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Athletic Identity and Intention to Report Concussions in Collegiate Club Recreational Athletes

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ATHLETIC IDENTITY AND INTENTION TO REPORT CONCUSSIONS IN COLLEGIATE
CLUB RECREATIONAL ATHLETES

By

KIERSTEN KUHLMAN

(Under the Direction of Tamerah Hunt)

ABSTRACT

Background: Athletic identity is the extent to which one identifies with the athlete role, but we do not know what that looks like in club sports and its effect on concussion reporting intention. The athletic identity of club sport athletes and their intention to report concussive injuries is limited and needs further research. **Purpose:** Describe athletic identity in club sport athletes and determine its influence on concussion reporting in club sport participants. **Methods:** A convenience sample of 149 (age 18-28 ($M = 19.95 \pm 1.81$) years old) club sport athletes at Georgia Southern University completed the Athletic Identity Measurement Scale (AIMS) and Intention to Report Subscale (Theory of Planned Behavior Scale) during the 2022-2023 calendar year. Scores from the AIMS and Intention to Report Subscale served as dependent variables. Correlation analyses utilizing Pearson and Spearman's Rho correlations examined the relationship between age, sex, sport, level of involvement, previous history of concussions, previous history of concussion education, athletic identity, and intention to report. **Results:** Participants averaged 11.16 years ($SD = 5.34$) of sport involvement with lacrosse (20.1%), men's volleyball (12.5%), dance (11.1%), women's volleyball (9.0%), cheer (7.6%), and quidditch (6.9%) providing the most responses. The average AIMS score for the entire sample was relatively moderate ($M = 35.24 \pm 7.77$). The total number of years that athletes participated in sports was significantly

associated with athletic identity ($r = .387$, $p < 0.001$). Age was negatively associated with athletic identity ($r = -0.23$, $p = 0.006$). A moderate-high intent to report ($M = 16.82 \pm 4.60$) concussion was obtained. No correlations existed between athletic identity, age, sex, club sport, years in sport, and intention to report a concussion in club sport athletes. **Conclusions:** Club sport athletes do have an established athletic identity which could be impacted by years of participation in sport and age. No relationship existed between athletic identity and intention to report a concussion; however, the influence of identity playing a role in concussion reporting intention in club sport athletes should not be discounted because of the moderate-high intention to report found in this study.

INDEX WORDS: Mild traumatic brain injury, Collegiate recreation, Sport clubs, Injury reporting, Identity

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MASTER OF SCIENCE

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CHAPTER ONE

INTRODUCTION

Only 6.2% of high school athletes will move on to compete on a varsity level at an NCAA institution once they graduate (NCAA publications, n.d.). This leaves many high school athletes that may choose to join a club sport in order to continue their athletic careers (Beidler et al., 2018). Participation numbers in club sports throughout various campus recreation institutions continue to increase due to the large number of children graduating from high school with extensive athletic skills and interest in organized sports (Lifschutz, 2012). In 2020, there were approximately 9 million college students participating in organized sports in the United States and of those, 8.5 million participated in a club or intramural sports (Fuller et al., 2020).

Due to the rise of participation in recreational sports, clinicians have seen an increase in the number of concussions sustained during practice and competition (Gessel et al., 2007). According to Gessel et al. (2007), the concussion incidence rate in collegiate and high school athletes during practice and competition is 0.23 and 0.43 per 1,000 athletes. At the end of their collegiate sports career, 33.5% of athletes reported a history of at least one concussion, and 22.2% reported sustaining three or more concussions while playing their respective sport (Llewellyn et al., 2014). In total, there is an estimated number of 1.6 to 3.8 million concussions sustained per year in the United States while participating in competitive sports and recreational activities (Langlois et al., 2006). Concussion incidence could be higher because only approximately 50% of all concussions are reported to coaches or medical professionals when they occur (McCrea et al., 2004).

Underreporting concussions is not only a problem in campus recreation but also throughout many sports associations in the United States. Sports medicine professionals have

come to the consensus that the rate of concussions in contact and collision sports is higher than what is currently recorded and being reported (McCrea et al., 2004). Concussions in club sports have increasingly been a problem that is often overlooked because there is a lack of oversight from the NCAA and a limited number of sports medicine staff who work in the campus recreation setting (Lifschutz, 2012). Lifschutz (2012) and Beidler et al. (2018) reported that only 35% of club sports programs had access to athletic training services. If an injury occurred while participating in practice or competition, the athlete and coaching staff were solely responsible for the return to play decision-making if a medical professional was not available for the formal assessment of an injury (Lifschutz, 2012; Beidler et al., 2018). The lack of certified athletic trainers at their facilities should be alarming to campus recreation directors because of the estimated 3.7 million sports and recreation injuries occurring annually that require emergency room visits, 1.1 million involved the head or the neck region, of which 17.2% were concussions, and 68% of the persons falling within the age range typically participate in collegiate club sports (Conn et al., 2003).

