample to notice if there was any missing survey information. Of the entire sample of 107 participants, one participant's survey had to be excluded from the research for due to extensive missing data, 14 other participants had missing data on burnout, engagement, or motivation type, all of whom missed no more than three items. As done for the first sample, if a participant missed a single item on a given subscale, the remaining items for that subscale were averaged and that number was inputted into the missing data slot. This resulted in a final sample size of 106.

The Cronbach's alpha values were initially computed for each subscale to ensure that each scale demonstrated strong reliability or internal consistency. As shown in Table 1b., all the subscales had a Cronbach's alpha greater than .70 indicating acceptable reliability except for vigor and identified regulation. Vigor's coefficient was 0.68, and identified regulation's coefficient was 0.69. It was deemed that both were sufficiently close to the cut off point of .70 that both subscales would be used in data analyses.

Descriptive Statistics

As seen in table 2b., descriptive statistics for all of the 106 wrestlers and swimmers were then examined. Overall 15 club teams participated in this survey, 11 wrestling clubs and four swimming clubs. There were 29 wrestlers and 77 swimmers who participated. Of these 106 participants, 81 of them were Caucasian (76.4%), 10 were other/mixed (9.4%), seven were African American (6.6%), four were Hispanic (3.8%) and four were Asian (3.8%). The

participants' mean age was 15.67 (SD = 1.38) years, and 8.66 (SD = 3.62) years of age was the mean sports participation start age. They trained an average of 5.53 (SD = 1.24) days per week, for 9.93 (SD = 2.87) months out of the year on average in their respective sport. They have competed in their primary sport an average of 7.08 (SD = 3.40) years and the mean number of years affiliated with their current team was 4.97 (SD = 3.26). In addition to their club team, most (i.e., 81) said they also competed on their high school team. In terms of specialization, nearly half were non-specializers (n = 51). For the 55 specializers, 30 were classified as early and 25 as late specializers. On average late specializers focused solely on one sport at the average age of 14.10 (SD = 1.14) years whereas the early specializers reported focusing on one sport at the average age of 9.30 (SD = 2.02) years.

ANOVAs: Results by Specialization Status

ANOVAs were used to compare the second sample of early specializers to late specializers and non-specializers on the dependent measure of burnout, engagement, and motivation type. The results showed that there were no significant differences between specialization groups on any of the burnout, engagement, or motivation subscales at $p < .05$ (See Table 4b.). Further supporting these ANOVA results, inspection of mean scores and effect sizes showed small differences across groups on all subscales. For burnout, all three subscales had very small-to-small effect sizes when comparing early specializers to late and non-specializers (all Cohen's $d \leq .24$). For engagement all of the effect sizes between early versus late, except for confidence, were very small (all Cohen's $d \leq .19$). There was a moderately low effect size for confidence between early and late specializers ($d = .41$) with early specializers having higher levels of confidence. The effect sizes between early versus non-specializers were at most

moderately low (all Cohen's $d \leq .34$). Following the same pattern as burnout and engagement, the effect size differences between early, late, and non-specializers on motivation type were small in magnitude (all Cohen's $d \leq .19$) (see Table 4b.).

Chapter 6. Discussion

According to position statements, early specialization may increase the risk of burnout and result in lower motivation (Côté et al., 2009; CSFL, 2016; NASPE, 2010). However, very few empirical studies have examined specialization and its impact on burnout (Gould et al., 1996; Gustafsson et al., 2007; Strachan et al., 2009) and motivation (Russell & Symonds, 2015). The studies that have examined the association of specialization with burnout and motivation have found mixed results, which may be due to design limitations. For example, some studies have evaluated college students recall of their youth sport experiences, which is limited in that their recall might not be accurate several years later (Russell & Symonds, 2014). Others were limited in that they sampled sports where it was necessary to specialize at an early age (Law et al., 2007) and compared them to multi-sport athletes who competed in different sports at a different competitive level (Strachan et al., 2009). As far as we know, no studies have compared early and late specializers in burnout and motivation. The main void this research fills is that studies have not assessed whether early or late specialization is differentially associated with burnout, engagement and motivation in sports where athletes do not need to specialize at an early age.

Results from both samples in the current study indicate that very few differences existed between early specializers, late specializers and non-specializers on burnout, engagement, and motivation type. In contrast to predictions in sample one, early specializers had lower non self-determined motivation (e.g. introjected regulation and external regulation) compared to non-specializers. They also reported higher vigor compared to both late and non-specializers. For sample two there were no significant differences between groups on burnout, engagement, or

motivation. Thus results from this study fail to support the common belief articulated in position statements suggesting that specialization has a negative impact on burnout or motivation.

One explanation why the findings are in contrast to recommendations of position statements, most of the athletes who participated were young in age. It is possible that the impact of early specialization may not manifest itself until athletes are further in their sport careers. Consequently correlations between age and burnout, engagement and motivation were examined. Correlational analyses revealed that for early specializers, there was a small positive correlation between age and burnout as well as small negative relationships between age and engagement. Older athletes who specialized early had slightly higher burnout scores and lower engagement scores compared to younger athletes. This provides some support that the negative effects of early specialization may be manifested later in an athlete's career versus earlier. However, the correlations were not strong indicating that age was weakly related to burnout and engagement. This suggests that the risk of burnout increasing for early specializers as they age is small. For non-specializers there was almost no relationship of age with burnout, engagement, or motivation aside from a small negative correlation between age and integrated regulation.

In juxtaposition to the results of the current study, qualitative studies have shown that specialization was associated with negative outcomes through interviews of athletes on their sports experiences. For example, Law et al. (2007) showed that early specializers had significantly less fun than their counterparts when training. This study has shown that specializers will have less enjoyment in their sport involvement; however, it did not directly study burnout and motivation. There have been other qualitative studies that have shown that specialization was associated with burnout and negative motivational outcomes through interviews of athletes (Gould et al., 1996; Gustafsson et al., 2007).

Aside from those studies, there have been very few quantitative studies that have examined the relationship of specialization and burnout. The past quantitative studies have found mixed results in terms of whether specialization is associated with burnout. Similar to the results of the current studies, Yapar & Levent (2014) found no differences between specializers and non-specializers on burnout. In contrast, Strachan et al. (2009) found that specializers had higher burnout than did non-specializers, especially for emotional physical exhaustion. The difference between Strachan et al.'s 2009 study and others studies could be the fact that their specializers were athletes who specialized in sports where early specializing was required. In addition, it is possible that since Strachan et al. (2009) sampled non-specializers from camps, junior and high school sports that the non-specializers were more seasonal athletes. In contrast, the non-specializers in the current study participated soccer, swimming, or wrestling more than 10 months per year. Thus, it is possible that non-specializers who are highly involved in their primary sport may have a different response pattern on burnout than those who are more seasonal athletes. It is also possible that by sampling current athletes during their practice, it is possible that athletes who have already dropped out of the sport were missed.

When comparing early and late specializers to non-specializers on motivation, the current study found no significant differences, which is similar to prior research. For example, although Russell & Symonds (2015) found that college students who had specialized were less involved in sports later in life, there were no significant differences on motivation related variables based on recall of their youth sport experiences. Likewise McFadden et al. (2015) found no differences in need satisfaction between specializers and non-specializers. They did however find that specializers had higher need dissatisfaction non-specializers. Overall past research suggests that specialization does not negatively impact motivation type.

Across studies, early versus late specialization does not appear to be associated with burnout and less self-determined motivation amongst athletes. Since early specialization is defined in terms of involvement in one sport and high amounts of deliberate practice, one possibility could be the amount of time spent in deliberate play and practice has a larger impact on burnout and motivation than whether athletes participate in single or multiple sports. Wall and Côté (2007) studied the start age of hockey players' off-ice training that was specifically designed for hockey improvement. They found that the younger the athletes started this deliberate off-ice training, the higher the chance of them dropping the sport. Their results suggest that early involvement in deliberate practice activities that are not enjoyable may lead to decreased intrinsic motivation. The Wall & Côté (2007) study showed that the more time spent in deliberate practice could be associated with increased risk of burnout and maladaptive motivation. Similar to Wall and Côté, Hendry, Crocker, and Hodge (2014) examined practice and play as determinants of self-determined motivation. They found that there was no association between the amount of time spent in deliberate play and self-determined motivation. They did find that for older athletes, the more time spent in deliberate practice the lower the autonomous motivation and the higher the controlled motivation. This supports that as athletes, age high amounts of deliberate practice can be associated with lower motivation

Another possibility as to why minimal differences existed between specializers and non-specializers on burnout and motivation could be due to both groups spending similar amounts of time in their primary sport (e.g., soccer, wrestling, swimming) with the non-specializers participating in multiple sports simultaneously. This could impact not only burnout and motivation but also injury rates. Past research has consistently shown that early specialization can result in on overuse injuries (Hall et al., 2015; Jayanthi et al., 2015; Jayanthi et al., 2013;

Malina, 2010; Myer et al., 2015). However, it is possible that the non-specializers in club sports might be at greater risk of overuse injuries compared to specializers since they participate in multiple sports at the same time.