Unfortunately, the diagnosis of a concussion is largely based on the self-reporting of symptoms, as many times the signs and symptoms of a concussion are not visible to coaches and other personnel that are there at their practices and competitions (Williamson & Goodman, 2006). The detection and diagnosis of a concussion can also be difficult due to the athlete's tendency to underreport or mask symptoms they are experiencing in anticipation of a more rapid return to activity (McCrea et al., 2004). The reliance on the athlete's self-reporting, therefore, makes it critical to understand why athletes do not report their symptoms.

Several reasons have been posited to explain underreporting of concussions. Based on the literature, it appears that there are three major reasons why athletes do not report their concussion

symptoms: lack of knowledge on the topic, social influences, and personal reasons. Kerr et al. (2016) asked former college athletes why they did not report their symptoms to a medical professional or coach after sustaining a blow to the head and 78.9% stated they did not want to leave the game or practice, 71.8% did not want to let the team down, 70.4% did not know it was a concussion, and 70.4% did not think the hit to the head was serious. Similarly, high school football players did not report their concussions because 66.4% of the athletes did not think their injury was serious, 41% did not want to leave the game, and 22.1% did not want to let their teammates down (McCrea et al., 2004).

Concussion education programs are already being implemented in high school and NCAA-sanctioned athletics, but there is a lack of education programs set up for club sports. Previous studies have found that high school and collegiate athletes had an increased intention to report a concussion after receiving a form of concussion education (Daneshvar et al., 2021a; Daneshvar et al., 2021b). It is theorized that by increasing education about the signs and symptoms and dangers associated with returning to play with a concussion, reporting might increase (Sarmiento et al., 2010). Another reason athletes choose whether to report concussions is their personal commitment to sport and social influences from parents, teammates, and coaches (Fuller et al., 2020). Athletes may not report their signs and symptoms to a medical professional because they want to please their peers and have continuous support from those involved in their athletic careers.

Underreporting of concussions is still a problem today and many studies have been conducted to better understand an athlete's intention to report concussions while also trying to understand what factors influence their intentions to report. A factor that may influence the intention and willingness to report a concussion is the individual's identity. Some identities can

be a negative motivator and individuals may be reluctant to report potential concussion symptoms because they do not want to jeopardize their identity. Identity can be described as a person's self-identification based on their goals, values, and beliefs that are used to shape their behaviors (Waterman, 1985). A person's time in college is thought to be an important time for identity development because it is used by individuals to guide their current and future behaviors (Downs & Ashton, 2011). Our identities are formed based on our own experiences (personal identity) and others' opinions of us (Tusak et al., 2005).

Most individuals have multiple identities that they associate with and are organized into a ranking order of the likeliness of use (Curry & Weaner, 1987). Oftentimes, individuals seek out opportunities that align with the identities that are important to them and tend to commit large portions of their time to developing a higher identity (Curry & Weaner, 1987). Some common identities that individuals commit to include sports, academics, peers, kinship, and romantic identities (Curry & Weaner, 1987).

Students who join a club sport are believed to have an athletic identity because they sought out opportunities after high school to continue their athletic careers. Athletic identity was described by Brewer et al. as, "the extent to which an individual associates themselves with being an athlete" (1993, p. 237). Athletic identity is expressed as a self-concept and can also be described as a social role (Brewer et al, 1993). As a result, athletic identity can be influenced by their beliefs as well as by someone else's beliefs (Brewer et al., 1993). People with higher athletic identities will attribute greater importance to their involvement in sports and will translate events that happen during their day to be associated with an athlete role (Brewer et al., 1993).

The level of competition and years of participation in sport has been shown to influence an individual's athletic identity. Lavalley et al. (1997) discovered that as individuals became more involved and committed to their respected sport, the athlete took on a greater athletic identity role. Wiechman & Williams (1997) previously reported that males had significantly higher athletic identities than females and discovered that years of experience in sport accounted for 4% of the variance in athletic identity measurement scores in high school athletes. College athletes who were involved in sports during their high school career reported having a higher athletic identity than those that specialize in one sport (Downs & Ashton, 2011). High school athletes who anticipated playing in college athletics also had a significantly higher AI (Wiechman & Williams, 1997).

High school athletes planning on participating in collegiate athletics have been shown to have an increased athletic identity but there is limited research investigating what happens to athletic identity in high school athletes who continue to participate in club sports. Upon the shift into one's college years, individuals may decrease their participation in traditional organized sports and therefore might also show a decline in their athletic identity (Downs & Ashton, 2011). Club athletes may experience a decrease in their athletic identity because of the change and transition out of traditional and organized sanctioned high school sports and the low stakes involved with club sports (Lavalley et al, 2008; Downs & Ashton, 2011; Helms & Moiseichik, 2018). Yukhymenko–Lescroart (2014) found that collegiate athletes reported a significantly higher athletic identity and a significantly weakened academic identity compared to their fellow club sports counterparts. It is important to know about high school athletes who go on to participate in club sports during their time in college because their intention to report may change as they take on other identities outside of their athletic identities.

Club sport participants may also show a decrease in their athletic identity because they prioritize a different identity over their athlete identity. The decline in their athletic identities may allow the club sport athletes to invest in other roles such as peer and student roles (Lally & Kerr, 2005). Athletes participating in NCAA-sanctioned sports in college tend to develop a high athletic identity because of the time commitment required when participating in sporting events such as practice and competitions (Brewer et al., 1993). However, this may not be the case for club sports participants. Participants of club sports have an athletic identity but may commit more of their time to identify with different identities such as student leaders because they have other values outside of sports. Within club sports, the level of athletic identity and student leadership may interfere with the athletes' willingness to report concussions.

A person's athletic identity could help to explain an athlete's willingness to report a concussion. Wayment et al. (2019) found an athlete's athletic identity can be a negative motivator and they are often reluctant to report potential concussion symptoms. Reporting a head injury or concussion symptoms during a game or practice is at odds with their athletic identity goals, particularly if the athlete deems playing with pain as part of the game or if their symptoms do not interfere with playing capabilities (Petrie et al., 2014; Sanderson et al., 2016). Athletes with a high athletic identity may be less likely to report a concussion because they do not want to jeopardize what they deem important (playing time, satisfying coaches, and teammates).

Currently, research is scarce in regard to club sport athletes and factors that may influence concussion-reporting behaviors. Cook, (2020) investigated athletic identity in high school athletes and its relationship to the intention to report a concussion. This first examination of the relationship between AI and intention to report concussion was completed in 78 local high school athletes and found that athletic identity was not related to intention. Cook (2020) also

found that age significantly influenced reporting intentions, where older athletes reported lower intention to report a concussion. Cook was able to describe high school athletes' athletic identity and intention to report but we do not fully understand these variables in the club sport population. Unfortunately, it is unknown whether these findings in high school athletes will translate into the collegiate club population. Therefore, this study is a replication of the Cook 2020 study in collegiate club athletes.

Research suggests that athletic identity influences behavior and athletic identity could play a role in one's motivation to report a concussion (Wayment et al., 2019). Athletes may not report concussion symptoms because they are afraid they will lose their athlete identity if they do not get playing time which could therefore lead to them feeling left out (Wayment et al., 2019). Athletes participating in NCAA-sanctioned sports during college may view lack of playing time as a jeopardizing factor to their athletic identity. This idea has not been examined in club sports athletes; therefore, the purpose of this study was to examine the presence of athletic identity in club sport athletes and determine the influence of athletic identity on concussion reporting in club sport participants. The first research question is how can we describe athletic identity in club sport athletes? We hypothesize that club sport athletes will have an athletic identity but will vary on the sport they play and their level of involvement before leaving high school. Second, what is the relationship between athletic identity and intention to report concussions? We hypothesize that there will be a negative relationship between athletic identity and intention to report concussions in club sports athletes.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

The following review of literature will synthesize the existing literature surrounding athletic identity, and intention to report a concussion in club sport athletes. To date, there are nearly 2 million students participating in club sports in the collegiate setting, and the numbers continue to grow each year (Morris et al, 2021). The rise of participation in sports resulted in clinicians observing an increase in the number of concussions sustained during practices and competitions. In total, there is an estimated number of 1.6 to 3.8 million concussions sustained per year in the United States while participating in competitive sports and recreational activities (Langlois et al., 2006). The incidence rate could potentially be higher than what is currently recorded because only about 50% of all concussions are reported to coaches or medical professionals when they occur (McCrea et al., 2004).