Since early, late and non-specializing athletes were on the same teams, it could be quality of the sport experience may be more strongly associated with burnout and motivation types rather than whether or not athletes specialize. The quality of the sport experience could be reflected by basic need fulfillment (Bartholomew, Ntoumanis, and Thøgersen-Ntoumani, 2009; Li, Wang, Pyun & Kee, 2013), the motivational climate (Cumming, Smoll, Smith & Grossbard, 2007), and the coach leadership style (Price & Weiss, 2000; Vealey, Armstrong, Comar, & Greenleaf, 1998).

Research has shown that basic need fulfillment is associated with burnout and motivation quality. A meta-analysis study conducted by Li et al. (2013) evaluated the relationship of burnout with athletes' basic psychological needs and motivation. After examining numerous studies their results found that basic psychological needs, intrinsic motivation, extrinsic autonomous regulation and amotivation predicted burnout, i.e. fulfillment of basic psychological needs had a negative influence on burnout dimensions (Li et al., 2013). Bartholomew et al. (2009) identified six specific controlling strategies used by coaches that may thwart need fulfillment and thus contribute to lower motivation. The first would be using tangible rewards to manipulate an athlete's behavior and encourage desired behaviors. Another controlling strategy would be controlling feedback. When coaches use controlling feedback, they point out all the negative aspects of athletes' performances, but do not highlight the things athletes have done well. Excessive personal control is when coaches discount opinions that are different than their own and sees these different opinions as criticism (Bartholomew et al., 2009). Fourthly would be

using intimidation behaviors to force athletes to comply with the coach's expectations via power assertive techniques. Promoting-ego involvement is having the athletes feel that their self-worth is reliant on showing superiority against other athletes. Lastly conditional regard is when coaches provide attention to athletes who display certain behaviors and withdraws attention when the athletes do not display them (Bartholomew et al., 2009). These studies showed that the fulfillment of basic needs were positively correlated to self-determined motivation and negatively correlated with burnout.

Related to basic needs, other coach behaviors associate with burnout and motivation type include motivational climate. Research has shown that a mastery motivational climate has a stronger impact on athletes' sport experience than win/loss record or ego/outcome motivational climate (Cumming et al., 2007). In particular, a mastery motivational climate is associated with a variety of positive outcomes include basic need fulfillment, increased self-determined motivation and lower burnout (Amorose & Anderson-Butcher, 2007; Langan et al., 2014). To create a mastery motivational climate, coaches can reduce the notion that winning is the only important thing in sports and rather define success in terms of skill development and mastery. Consequently, they emphasize effort, learning, and skill development, while recognizing that mistakes are a natural part of the learning process (Cumming et al., 2007).

The leadership style of a coach can have an impact on burnout and athletes' motivation quality. Vealey et al. (1998) examined the influence of perceived coaching behaviors on competitive anxiety and burnout. Their results found that perceived coaching styles/behavior was predictive of burnout in athletes. Athletes who scored higher on burnout dimensions felt that their coaches emphasized dispraise over praise, were less empathetic, and had an autocratic coaching style (Vealey et al., 1998). Another study conducted by Price & Weiss (2000)

evaluated the relationship among burnout in coaches, their behaviors, and athletes' psychological responses. Their results found that coaches who were higher in emotional exhaustion had athletes who believed that they were getting less training, instruction as well as social support (Price & Weiss, 2000). Athletes who perceived that they received greater training, instruction, positive feedback, and social support were more related to positive and less negative psychological outcomes, such as burnout. Collectively, these results may show that coach behaviors and leadership style are associated with burnout and motivation quality in athletes. Since both specializers and non-specializers played for the same coaches in the current study, it is possible that coach leadership style and behaviors may have a larger impact on burnout and motivation type than specialization status.

The current study provides different possible directions for future studies on this topic. Researchers should take a longitudinal approach and track athletes over several seasons in their sport career to evaluate whether specializers show a decrease in motivation quality and an increase in burnout scores across several seasons compared to non-specializers. By doing this type of study, researchers may be able to observe if early specialization played a part in burnout and lower motivation quality. Future research should also include the amount of time an athlete spends in deliberate play and deliberate practice and not simply whether they participate in one or multiple sports. Since position papers have argued that too much deliberate practice could be a problem (Côté et al., 2009; CSFL, 2016; NASPE, 2010), future studies should look into seeing if there is a relationship between deliberate practice and burnout and motivation. Future research should also differentiate non-specializers who are more seasonal athletes versus those who are in concurrent sports at the same time. The club sport non-specializers are just as involved in their primary as specializers, but they are not getting a break from the sport as they participate in

multiple sports concurrently. This may actually increase the risk of burnout and decreased motivation as they are not seasonal athletes.

This study did have potential limitations that should be noted. A major one is that a majority of the athletes were very young. Older athletes who experienced burnout or motivation loss could have left the sport. This makes it possible that it could be specialization is a problem, but the survey just did not sample athletes who may have experienced maladaptive motivational outcomes. Having so few late specializers in the first sample could be a limitation. There is the possibility that with a more balanced sample, a more accurate representation on burnout and motivation quality of the different specialization types could have been obtained.

Although numerous position papers argue against specialization (Côté et al., 2009; CSFL, 2016; NASPE, 2010), the findings from this study may suggest that early specialization is not negative in terms of its association with burnout and motivation. However, future research is needed to examine this issue to develop a more complete understanding of specialization given the trend toward early specialization in today's sport world. In doing so, it will be important to differentiate non-specializers who participate in multiple sports seasonally versus athlete who participate nearly year round while simultaneously participating in other sports. In addition, sampling older athletes who specialize early will be important as the negative impact of early specialization may transpire over time.

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Table 1a. Sample 1 Reliability Analysis

| Subscale | Cronbach's Alpha |
|-------------------------------|-------------------------|
| Exhaustion | 0.90 |
| Reduced Accomplishment | 0.79 |
| Sport Devaluation | 0.84 |
| Vigor | 0.84 |
| Enthusiasm | 0.89 |
| Dedication | 0.89 |
| Confidence | 0.86 |
| Intrinsic Motivation | 0.82 |
| Integrated Regulation | 0.75 |
| Identified Regulation | 0.65 |
| Introjected Regulation | 0.83 |
| External Regulation | 0.81 |
| Amotivation | 0.85 |

Table 1b. Sample 2 Reliability Analysis

| Subscale | Cronbach's Alpha |
|-------------------------------|-------------------------|
| Exhaustion | 0.79 |
| Reduced Accomplishment | 0.82 |
| Sport Devaluation | 0.87 |
| Vigor | 0.68 |
| Enthusiasm | 0.87 |
| Dedication | 0.85 |
| Confidence | 0.85 |
| Intrinsic Motivation | 0.83 |
| Integrated Regulation | 0.79 |
| Identified Regulation | 0.69 |
| Introjected Regulation | 0.79 |
| External Regulation | 0.86 |
| Amotivation | 0.79 |

Table 2a. Sample 1 Demographics

| Variable | Overall | Early | Late | Non |
|---------------------------------------|----------------|---------------|---------------|---------------|
| | N = | n = | n = | n = |
| Participants | 276 | 112 | 22 | 113 |
| Race | | | | |
| Caucasian | 237 | 97 | 20 | 96 |
| African American | 9 | 1 | | 6 |
| Hispanic | 5 | 2 | | 1 |
| Asian | 2 | 1 | | 1 |
| Other/Mixed | 22 | 10 | 2 | 9 |
| Missing | 1 | 1 | | |
| High School | | | | |
| Yes | 231 | 85 | 21 | 99 |
| No | 45 | 27 | 1 | 14 |
| Other Sport | | | | |
| Yes | 113 | | | 113 |
| No | 163 | 112 | 22 | |
| Total Teams | 21 | | | |
| National | 4 | | | |
| State | 13 | | | |
| Regional | 2 | | | |
| Local | 2 | | | |
| | M (SD) | M (SD) | M (SD) | M (SD) |
| Age | 14.94 (1.39) | 14.76 (1.26) | 15.82 (.91) | 14.81 (1.32) |
| Start Age | 4.71 (1.80) | 4.83 (1.90) | 4.91 (2.04) | 4.60 (1.73) |
| Age Specialized Practices/Week | 8.40 (3.56) | 7.34 (2.86) | 13.77 (.81) | |
| Months/Year | 3.53 (1.08) | 3.71 (1.00) | 3.32 (.78) | 3.36 (1.247) |
| Years Playing | 10.62 (1.41) | 10.67 (1.41) | 10.70 (1.44) | 10.48 (1.46) |
| | 10.19 (2.03) | 9.93 (2.20) | 11.09 (1.57) | 10.04 (1.96) |