Participation in club sports has been on the rise and injury rates are following a similar trend. Among the few studies available in the literature, club sports resulted in an injury rate of 18.3 injuries per 1,000 sports interactions, and intramural sports at college institutions, saw 10.28 injuries per 1,000 sports interactions (Arthur-Banning et al., 2018). On the other hand, NCAA sports reported having 13.79 injuries per 1,000 sports interactions (Arthur-Banning et al., 2018). This demonstrates that club sports athletes are at a greater risk for injuries than NCAA collegiate athletes and club sports need similar medical coverage to that of NCAA-sanctioned competitions and practices.

Concussions in club sports have increasingly been a problem that is often overlooked because there is a lack of oversight from the NCAA and a limited number of sports medicine

staff in the campus recreation field (Lifschutz, 2012). Lifschutz (2012) and Beidler et al. (2018), reported that only 35% of club sports programs had access to athletic training services. If an injury occurred while participating in practice or competition, the athlete and coaching staff were solely responsible for the return to play decision-making if a medical professional was not available for the formal assessment of an injury (Lifschutz, 2012; Beidler et al., 2018). The lack of certified athletic trainers at their facilities should be alarming to campus recreation directors because of the estimated 3.7 million sports and recreation injuries occurring annually that require emergency room visits, 68% of the persons falling within the age range typically participate in collegiate club sports (Conn et al., 2003). Conn et al. (2003) also found that of those 3.7 million emergency room visits, 1.1 million sports and recreation injuries involved the head or the neck region, of which 17.2% were concussions.

Unfortunately, the diagnosis of a concussion is largely based on the self-reporting of symptoms as many times the signs and symptoms of a concussion are not visible to coaches and other personnel that are there at their practices and competitions (Williamson & Goodman, 2006). The detection and diagnosis of a concussion can also be difficult due to the athlete's tendency to underreport or mask symptoms they are experiencing in anticipation of a more rapid return to activity (McCrea et al., 2004). The diagnosis of a concussion is many times reliant on the athlete's self-reporting therefore, it is important to understand why athletes do not report their symptoms.

Numerous reasons have been theorized for the under-reporting of concussions and current literature suggests intention may provide the leading reason. A person's intention to report a concussion may further be complicated by personal factors such as athletic identity (Wayment et al., 2019). Athletic identity was described by Brewer et al. (1993) as, "the extent to

which an individual associates themselves with being an athlete” (p. 237). People with high athletic identities will attribute greater importance to their involvement in sports and will translate events that happen during their day to be associated with an athlete role (Brewer et al., 1993). Wayment et al. (2019) found an athlete’s athletic identity can be a negative motivator and they are often reluctant to report potential concussion symptoms. Reporting a head injury or concussion symptoms during a game or practice is at odds with their athletic identity goals, particularly if the athlete deems playing with pain as part of the game or if their symptoms do not interfere with playing capabilities (Petrie et al., 2014; Sanderson et al., 2016). Athletes with a high athletic identity may be less likely to report a concussion because they do not want to jeopardize what they deem important (playing time, satisfying coaches, and teammates). This idea has not been examined in club sports athletes; therefore, the purpose of this study was to examine the presence of athletic identity in club sport athletes and determine the influence of athletic identity on concussion reporting in club sport participants.

Club Sports

The National Intramural-Recreational Sports Association (NIRSA) defines club sports as “a group of students that voluntarily organize to further their common interest in activity through participation and competition” (Lifschutz, 2019, p. 119). These clubs are formed when students have a common interest in a particular sport and come together to initiate and operate all aspects of the club (Mull et al., 2005). Club sports have been described as athlete-directed, less formal, and more flexible than those sports of NCAA collegiate varsity athletics (Warner et al., 2012). As participation in sport clubs is voluntary, clubs are more accessible than intercollegiate athletics, making entry, exit, and commitment to a club team sovereign in nature (Czekanski &

Lower, 2018). Club sport systems are typically more flexible and open because they are organized and administered by students on their own behalf (Warner et al., 2012).

A sport club director or campus recreation director will provide some oversight of the club, but the club is ultimately run by the students (Warner et al., 2012). Students on the executive board of the club organize and arrange practices, games, fundraising, and team travel (Carlson, 1990; Hyatt, 1977; Jeter, 1986; Warner et al., 2012). There are occasional exceptions to the structure and organization of sport clubs at some universities, but most club sport programs are student-guided and directed (Warner et al., 2012).