Table 2b. Sample 2 Demographics

| Variable | Overall | Early | Late | Non |
|-------------------------|----------------|-------------------|-------------------|-------------------|
| | (N = 106) | (n = 30) | (n = 25) | (n = 51) |
| Gender | | | | |
| Overall | 106 | 30 | 25 | 51 |
| Male | 70 | 15 | 18 | 37 |
| Female | 36 | 15 | 7 | 14 |
| Race | | | | |
| Caucasian | 81 | 24 | 20 | 37 |
| African American | 7 | 2 | 2 | 3 |
| Hispanic | 4 | | | 4 |
| Asian | 4 | 3 | | 1 |
| Other/Mixed | 10 | 1 | 3 | 6 |
| Sport | | | | |
| Wrestling | 29 | 2 | 6 | 21 |
| Swimming | 77 | 30 | 17 | 30 |
| High School | | | | |
| Yes | 81 | 22 | 24 | 35 |
| No | 25 | 8 | 1 | 16 |
| Other Sport | | | | |
| Yes | 51 | | | 51 |
| No | 55 | 30 | 25 | |
| Total Clubs | 15 | | | |
| Wrestling | 11 | | | |
| Swimming | 4 | | | |
| | M (SD) | M (SD) | M (SD) | M (SD) |
| Age | 15.67 (1.38) | 15.60 (1.50) | 16.40 (1.16) | 15.35 (1.29) |
| Start Age | 8.66 (3.62) | 6.93 (2.23) | 9.00 (3.29) | 9.51 (4.10) |
| Age Specialized | 11.48 (2.93) | 9.30 (2.02) | 14.10 (1.14) | |
| Practices/Week | 5.53 (1.24) | 6.05 (.87) | 5.42 (1.48) | 5.27 (1.22) |
| Practice Length | 134.84 (28.34) | 138.93 (30.61) | 129.70 (23.37) | 134.95 (29.29) |
| Months/Year | 9.93 (2.87) | 10.73 (2.20) | 10.32 (2.27) | 10.41 (2.00) |
| Years Playing | 7.08 (3.40) | 8.58 (2.64) | 7.72 (3.40) | 5.88 (3.42) |

Table 3. Sample 1 Descriptives

| Variable | Overall w/o Missing | Missing Specialization | Cohen <i>d</i> |
|-------------------------------|--------------------------------|-----------------------------------|-----------------------|
| | (N = 247) | (N = 29) | |
| | M (<i>SD</i>) | M (<i>SD</i>) | |
| Exhaustion | 2.32 (.90) | 2.55 (1.01) | -.25 |
| Reduced Accomplishment | 1.93 (.69) | 2.05 (.80) | -.17 |
| Devaluation | 1.58 (.73) | 1.82 (.85) | -.32 |
| Vigor | 4.45 (.60) | 4.51 (.52) | -.10 |
| Enthusiasm | 4.71 (.51) | 4.64 (.54) | .14 |
| Dedication | 4.66 (.58) | 4.78 (.56) | -.21 |
| Confidence | 4.32 (.63) | 4.39 (.57) | -.11 |
| Intrinsic Motivation | 6.66 (.62) | 6.41 (.62) | .40 |
| Integrated Regulation | 6.00 (1.00) | 5.79 (.96) | .21 |
| Identified Regulation | 6.03 (.87) | 5.79 (1.06) | .27 |
| Introjected Regulation | 3.35 (1.78) | 3.81 (2.08) | -.46 |
| External Regulation | 2.21 (1.24) | 2.84 (1.77) | -.49 |
| Amotivation | 1.72 (1.09) | 2.14 (1.73) | -.36 |

Table 4a. Sample 1 ANOVA Results by Specialization Status

| Variable | Early Specializer | Late Specializer | Non- Specializer | F value | <i>p</i> | Early vs. Late Cohen <i>d</i> | Early vs. Non Cohen <i>d</i> |
|---|--------------------------|---------------------------|--------------------------|---------|----------|-------------------------------------|------------------------------------|
| | M (SD) | M (SD) | M (SD) | | | Cohen <i>d</i> | Cohen <i>d</i> |
| Exhaustion | 2.27 (.90) | 2.32 (.74) | 2.38 (.96) | .39 | .68 | -.06 | -.12 |
| Reduced Accomplishment Devaluation | 1.87 (.69) | 1.98 (.56) | 1.99 (.71) | .87 | .42 | -.16 | -.17 |
| Vigor | 4.56 (.52) ^a | 4.41 (.55) ^{ab} | 4.36 (.66) ^b | 3.34 | .04* | .29 | .34 |
| Enthusiasm | 4.76 (.50) | 4.83 (.30) | 4.64 (.55) | 1.98 | .14 | -.15 | .23 |
| Dedication | 4.72 (.58) | 4.66 (.57) | 4.60 (.57) | 1.29 | .28 | .10 | .21 |
| Confidence | 4.42 (.63) | 4.42 (.57) | 4.28 (.70) | 1.36 | .26 | 0 | .21 |
| Intrinsic Motivation | 6.72 (.53) | 6.69 (.41) | 6.60 (.72) | 1.04 | .36 | .06 | .19 |
| Integrated Regulation | 6.06 (.99) | 6.05 (.74) | 5.93 (1.06) | .44 | .64 | .01 | .13 |
| Identified Regulation | 5.95 (.90) | 6.14 (.58) | 6.09 (.89) | .93 | .40 | -.22 | -.16 |
| Introjected Regulation | 3.06 (1.79) ^a | 2.91 (1.51) ^{ab} | 3.72 (1.75) ^b | 4.85 | .009** | .09 | -.37 |
| External Regulation | 1.97 (1.09) ^a | 1.95 (.86) ^{ab} | 2.49 (1.38) ^b | 5.64 | .004** | .02 | -.42 |
| Amotivation | 1.65 (1.10) | 1.73 (.86) | 1.79 (1.16) | .51 | .60 | -.08 | -.12 |

Note. Variables with unique letters are significantly different

p < .05 = *

p < .01 = **

Table 4b. Sample 2 ANOVA Results by Specialization Status

| Variable | Early | Late | Non- | F value | <i>p</i> | Early vs. | Early vs. |
|-------------------------------|-------------|-------------|-------------|---------|----------|----------------|----------------|
| | Specializer | Specializer | Specializer | | | Late | Non |
| | M (SD) | M (SD) | M (SD) | | | Cohen <i>d</i> | Cohen <i>d</i> |
| Exhaustion | 2.94 (.99) | 2.85 (.78) | 2.85 (1.08) | .09 | .92 | .10 | .09 |
| Reduced Accomplishment | 2.15 (.83) | 2.34 (.93) | 2.14 (.82) | .52 | .59 | -.24 | .01 |
| Devaluation | 1.82 (.87) | 1.90 (1.06) | 1.87 (.89) | .05 | .94 | -.08 | -.06 |
| Vigor | 4.11 (.64) | 4.22 (.50) | 4.22 (.61) | .35 | .71 | -.19 | -.18 |
| Enthusiasm | 4.24 (.74) | 4.28 (.77) | 4.39 (.66) | .46 | .63 | -.05 | -.22 |
| Dedication | 4.66 (.52) | 4.65 (.51) | 4.49 (.63) | 1.49 | .23 | .02 | .29 |
| Confidence | 4.49 (.73) | 4.19 (.75) | 4.25 (.68) | 1.49 | .23 | .41 | .34 |
| Intrinsic Motivation | 5.84 (1.21) | 5.84 (1.01) | 6.00 (1.05) | .30 | .74 | 0 | -.14 |
| Integrated Regulation | 5.65 (1.13) | 5.62 (1.28) | 5.69 (1.07) | .05 | .95 | .03 | -.04 |
| Identified Regulation | 6.09 (.83) | 6.15 (1.02) | 6.04 (.93) | .10 | .90 | -.07 | .05 |
| Introjected Regulation | 4.40 (1.51) | 4.71 (1.82) | 3.89 (1.65) | 2.26 | .11 | -.19 | .32 |
| External Regulation | 2.73 (1.59) | 2.77 (1.57) | 2.90 (1.70) | .11 | .90 | -.03 | -.10 |
| Amotivation | 2.53 (1.44) | 2.55 (1.59) | 2.48 (1.31) | .03 | .98 | -.01 | .04 |

p < .05 = *

p < .01 = **

Table 5. Sample 1 Correlations between age & burnout, engagement, and motivation subscales of Early and Non-Specializers

| | Exhaustion | Accomplishment | Devaluation | Vigor | Enthusiasm | Dedication | Confidence |
|--------------|-------------------|-----------------------|--------------------|--------------|-------------------|-------------------|-------------------|
| Early | .03 | .20 * | .26** | -.25** | -.19* | -.18 | -.13 |
| Non | -.13 | .15 | .10 | -.05 | -.10 | -.11 | -.10 |

| | Intrinsic Motivation | Integrated Regulation | Identified Regulation | Introjected Regulation | External Regulation | Amotivation |
|--------------|-----------------------------|------------------------------|------------------------------|-------------------------------|----------------------------|--------------------|
| Early | -.18 | -.17 | -.08 | -.06 | .19* | .15 |
| Non | -.17 | -.29** | .07 | -.01 | .06 | -.02 |

$p < .05 = *$
 $p < .01 = **$
 $p < .001 = ***$

$p < .05 = *$
 $p < .01 = **$
 $p < .001 = ***$

APPENDIX A:

INFORMED CONSENT

Athlete Thoughts and Feelings about Their Soccer Experiences

This study is being conducted by Tom Raedeke, a professor at East Carolina University, who specializes in sport psychology. You have been selected to participate in a research study looking at motivation and factors thought to influence soccer participation. The information from this study will be useful in helping us learn more about making soccer a positive experience for athletes. You have been selected to participate because you are a member of a soccer club.

Although you may not directly benefit from participating in this study, there are minimal risks associated with survey completion. You may develop greater self-awareness by completing the survey. If this increased self-awareness creates any emotional discomfort, you are free to discontinue survey completion and talk to the person administering the survey.

If you agree to participate, we would like you to complete a survey. It will take about 15 minutes to complete. The survey is not a test -- there are no right or wrong answers. Rather we are interested in getting your thoughts about soccer participation. When answering the questions, do not spend much time on each item, rather simply record your initial thought. No one will see your completed questionnaire except a research assistant and myself. Your answers are completely confidential and anonymous, so you don't need to put your name on the survey.

Your participation is completely voluntary. If you want to stop completing the survey at any time, that's okay. Just let us know. If you volunteer to fill out the survey, you can simply complete it without signing this letter. If you prefer, you can sign your name and write the date on this letter. I can then give you another copy of the letter to keep. Don't put your name on the questionnaire.

Once we complete the study, we will share a copy of the results with your coach that he or she can give you. If you think of any comments about this study, please feel free to contact me at the address listed on the letter.

Thanks again for your help!

Signed _____ Date _____

Dr. Tom Raedeke
Dept. of Kinesiology
175 Minges Coliseum
East Carolina University
Greenville, NC 27858
raedeket@ecu.edu
252 737-1292

Athlete Thoughts and Feelings about Their Wrestling Experiences

This study is being conducted by Tom Raedeke, a professor at East Carolina University, who specializes in sport psychology. You have been selected to participate in a research study looking at motivation and factors thought to influence wrestling participation. The information from this study will be useful in helping us learn more about making wrestling a positive experience for athletes. You have been selected to participate because you are a member of a wrestling club.

Although you may not directly benefit from participating in this study, there are minimal risks associated with survey completion. You may develop greater self-awareness by completing the survey. If this increased self-awareness creates any emotional discomfort, you are free to discontinue survey completion and talk to the person administering the survey.

If you agree to participate, we would like you to complete a survey. It will take about 15 minutes to complete. The survey is not a test -- there are no right or wrong answers. Rather we are interested in getting your thoughts about wrestling participation. When answering the questions, do not spend much time on each item, rather simply record your initial thought. No one will see your completed questionnaire except a research assistant and myself. Your answers are completely confidential and anonymous, so you don't need to put your name on the survey.

Your participation is completely voluntary. If you want to stop completing the survey at any time, that's okay. Just let us know. If you volunteer to fill out the survey, you can simply complete it without signing this letter. If you prefer, you can sign your name and write the date on this letter. I can then give you another copy of the letter to keep. Don't put your name on the questionnaire.

Once we complete the study, we will share a copy of the results with your coach that he or she can give you. If you think of any comments about this study, please feel free to contact me at the address listed on the letter.

Thanks again for your help!

Signed _____ Date _____

Dr. Tom Raedeke
Dept. of Kinesiology
175 Minges Coliseum
East Carolina University
Greenville, NC 27858
raedeket@ecu.edu
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Athlete Thoughts and Feelings about Their Swimming Experiences

This study is being conducted by Tom Raedeke, a professor at East Carolina University, who specializes in sport psychology. You have been selected to participate in a research study looking at motivation and factors thought to influence swimming participation. The information from this study will be useful in helping us learn more about making swimming a positive experience for athletes. You have been selected to participate because you are a member of a swimming club.

Although you may not directly benefit from participating in this study, there are minimal risks associated with survey completion. You may develop greater self-awareness by completing the survey. If this increased self-awareness creates any emotional discomfort, you are free to discontinue survey completion and talk to the person administering the survey.

If you agree to participate, we would like you to complete a survey. It will take about 15 minutes to complete. The survey is not a test -- there are no right or wrong answers. Rather we are interested in getting your thoughts about swimming participation. When answering the questions, do not spend much time on each item, rather simply record your initial thought. No one will see your completed questionnaire except a research assistant and myself. Your answers are completely confidential and anonymous, so you don't need to put your name on the survey.

Your participation is completely voluntary. If you want to stop completing the survey at any time, that's okay. Just let us know. If you volunteer to fill out the survey, you can simply complete it without signing this letter. If you prefer, you can sign your name and write the date on this letter. I can then give you another copy of the letter to keep. Don't put your name on the questionnaire.

Once we complete the study, we will share a copy of the results with your coach that he or she can give you. If you think of any comments about this study, please feel free to contact me at the address listed on the letter.

Thanks again for your help!

Signed _____ Date _____

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APPENDIX B: QUESTIONNAIRE FOR SOCCER PLAYERS



Reflections on Your Soccer Experiences

2013 Season

Instructions:

There are no right or wrong answers so please answer each question as honestly as you can. Some items may appear similar but please respond to all the statements. Do not spend too much time on any one question. Please make sure you answer all items. If you have any questions, feel free to ask.

Why Do You Participate in Soccer?

Below are some reasons why people participate in soccer. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you participate.

I participate in soccer...

| | | Not true at all | | Somewhat true | | | Very true | |
|----|--|--------------------|---|------------------|---|---|--------------|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | because I enjoy it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | because it's a part of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | because it's an opportunity to just be who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | because I would feel ashamed if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | but the reasons why are not clear to me anymore. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | because I would feel like a failure if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | but I wonder what's the point. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | because what I do in sport is an expression of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | because the benefits of sport are important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | because if I don't other people will not be pleased with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | because I like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | because I feel obligated to continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | but I question why I continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | because I feel pressure from other people to play. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | because people push me to play. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | because it's fun. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | because it teaches me self-discipline. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | because I would feel guilty if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | because I find it pleasurable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | because I value the benefits of soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | but I question why I am putting myself through this. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | because it is a good way to learn things which could be useful to me in my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | in order to satisfy people who want me to play. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | because it allows me to live in a way that is true to my values. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

INSTRUCTIONS: Below are some statements athletes have made about their soccer experiences. Please indicate how often you have felt this way about your participation this season which includes all training and competition.

| | | Almost never | Rarely | Some times | Frequently | Almost always |
|-----|---|--------------|--------|------------|------------|---------------|
| 1. | I believe I am capable of accomplishing my soccer goals | 1 | 2 | 3 | 4 | 5 |
| 2. | I feel energized when I participate in soccer. | 1 | 2 | 3 | 4 | 5 |
| 3. | I am dedicated to achieving my goals in soccer. | 1 | 2 | 3 | 4 | 5 |
| 4. | I feel excited about soccer. | 1 | 2 | 3 | 4 | 5 |
| 5. | I feel capable of success in soccer. | 1 | 2 | 3 | 4 | 5 |
| 6. | I feel energetic when I participate in soccer. | 1 | 2 | 3 | 4 | 5 |
| 7. | I am determined to achieve my goals in soccer. | 1 | 2 | 3 | 4 | 5 |
| 8. | I am enthusiastic about soccer. | 1 | 2 | 3 | 4 | 5 |
| 9. | I believe I have the skills/technique to be successful in soccer. | 1 | 2 | 3 | 4 | 5 |
| 10. | I feel really alive when I participate in soccer. | 1 | 2 | 3 | 4 | 5 |
| 11. | I am devoted to soccer. | 1 | 2 | 3 | 4 | 5 |
| 12. | I enjoy soccer. | 1 | 2 | 3 | 4 | 5 |
| 13. | I am confident in my soccer abilities. | 1 | 2 | 3 | 4 | 5 |
| 14. | I feel mentally alert when I participate in soccer. | 1 | 2 | 3 | 4 | 5 |
| 15. | I want to work hard to achieve my goals in soccer. | 1 | 2 | 3 | 4 | 5 |
| 16. | I have fun in soccer. | 1 | 2 | 3 | 4 | 5 |

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

| | | Almost Never | Rarely | Some times | Frequentl y | Almost Always |
|----|--|--------------|--------|------------|----------------|---------------|
| | <u>How often do you feel this way?</u> | | | | | |
| 1. | I'm accomplishing many worthwhile things in soccer | 1 | 2 | 3 | 4 | 5 |
| 2. | I feel so tired from my training that I have trouble | 1 | 2 | 3 | 4 | 5 |

finding energy to do other things

3. The effort I spend in soccer would be better spent doing other things 1 2 3 4 5

How often do you feel this way?