In 2015, there were approximately 9 million college students participating in organized sports in the United States and of those, 8.5 million participated in club and intramural sports (Fuller et al., 2020). Over the past several years, there has been a large increase in club sports participation. The increase in participation in campus recreation is thought to be due to the large number of children graduating from high school with extensive athletic skills and an interest in organized sports (Lifschutz, 2012). After high school, a sizable portion of high school athletes choose to participate in club sports to continue their athletic careers or to fulfill their physical activity needs during their collegiate years (Beidler et al., 2018).

Only 6.2% of high school athletes will move on to compete on a varsity level at an NCAA institution once they graduate (NCAA publications, n.d.). This leaves a large number of high school athletes that may choose to join a club sport in order to continue their athletic careers (Beidler et al., 2018), and fulfill their physical activity needs throughout their time in college (Beidler et al., 2018). College students are drawn to the unique aspects of club sports and its inclusivity and less restrictive time commitment that is typical in intercollegiate athletics; therefore, students are able to uphold their athletic identity while in college (Morris et al., 2021).

Benefits

College club sports offer many positive benefits to the students that can uphold their athletic identity and other identities they deem as important. Students have an opportunity to belong to an organized team of skilled individuals, develop time management skills with multiple commitments between school and sport, understand what it takes to be committed and the effort that needs to be put in to be successful, develop important athletic skills, social opportunities, and the augmentation of one's development of self-identity (Houselog, 2014). The collegiate sport club system offers a wide variety of traditional sporting activities such as tennis and swimming to its students (Mull et al., 2005). Campus recreation departments also provide nontraditional sports such as cycling, quidditch horseback riding, and martial arts for those who wish to pursue alternative forms of physical activity (Beidler et al., 2018; Mull et al., 2005). The existence of individual club sports at universities across the country is based on student interest and student initiative (Hyatt, 1977).

Motivations

Club sports represent a unique campus organization for students to explore in the introduction stages of their college careers (Rundio & Buning 2021). Sport clubs offer students an opportunity to participate and/or compete in sports while in college for those who do not have the opportunity to play at the varsity level (Rundio & Buning, 2021). Understanding motivating factors for college students can help to better understand why students join a club sport during their college career. Understanding their motivation to join a club sport can also help us understand their motives in other important decision-making processes. Motivation refers to the internal factors that guide an individual's behavior (Beard & Ragheb, 1983). In sport and recreation, motivation refers to the internal factors that push or pull an individual into an activity

(Beard & Ragheb, 1983; Iso-Ahola, 1982; Rundio & Buning, 2021). The internal factors that motivate a person to participate in club sports can be categorized in an array of ways including intellectual, social, competence-mastery, stimulus-avoidance, health, weight control, stress management, competition, competence, appearance, and enjoyment (Beard & Ragheb, 1983; Frederick & Ryan, 1993; Kilpartick et al., 2005; Koivula, 1999; Rundio & Buning, 2021). The strength of these motivating factors varies from person to person and can be satisfied by different activities.

Several motivating factors have been posed as to why students join a club sport during their college career. Some of these factors include competition and skill development, physical health, and a sense of belonging. A study conducted by Rundio and Buning (2021) found that new members of their respected club joined because they wanted to compete and improve in their sport. The same study also found students joined a club sport because they wanted to learn more about the sport and continue developing new skills (Rundio & Buning, 2021). Similarly, a study completed at The Ohio State University found that club sport participants ranked skill development as one of the most important motivating factors when deciding to participate in university recreation (Lindsay & Sessoms, 2006).

Another internal factor that motivates participation in club sports is physical health. Participants of club sports reported joining the club team to fulfill their need to stay healthy and physically fit (Rundio & Buning, 2021). Students may participate in a club sport over intramurals or group fitness because clubs operate at a higher level of competition which creates an opportunity for physical activity that is more vigorous than other fitness activities on campus (Lower et al., 2013). College students also decide to join a club sport to achieve a sense of belonging to a group and build relationships with others that have similar interests. Gill et al.

(1983) found that a sense of belonging to a team was ranked as a top motivator for Iowa Summer Sports participants when asked why they participated in organized sports. U.S.-based collegiate sport club members reported joining a team at their university because they were looking for similarly-minded people and wanted to be a part of something (Rundio & Buning, 2021). College students may join a club sport at their university for reasons that other on-campus programs may not be able to fulfill.