Almost Never Rarely Some times Frequently Almost Always

4. I feel overly tired from my soccer participation 1 2 3 4 5

5. I am not achieving much in soccer 1 2 3 4 5

6. I don't care as much about my soccer performance as I used to 1 2 3 4 5

7. I am not performing up to my ability in soccer 1 2 3 4 5

8. I feel "wiped out" from soccer 1 2 3 4 5

9. I'm not into soccer like I used to be 1 2 3 4 5

10. I feel physically worn out from soccer 1 2 3 4 5

11. I feel less concerned about being successful in soccer than I used to 1 2 3 4 5

12. I am exhausted by the mental and physical demands of soccer 1 2 3 4 5

13. It seems that no matter what I do, I don't perform as well as I should 1 2 3 4 5

14. I feel successful at soccer 1 2 3 4 5

15. I have negative feelings toward soccer 1 2 3 4 5

16. I am completely exhausted from soccer 1 2 3 4 5

INSTRUCTIONS: Please answer the questions according to your feelings and experiences when participating in soccer

| | | Not true at all | | Somewhat true | | | Very true | |
|---|--|-----------------|---|---------------|---|---|-----------|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | In soccer, I feel close to other people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | In soccer, I feel I am pursuing goals that are my own. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | | |
|----|--|-----------------|---|---------------|---|---|-----------|---|
| 3 | I feel I participate in soccer willingly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | In soccer, I get opportunities to make choices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | In soccer, I feel that I am being forced to do things that I don't want to do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | I can overcome challenges in soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | Not true at all | | Somewhat true | | | Very True | |
| 7 | I show concern for others in soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | I choose to participate in soccer according to my own free will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | In soccer, I have a say in how things are done. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | There are people in soccer who care about me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | I am skilled at soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | I feel I am good at soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | In soccer, I can take part in the decision making process. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | I get opportunities to feel that I am good at soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | In soccer, I really have a sense of wanting to be there. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | In soccer, I feel I am doing what I want to be doing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | I have the ability to perform well in soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | In soccer, there are people who I can trust. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | I have close relationships with people in soccer. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | In soccer, I get opportunities to make decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | | |
|----|---|-------------------|---|---|---|---|----------------|---|
| | | Strongly Disagree | | | | | Strongly Agree | |
| 1. | We all share the same commitment to our team goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I invite my teammates to do things with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|--|---|---|---|---|---|---|---|
| 3. As a team, we are all on the same page. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Some of my best friends are on this team. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I like the way we work together as a team. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. We hang out with one another whenever possible. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. As a team, we are united. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. I contact my teammates often (phone, text message, internet). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | | | Strongly Agree | | | |
|--|-------------------|---|---|----------------|---|---|---|
| 9. This team gives me enough opportunities to improve my own performance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I spend time with my teammates. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. I am going to keep in contact with my teammates after the season ends. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. I am happy with my team's level of desire to win. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. We stick together outside of practice. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. My approach to playing is the same as my teammates. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. We contact each other often (phone, text message, internet). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. We like the way we work together as a team. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

1. Age (circle one) 13 14 15 16 17 18

2. What is your racial background? (circle all that apply)

White

African American

Hispanic

Asian

Native American

Other

3. At what age did you start participating on a soccer team? _____ years of age

4. How many years have you participated on a soccer team _____ years

5. Do you also play on a high school soccer team (circle one) YES NO

6. **Within the past year**, have you participated in any other competitive sport other than soccer?

YES NO

6a. If you answered yes to #6, which sports and at what level (e.g. high school, travel team, recreational league)?

6b. If you answered yes to #6 and compete in organized sports outside of soccer, are any of the sports you listed above currently in season? YES NO

6c. If you answered no to #6 and **DO NOT compete** in another sport, at what age did you first specialize and compete just in soccer? _____ years of age.

7. How many times do you soccer practice per week? _____

8. How many months per year do you participate on a soccer team (include all soccer teams including club and high school)? _____ months

9. How many years have you been with group of athletes/team _____?

10. What is your primary position on the team (circle all that apply)

Defender

Midfield

Forward

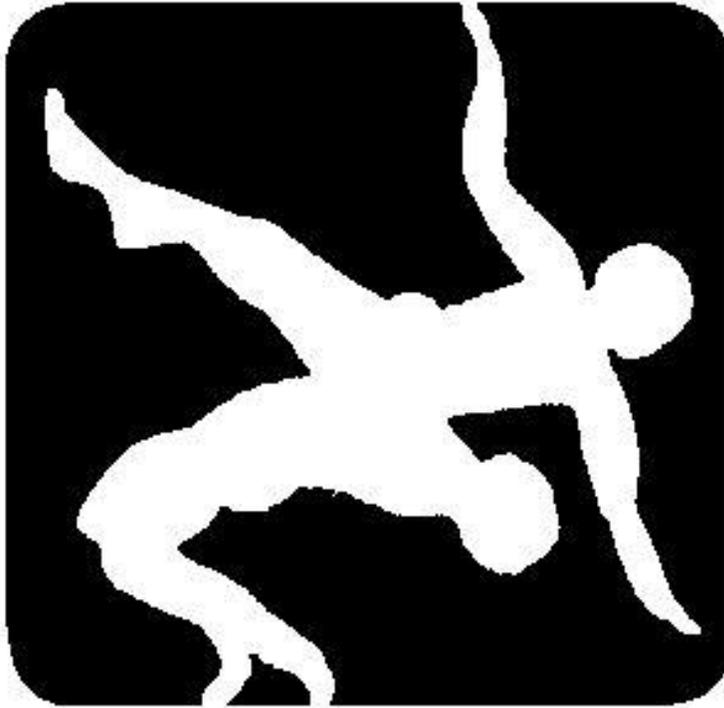
Goalkeeper

11. Your team name _____



Thank you for your help completing the questionnaire. We really appreciate it.
Have a great rest of the season!!!

APPENDIX C: QUESTIONNAIRE FOR WRESTLERS



Reflections on Your Wrestling Experiences

2016-2017 Season

Instructions:

There are no right or wrong answers so please answer each question as honestly as you can. Some items may appear similar but please respond to all the statements. Do not spend too much time on any one question. Please make sure you answer all items. If you have any questions, feel free to ask.

Why Do You Participate in Wrestling?

Below are some reasons why athletes participate in wrestling. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you participate.