Concussion

The National Athletic Trainers' Association has defined concussion as a "trauma-induced alteration in mental status that may or may not involve loss of consciousness" (Broglia et al., 2014, p. 246). A concussion can be caused by a bump or blow to the head or by a hit to the body that causes the brain to quickly move back and forth against the skull (Centers for Disease Control and Prevention, 2019). With more attention being paid to concussions, the definition is constantly evolving to create a standard for its application in diagnosing a concussion (Soomro et al., 2018). Words such as "bell ringer" and "ding" should be excluded from future definitions as they are outdated and minimize the severity of a concussion (Broglia et al., 2014). Lack of knowledge and incorrect terminology commonly used such as "bell ringer" and "ding" leads to confusion on the definition of a concussion and may be a contributing factor to the underreporting of concussive injuries (Register-Mihalik, Guskiewicz, et al., 2013).

The annual number of head traumas diagnosed in the emergency room increased since the Conn et al., 2003 landmark study. Gaw & Zonfrillo (2016) reported an estimated 10.7 million patients were treated for head trauma and 1.7 million were sports-related head traumas. Sports-related head traumas that were explicitly documented were associated with a 0.60 times risk of hospitalization compared to other causes of head trauma seen in the emergency room (Gaw &

Zonfrillo, 2016). In the same study, an estimated 2 million concussions occurred over the study period and nearly a third (30%) of concussions were associated with a sport or recreational activity (Gaw & Zonfrillo, 2016). According to Gessel et al. (2007), the concussion incidence rate in collegiate and high school athletes during practice and competition is 0.23 and 0.43 per 1,000 athletes. At the end of their collegiate sports career, 33.5% of athletes reported a history of at least one concussion, and 22.2% reported sustaining three or more concussions while playing their respective sport (Llewellyn et al., 2014).

Concussion Under-reporting

Frequently, concussions are not reported or are delayed after the head injury occurs. There are many risks associated with the delay of concussion reporting and oftentimes the athlete is withheld from activity longer than originally projected. Athletes who delay reporting their signs and symptoms to a healthcare professional were 2.2 times more likely to have a prolonged recovery than those who reported their symptoms instantly after onset (Asken et al., 2016). Collegiate athletes that delayed reporting their symptoms after injury missed an average of 4.9 more days of sports activity than those athletes who were removed from play immediately (Asken et al., 2016). Individuals that do not report their concussive injury directly after the incidence are at a larger risk for additional problems and poor outcomes.

Underreporting concussions is a problem throughout the United States and an estimated 50% of all concussions sustained during athletic activities are reported (McCrea et al., 2004). Sports medicine professionals have come to the consensus that the rate of concussions in contact and collision sports is higher than what is currently recorded and being reported (McCrea et al., 2004). Unfortunately, the diagnosis of a concussion is largely based on the self-reporting of symptoms as many times the signs and symptoms of a concussion are not visible to coaches and

medical staff (Williamson & Goodman, 2006). The detection and diagnosis of a concussion can also be difficult due to the athlete's tendency to underreport or mask symptoms they are experiencing in anticipation of a more rapid return to activity (McCrea et al., 2004).

Barriers to Concussion Reporting

Identifying factors that influence the reporting of concussions and reasons why athletes do not report is an important next step to addressing the serious underreporting of concussions. Kerr et. al (2016) asked former college athletes why they did not report their symptoms to a medical professional or coach after sustaining a blow to the head and 78.9% stated they did not want to leave the game or practice, 71.8% did not want to let the team down, 70.4% did not know it was a concussion, and 70.4% did not think the hit to the head was serious. Similarly, high school football players did not report their concussions because 66.4% of the athletes did not think their injury was serious, 41% did not want to leave the game, and 22.1% did not want to let their teammates down (McCrea et al., 2004). Another study discovered that 74 athletes who did not report their concussion did so because 70.2% did not want to stop playing, 36.5% did not want to be removed from the game, and 27.0% did not want to let their team down (Register-Mihalik, Linnan, et al., 2013). Beidler et al. (2018) found similar results from club sports athletes in that they did not report or would not report an SRC because they did not think the injury was serious (40.3%), did not want to lose playing time (31.3%), did not know at the time they had an SRC (22.7%), and did not want to let their teammates down (20.8%). It is possible however that club athletes may experience fewer external pressures to underreport concussion symptoms in order to continue playing given the lower rewards associated with the campus recreation setting and may be more likely to report their symptoms to a teammate, coach, or medical professional

(Fuller et al., 2020). Therefore, several reasons have been posited to explain the underreporting of concussions.