I participate in wrestling...

| | | Not true at all | | Somewhat true | | | Very true | |
|----|--|--------------------|---|------------------|---|---|--------------|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | because I enjoy it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | because it's a part of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | because it's an opportunity to just be who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | because I would feel ashamed if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | but the reasons why are not clear to me anymore. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | because I would feel like a failure if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | but I wonder what's the point. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | because what I do in wrestling is an expression of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | because the benefits of wrestling are important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | because if I don't other people will not be pleased with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | because I like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | because I feel obligated to continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | but I question why I continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | because I feel pressure from other people to play. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | because people push me to participate. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | because it's fun. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | because it teaches me self-discipline. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | because I would feel guilty if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | because I find it pleasurable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | because I value the benefits of wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | but I question why I am putting myself through this. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | because it is a good way to learn things which could be useful to me in my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | in order to satisfy people who want me to participate. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | because it allows me to live in a way that is true to my values. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

INSTRUCTIONS: Below are some statements athletes have made about their wrestling experiences. Please indicate how often you have felt this way about your participation this season which includes all training and competition.

| | | Almost never | Rarely | Some times | Frequently | Almost Always |
|-----|--|--------------|--------|------------|------------|---------------|
| 1. | I believe I am capable of accomplishing my wrestling goals | 1 | 2 | 3 | 4 | 5 |
| 2. | I feel energized when I participate in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 3. | I am dedicated to achieving my goals in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 4. | I feel excited about wrestling. | 1 | 2 | 3 | 4 | 5 |
| 5. | I feel capable of success in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 6. | I feel energetic when I participate in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 7. | I am determined to achieve my goals in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 8. | I am enthusiastic about wrestling. | 1 | 2 | 3 | 4 | 5 |
| 9. | I believe I have the skills/technique to be successful in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 10. | I feel really alive when I participate in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 11. | I am devoted to wrestling. | 1 | 2 | 3 | 4 | 5 |
| 12. | I enjoy wrestling. | 1 | 2 | 3 | 4 | 5 |
| 13. | I am confident in my wrestling abilities. | 1 | 2 | 3 | 4 | 5 |
| 14. | I feel mentally alert when I participate in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 15. | I want to work hard to achieve my goals in wrestling. | 1 | 2 | 3 | 4 | 5 |
| 16. | I have fun in wrestling. | 1 | 2 | 3 | 4 | 5 |

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

| | | Almost Never | Rarely | Some times | Frequentl y | Almost Always |
|-----|--|--------------|--------|------------|----------------|---------------|
| | <u>How often do you feel this way?</u> | | | | | |
| 17. | I'm accomplishing many worthwhile things in wrestling | 1 | 2 | 3 | 4 | 5 |
| 18. | I feel so tired from my training that I have trouble finding energy to do other things | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|--|--------------|--------|------------|-------------|---------------|
| 19. The effort I spend in wrestling would be better spent doing other things | 1 | 2 | 3 | 4 | 5 |
| <u>How often do you feel this way?</u> | Almost Never | Rarely | Some times | Frequentl y | Almost Always |
| 20. I feel overly tired from my wrestling participation | 1 | 2 | 3 | 4 | 5 |
| 21. I am not achieving much in wrestling | 1 | 2 | 3 | 4 | 5 |
| 22. I don't care as much about my wrestling performance as I used to | 1 | 2 | 3 | 4 | 5 |
| 23. I am not performing up to my ability in wrestling | 1 | 2 | 3 | 4 | 5 |
| 24. I feel "wiped out" from wrestling | 1 | 2 | 3 | 4 | 5 |
| 25. I'm not into wrestling like I used to be | 1 | 2 | 3 | 4 | 5 |
| 26. I feel physically worn out from wrestling | 1 | 2 | 3 | 4 | 5 |
| 27. I feel less concerned about being successful in wrestling than I used to | 1 | 2 | 3 | 4 | 5 |
| 28. I am exhausted by the mental and physical demands of wrestling | 1 | 2 | 3 | 4 | 5 |
| 29. It seems that no matter what I do, I don't perform as well as I should | 1 | 2 | 3 | 4 | 5 |
| 30. I feel successful at wrestling | 1 | 2 | 3 | 4 | 5 |
| 31. I have negative feelings toward wrestling | 1 | 2 | 3 | 4 | 5 |
| 32. I am completely exhausted from wrestling | 1 | 2 | 3 | 4 | 5 |

INSTRUCTIONS: Please answer the questions according to your feelings and experiences when participating in wrestling

| | | | | | | | | |
|---|---|-----------------|---|---------------|---|---|-----------|---|
| | | Not true at all | | Somewhat true | | | Very true | |
| 1 | In wrestling, I feel close to other people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | In wrestling, I feel I am pursuing goals that are my own. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | | |
|----|---|-----------------|---|---------------|---|---|-----------|---|
| 3 | I feel I participate in wrestling willingly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | In wrestling, I get opportunities to make choices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | In wrestling, I feel that I am being forced to do things that I don't want to do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | I can overcome challenges in wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | Not true at all | | Somewhat true | | | Very True | |
| 7 | I show concern for others in wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | I choose to participate in wrestling according to my own free will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | In wrestling, I have a say in how things are done. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | There are people in wrestling who care about me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | I am skilled at wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | I feel I am good at wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | In wrestling, I can take part in the decision making process. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | I get opportunities to feel that I am good at wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | In wrestling, I really have a sense of wanting to be there. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | In wrestling, I feel I am doing what I want to be doing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | I have the ability to perform well in wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | In wrestling, there are people who I can trust. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | I have close relationships with people in wrestling. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | In wrestling, I get opportunities to make decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Your thoughts and feelings during the past month

The following questions ask you about your thoughts and feelings about swim team participation during the past month. In each case, indicate *how often* you felt or thought a certain way. Although some questions are similar, there are differences between them and you should treat each one as a separate question.

Never Almost Never Some times Fairly Often Very Often

| | | | | | | |
|-----|--|---|---|---|---|---|
| 1. | In the last month, how often have you been upset because of something that happened unexpectedly in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 2. | In the last month, how often have you felt that you were unable to control the important things in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 3. | In the last month, how often have you felt nervous and "stressed" about wrestling? | 1 | 2 | 3 | 4 | 5 |
| 4. | In the last month, how often have you dealt successfully with annoying things that happened in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 5. | In the last month, how often have you felt that you were effectively coping with important changes that were occurring in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 6. | In the last month, how often have you felt confident about your ability to handle your problems in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 7. | In the last month, how often have you felt things were going your way in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 8. | In the last month, how often have you felt that you could not handle all the things you had to do in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 9. | In the last month, how often have you been able to control irritations in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 10. | In the last month, how often have you felt that you were on top of things in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 11. | In the last month, how often have you been angered because of things that happened that were outside of your control in wrestling? | 1 | 2 | 3 | 4 | 5 |
| 12. | In the last month, how often have you found yourself thinking about things that you have to accomplish in wrestling? | 1 | 2 | 3 | 4 | 5 |

Thoughts over the last week

Please read each statement and circle the number which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

| | | Never | Sometimes | Often | Almost Always |
|----|---|-------|-----------|-------|---------------|
| 1. | I found it hard to wind down | 0 | 1 | 2 | 3 |
| 2. | I tended to over-react to situations | 0 | 1 | 2 | 3 |
| 3. | I felt I was using a lot of nervous energy | 0 | 1 | 2 | 3 |
| 4. | I found myself getting agitated | 0 | 1 | 2 | 3 |
| 5. | I found it difficult to relax | 0 | 1 | 2 | 3 |
| 6. | I was intolerant of anything that kept me from getting on with what I was doing | 0 | 1 | 2 | 3 |
| 7. | I felt I was rather touchy | 0 | 1 | 2 | 3 |

1. Age (circle one) 13 14 15 16 17 18

2. What is your gender? (circle one) Male Female

3. What is your racial background? (circle all that apply)

White African American Hispanic Asian Native American Other

4. At what age did you start participating on a wrestling team? _____ years of age

5. How many years have you participated on a wrestling team _____ years

6. Do you also compete on a high school wrestling team (circle one) YES NO

7. **Within the past year**, have you participated in any other competitive sport other than wrestling?
YES NO

7a. If you answered yes to #7, which other sports you participate in and at what level (e.g. high school, travel team, recreational league)?

Are any of the sports you listed above currently in season? YES NO

7b. If you answered no to #7 and **DO NOT compete** in another sport, at what age did you first specialize and compete just in wrestling? _____ years of age.

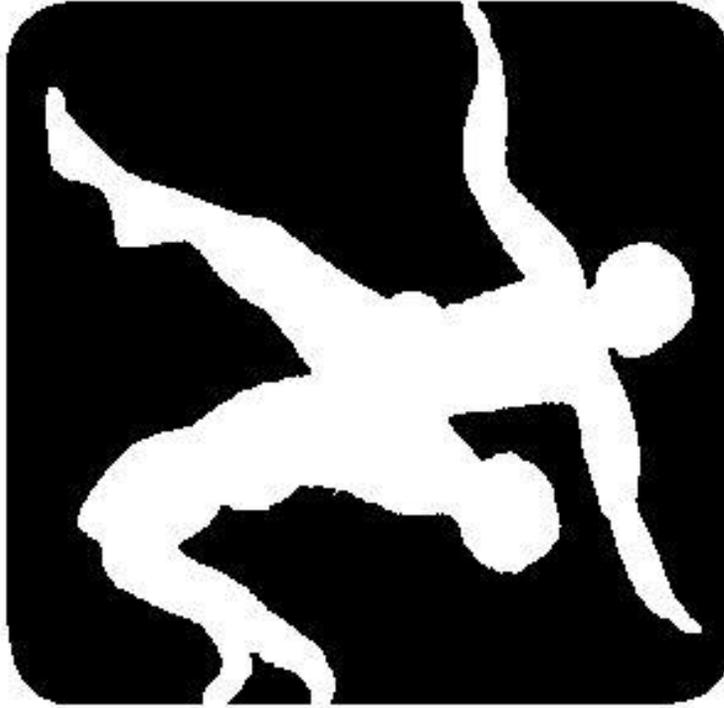
8. How many times do you attend wrestling practice per week? _____

9. How long does each practice last on average? _____

10. How many months per year do you participate on a wrestling team (include all wrestling teams including club and high school)? _____ months

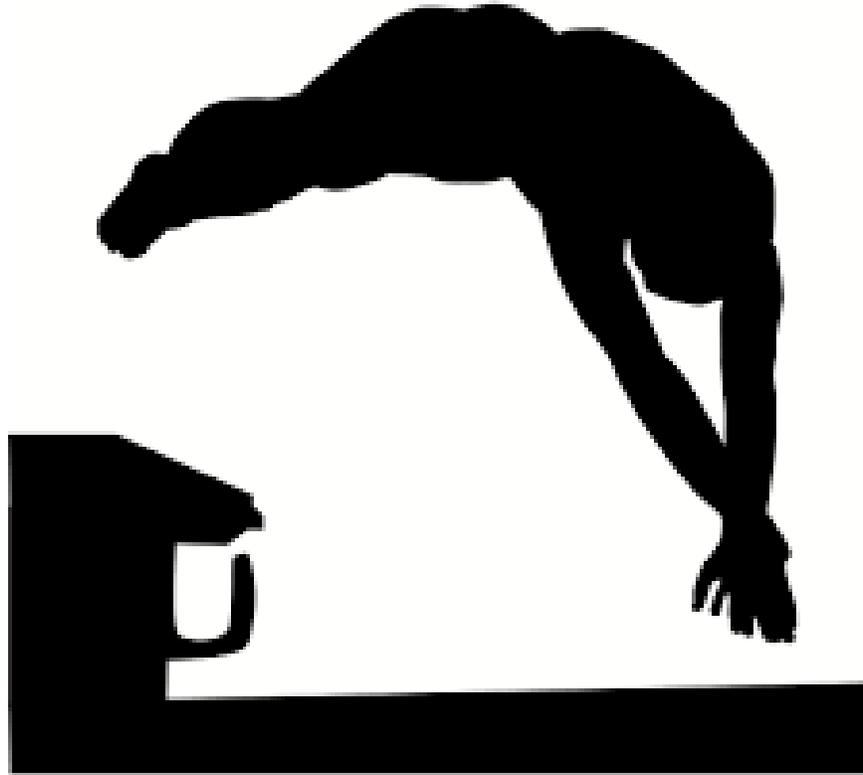
11. How many years have you been on this wrestling team _____?

12. Your team name _____



Thank you for your help completing the questionnaire. We really appreciate it.
Have a great rest of the season!!!

APPENDIX D: QUESTIONNAIRE FOR SWIMMERS



Reflections on Your Swimming Experiences

2016-2017 Season

Instructions:

There are no right or wrong answers so please answer each question as honestly as you can. Some items may appear similar but please respond to all the statements. Do not spend too much time on any one question. Please make sure you answer all items. If you have any questions, feel free to ask.

Why Do You Participate in Swimming?

Below are some reasons why people participate in swimming. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you participate.

I participate in Swimming...

| | | Not true at all | | Somewhat true | | | Very true | |
|----|--|--------------------|---|------------------|---|---|--------------|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | because I enjoy it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | because it's a part of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | because it's an opportunity to just be who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | because I would feel ashamed if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | but the reasons why are not clear to me anymore. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | because I would feel like a failure if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | but I wonder what's the point. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | because what I do in swimming is an expression of who I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | because the benefits of sport are important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | because if I don't other people will not be pleased with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | because I like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | because I feel obligated to continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | but I question why I continue. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | because I feel pressure from other people to participate. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | because people push me to participate. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | because it's fun. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | because it teaches me self-discipline. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | because I would feel guilty if I quit. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | because I find it pleasurable. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | because I value the benefits of swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | but I question why I am putting myself through this. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | because it is a good way to learn things which could be useful to me in my life. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | in order to satisfy people who want me to participate. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | because it allows me to live in a way that is true to my | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

values.

INSTRUCTIONS: Below are some statements athletes have made about their swimming experiences. Please indicate how often you have felt this way about your participation this season which includes all training and competition.

| | Almost never | Rarely | Some times | Frequently | Almost always |
|--|--------------|--------|------------|------------|---------------|
| 1. I believe I am capable of accomplishing my swimming goals | 1 | 2 | 3 | 4 | 5 |
| 2. I feel energized when I participate in swimming. | 1 | 2 | 3 | 4 | 5 |
| 3. I am dedicated to achieving my goals in swimming. | 1 | 2 | 3 | 4 | 5 |
| 4. I feel excited about swimming. | 1 | 2 | 3 | 4 | 5 |
| 5. I feel capable of success in swimming. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel energetic when I participate in swimming. | 1 | 2 | 3 | 4 | 5 |
| 7. I am determined to achieve my goals in swimming. | 1 | 2 | 3 | 4 | 5 |
| 8. I am enthusiastic about swimming. | 1 | 2 | 3 | 4 | 5 |
| 9. I believe I have the skills/technique to be successful in swimming. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel really alive when I participate in swimming. | 1 | 2 | 3 | 4 | 5 |
| 11. I am devoted to swimming. | 1 | 2 | 3 | 4 | 5 |
| 12. I enjoy swimming. | 1 | 2 | 3 | 4 | 5 |
| 13. I am confident in my swimming abilities. | 1 | 2 | 3 | 4 | 5 |
| 14. I feel mentally alert when I participate in swimming. | 1 | 2 | 3 | 4 | 5 |
| 15. I want to work hard to achieve my goals in swimming. | 1 | 2 | 3 | 4 | 5 |
| 16. I have fun in swimming. | 1 | 2 | 3 | 4 | 5 |

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

| | Almost Never | Rarely | Some times | Frequently | Almost Always |
|---|--------------|--------|------------|------------|---------------|
| 33. I'm accomplishing many worthwhile things in | 1 | 2 | 3 | 4 | 5 |

swimming

| | | | | | |
|--|--------------|--------|------------|-------------|---------------|
| 34. I feel so tired from my training that I have trouble finding energy to do other things | 1 | 2 | 3 | 4 | 5 |
| 35. The effort I spend in swimming would be better spent doing other things | 1 | 2 | 3 | 4 | 5 |
| <u>How often do you feel this way?</u> | Almost Never | Rarely | Some times | Frequentl y | Almost Always |
| 36. I feel overly tired from my swimming participation | 1 | 2 | 3 | 4 | 5 |
| 37. I am not achieving much in swimming | 1 | 2 | 3 | 4 | 5 |
| 38. I don't care as much about my swimming performance as I used to | 1 | 2 | 3 | 4 | 5 |
| 39. I am not performing up to my ability in swimming | 1 | 2 | 3 | 4 | 5 |
| 40. I feel "wiped out" from swimming | 1 | 2 | 3 | 4 | 5 |
| 41. I'm not into swimming like I used to be | 1 | 2 | 3 | 4 | 5 |
| 42. I feel physically worn out from swimming | 1 | 2 | 3 | 4 | 5 |
| 43. I feel less concerned about being successful in swimming than I used to | 1 | 2 | 3 | 4 | 5 |
| 44. I am exhausted by the mental and physical demands of swimming | 1 | 2 | 3 | 4 | 5 |
| 45. It seems that no matter what I do, I don't perform as well as I should | 1 | 2 | 3 | 4 | 5 |
| 46. I feel successful at swimming | 1 | 2 | 3 | 4 | 5 |
| 47. I have negative feelings toward swimming | 1 | 2 | 3 | 4 | 5 |
| 48. I am completely exhausted from swimming | 1 | 2 | 3 | 4 | 5 |

INSTRUCTIONS: Please answer the questions according to your feelings and experiences when participating in swimming

| | | Not true at all | | Somewhat true | | | Very true | |
|----|--|--------------------|---|------------------|---|---|--------------|---|
| 1 | In swimming, I feel close to other people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | In swimming, I feel I am pursuing goals that are my own. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | I feel I participate in swimming willingly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | In swimming, I get opportunities to make choices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | In swimming, I feel that I am being forced to do things that I don't want to do. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | I can overcome challenges in swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | Not true at all | | Somewhat true | | | Very True | |
| 7 | I show concern for others in swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | I choose to participate in swimming according to my own free will. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | In swimming, I have a say in how things are done. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | There are people in swimming who care about me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | I am skilled at swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | I feel I am good at swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | In swimming, I can take part in the decision making process. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | I get opportunities to feel that I am good at swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | In swimming, I really have a sense of wanting to be there. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | In swimming, I feel I am doing what I want to be doing. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | I have the ability to perform well in swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | In swimming, there are people who I can trust. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | I have close relationships with people in swimming. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | In swimming, I get opportunities to make decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Your thoughts and feelings during the past month