Lack of knowledge

The issue of underreporting concussions and concussion symptoms may also be due to the lack of knowledge on the topic. It is possible that if students were better educated about the signs and symptoms and dangers associated with returning to play with a concussion, reporting may increase (Sarmiento et al., 2010). Concussion education programs are already being implemented in high school and NCAA-sanctioned athletics, but there is a lack of education programs set up for club sports. Previous studies have found that high school and collegiate athletes had an increased intention to report a concussion after receiving a form of concussion education (Daneshvar et al., 2021a; Daneshvar et al., 2021b). In those schools that have implemented concussion education, athletes have reported they would like their concussion education programs to be delivered by an athletic trainer and expressed interest in physician and coach involvement (Kneavel et al., 2019). The same athletes reported wanting a video that included testimonials of former athletes reporting the long-term ramifications of concussions in order to make their team's concussion education more effective in getting across the seriousness of concussions (Kneavel et al., 2019).

Personal commitment

Another reason athletes choose whether to report concussions is their personal commitment to sport and social influences from parents, teammates, and coaches. Fuller et al. (2020) found that college athletes were more likely to intend to report a suspected concussion when they believed their parents wanted them to report it and were more likely to report when the athlete experienced less sports achievement pressure from their parents and peers. It was also

reported that parents influence the concussion safety of those entering varsity and club-level athletics in the collegiate setting (Fuller et al., 2020). Fuller et al. (2020) concluded that lower-pressure sports parenting prior to entry to college may help to promote safer concussion reporting behaviors. On the other hand, collegiate athletes (26%) report experiencing pressures from coaches, teammates, parents, and fans to continue playing even when experiencing concussion-like symptoms (Kroshus et al., 2015). Those athletes who experience “high pressure” from all sources had significantly lower intentions in reporting concussions than those with “low pressure” or little pressure from their peers (Kroshus et al., 2015). Athletes tend not to report their signs and symptoms to a medical professional because they want to please their peers and have continuous support from those involved in their athletic careers.

Gender

Lack of knowledge and social influences has been shown to be a reason for underreporting of concussions, but there has also been a notable difference seen among males and females when reporting a concussion. Kerr et al. (2016), reported that collegiate male athletes had significantly higher rates of non-reporting than female athletes (42.9% vs 14.9%) and males were significantly less likely to report concussion-like symptoms during an important game or competition to an athletic trainer (Chizuk et al., 2021). It is believed that male athletes who have a stronger ego orientation perceive higher levels of pressure from their peers making them less likely to report their symptoms (Fuller et al., 2020). On the contrary, collegiate female athletes are more likely to report their concussion symptoms to healthcare professionals and were found to encourage their teammates in reporting their concussions more frequently than male athletes (Kroshus et al., 2016). Overall, evidence shows that athletic identity, age, gender, and concussion history may play a role in intention to report a concussion.

Intention

Initial studies of concussions suggested that lack of knowledge was the primary reason athletes did not report concussions (Baugh et al., 2014). However, recently it has been established that the intention to report may better explain underreporting. Several studies have been conducted to better understand an athlete's intention to report concussions while also trying to understand what factors influence their intentions to report. In 1991, Ajzen stated, "Intentions capture the motivational factors that influence a behavior and are indicators of how hard people are willing to try in order to perform a behavior" (p.181). Ajzen (1991) also concluded that a person is more likely to perform a behavior in question when they have a stronger intention to engage in the behavior. The Theory of Planned Behavior (TPB) states that a person's attitude, perceived subjective norms, and perceived behavioral control are quality predictors of a person's intention to perform a specific behavior (Ajzen, 1991). Attitudes, subjective norms, and perceived behavior control all interact and influence each other to create a person's intent, which then influences the person's behavior (Ajzen, 1991).