The following questions ask you about your thoughts and feelings about swim team participation during the past month. In each case, indicate *how often* you felt or thought a certain way. Although some questions are similar, there are differences between them and you should treat each one as a separate question.

| | Never | Almost Never | Some times | Fairly Often | Very Often |
|--|-------|-----------------|---------------|-----------------|---------------|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly in swimming? | 1 | 2 | 3 | 4 | 5 |
| 2. In the last month, how often have you felt that you were unable to control the important things in swimming? | 1 | 2 | 3 | 4 | 5 |
| 3. In the last month, how often have you felt nervous and "stressed" about swimming? | 1 | 2 | 3 | 4 | 5 |
| 4. In the last month, how often have you dealt successfully with annoying things that happened in swimming? | 1 | 2 | 3 | 4 | 5 |
| 5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in swimming? | 1 | 2 | 3 | 4 | 5 |
| 6. In the last month, how often have you felt confident about your ability to handle your problems in swimming? | 1 | 2 | 3 | 4 | 5 |
| 7. In the last month, how often have you felt things were going your way in swimming? | 1 | 2 | 3 | 4 | 5 |
| 8. In the last month, how often have you felt that you could not handle all the things you had to do in swimming? | 1 | 2 | 3 | 4 | 5 |
| 9. In the last month, how often have you been able to control irritations in swimming? | 1 | 2 | 3 | 4 | 5 |
| 10. In the last month, how often have you felt that you were on top of things in swimming? | 1 | 2 | 3 | 4 | 5 |
| 11. In the last month, how often have you been angered because of things that happened that were outside of your control in swimming? | 1 | 2 | 3 | 4 | 5 |
| 12. In the last month, how often have you found yourself thinking about things that you have to accomplish in swimming? | 1 | 2 | 3 | 4 | 5 |

Thoughts over the last week

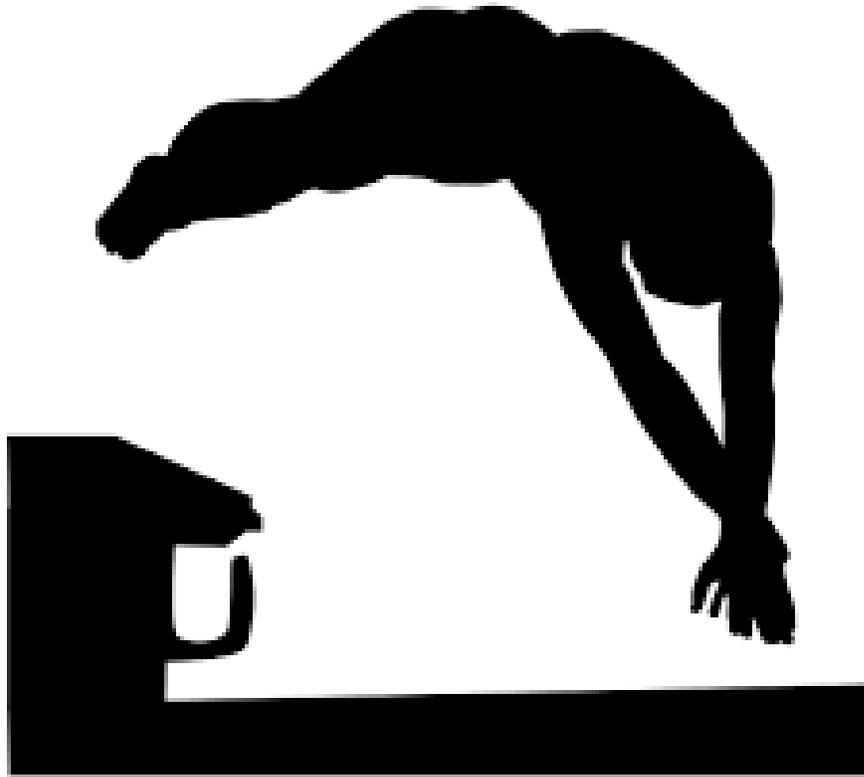
Please read each statement and circle the number which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

| | Never | Sometimes | Often | Almost Always |
|---|-------|-----------|-------|------------------|
| 1. I found it hard to wind down | 0 | 1 | 2 | 3 |
| 2. I tended to over-react to situations | 0 | 1 | 2 | 3 |

| | | | | | |
|----|---|---|---|---|---|
| 3. | I felt I was using a lot of nervous energy | 0 | 1 | 2 | 3 |
| 4. | I found myself getting agitated | 0 | 1 | 2 | 3 |
| 5. | I found it difficult to relax | 0 | 1 | 2 | 3 |
| 6. | I was intolerant of anything that kept me from getting on with what I was doing | 0 | 1 | 2 | 3 |
| 7. | I felt I was rather touchy | 0 | 1 | 2 | 3 |

1. Age (circle one) 13 14 15 16 17 18
2. What is your gender? (circle one) Male Female
3. What is your racial background? (circle all that apply)
 White African American Hispanic Asian Native American Other
4. At what age did you start participating on a swimming team? _____ years of age
5. How many years have you participated on a swimming team _____ years
6. Do you also compete on a high school swimming team (circle one) YES NO
7. **Within the past year**, have you participated in any other competitive sport other than swimming?
 YES NO
- 7a. If you answered yes to #7, which other sports you participate in and at what level (e.g. high school, travel team, recreational league)?

 Are any of the sports you listed above currently in season? YES NO
- 7b. If you answered no to #7 and **DO NOT compete** in another sport, at what age did you first specialize and compete just in swimming? _____ years of age.
8. How many times do you attend swimming practice per week? _____
9. How long does each practice last on average? _____
10. How many months per year do you participate on a swimming team (include all swimming teams including club and high school)? _____ months
11. How many years have you been on this swimming team _____?
12. What is your primary event on the team? (circle **all** that apply)
 Distance Sprint Strokes
 (200 meters or more freestyle) (100 meters or less freestyle) (any event but freestyle)
13. Your team name _____



Thank you for your help completing the questionnaire. We really appreciate it.
Have a great rest of the season!!!

APPENDIX E: RECRUITMENT EMAIL

Date _____

Dear Coach _____,

I'm writing to invite your team to participate in a survey study that I am conducting for my thesis research at East Carolina University (ECU) under the direction of Dr. Tom Raedeke. The media has drawn a great deal of attention to the pros and cons of sport specialization at young ages. However, very little research has examined the psychological impact of sport specialization. Consequently, for my thesis I plan to complete a survey study to compare the experiences of early specializers, late specializers, and multi-sport athletes on a variety of motivation related variables (e.g., intrinsic motivation, engagement, exhaustion, sense of accomplishment, passion for the sport).

For this study I'm recruiting adolescent athletes ranging in age from 13-18 from a variety of club sports in Eastern North Carolina. ECU's Institutional Review Board has approved the study. With your permission, I would like invite your team to participate. If your team is willing to be involved, we would like to have the athletes complete a questionnaire at a regularly scheduled practice. Athlete responses will be kept confidential and anonymous. In addition, the questionnaire will be completed in a group setting and you have the option of being present during that time. The questionnaire will take around 10-15 minutes to complete. I'm aware of the time demands this would impose on you and your athletes. To minimize interference, we would arrange a time with you, which would be conducive to your schedule. I hope that you are willing to help us with this project. It is important that we get as large a sample as possible.

As a token of appreciation for your assistance, I will be happy to share the study's findings with you on completion of the study. In the meantime, feel free to contact me if interested in participating or if you have any questions about the study.

Sincerely,
William Johnson
Graduate Student-Sport Psychology
East Carolina University
Email: johnsonwi15@students.ecu.edu
Phone: 919-971-9215



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/ORIC/irb

Notification of Continuing Review Approval: Expedited

From: Biomedical IRB
To: [Thomas Raedeke](#)
CC:

Date: 6/26/2017
Re: [CR00006067](#)
[UMCIRB 13-001760](#)
Club Sport Motivation

The continuing review of your expedited study was approved. Approval of the study and any consent form(s) is for the period of 6/22/2017 to 6/21/2018. This research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

| Document | Description |
|------------------------------------|----------------------------|
| Motivation Survey(0.01) | Surveys and Questionnaires |
| Revised Cover Letter-Consent(0.01) | Consent Forms |

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