Attitudes, subject norms, and perceived behavioral control accounted for a 58% variance in intention to report concussions in varsity athletes in the high school population (Register-Mihalik, Guskiewicz, et al., 2013). An increased intention was associated with a decrease in participation in playing with symptoms however, no connection was found between the intention of reporting a concussion and behavior (Register-Mihalik, Guskiewicz, et al., 2013). Similar results were found in a study administered across three different high schools. Direct attitude, direct subjective norms, direct perceived planned behavior, concussion knowledge, and year in school explained between 71%, 45.1%, and 58.9% of the variance in reporting intention in each high school (Beakey et al., 2016). An interesting study used concussion education based on

altering a student's attitudes, subjective norms, and perceived planned behavior and found that the intervention group had a higher intention to report a concussion compared to both their baseline scores and the scores of the control group (Sullivan et al., 2018). There is minimal evidence that suggests targeting an athlete's attitude, subjective norms, and perceived behavior is effective in adjusting one's intention to report a concussion. Similar findings have been found in the college population.

A survey of collegiate hockey players conducted by Kroshus et al. (2015) confirmed the components of TPB, attitudes, subjective norms, and perceived subjective norms all significantly corresponded with intent to report a concussion. The interaction term in this study was significant and indicated that athletes who at preseason intended to report their symptoms had 1.34 times greater odds of reporting a concussion for every additional symptom experienced in-season (Kroshus et al., 2015). Intention to report symptoms of a minor concussion was also significantly associated with in-season reporting behavior and the increase in reporting additional sustained symptoms (Kroshus et al., 2015). Kroshus et al. (2015) discussed the possibility that individuals who sustain a concussion and present with severe symptoms are more likely to report regardless of their intention and their symptoms may be more likely to be identified by their peers thus having the concussion symptom reporting process put in place for them. Athletes may also be more likely to report symptoms of a concussion if there is someone watching whom they believe to be qualified to diagnose a concussion and wouldn't be able to mask the symptoms from that individual (Kroshus et al., 2015). Another study completed by Register-Mihalik et al. (2018) investigated a cadet's intention to report a concussion. First-year cadets (n=972) with a high intention were more likely to report a concussion compared to those with a low intention (69.9% vs 45.6%). Researchers have shown that intention to report and behavior can be good

predictors of reporting a concussion and are influenced by more than concussion knowledge alone (Kroshus et al., 2015; Kroshus et al., 2014).

The Theory of Planned Behavior (TPB) can help to explain concussion-reporting behaviors among athletes. Direct attitude, subjective norm, and direct perceived behavioral control were all associated with the intention to report concussions (Register-Mihalik, Guskiewicz, et al., 2013). An attitude represents the athletes' beliefs about the positive or negative outcomes of reporting a concussive injury (Kroshus et al., 2014). An athlete may report a concussion because they think it is in the best interest of their health and well-being or they may decide against reporting because they believe playing time outweighs the consequences of not reporting. Subjective norms are the external pressure from social influences in an athlete's life such as coaches, parents, and teammates who influence the decision to report or not report a concussion (Kroshus et al., 2014). Club athletes may experience fewer external pressures to underreport concussion symptoms to continue playing given the lower rewards associated with the campus recreation setting and may be more likely to report their symptoms to a teammate, coach, or medical professional (Fuller et al., 2020). Lastly, perceived behavioral control (PBC) is the extent to which an athlete accepts that they can perform the behavior and the comparative ease to report a concussive injury (Kroshus et al., 2014). Those who have everyday access to athletic trainers would likely be more confident in reporting a concussion because of the availability of medical professionals and the perceived ease in comparison to those who have limited access to these resources (Wallace et al., 2017).

The Theory of Planned Behavior scale can be used to further understand an athlete's intention to report a specific planned behavior. The Theory of Planned Behavior questionnaire was created by Icek Ajzen to understand why individuals may or may not report a certain

behavior (Ajzen, 1991). The scale is a 7-point Likert-type scale ranging from one “strongly disagree” to seven “strongly agree”. The scale is scored by totaling the responses. Higher scores on this questionnaire indicate a more favorable intention to report concussions (Ajzen, 1991). The questionnaire was refined and validated in a juvenile population by Register-Mihalik, Linnan, et al. (2013). The theory of planned behavior questionnaire was used to investigate high school students’ intention to report a concussion (Register-Mihalik, Linnan, et al., 2013). Register-Mihalik and his colleagues found that student-athletes’ attitudes about concussion reporting had the greatest influence on the intention to report a concussion (2013). Another study completed by Carpenter et al., in 2020, examined the associations between an athlete’s intention to report a concussion and the interpersonal factors described by the Theory of Planned Behavior. The findings in this study suggest that only self-efficacy was significantly associated with concussion-reporting intention (Carpenter et al., 2020). Individuals were 3.5 times more likely to report with a higher self-efficacy score than those with a low self-efficacy score, and this shows that an athlete’s belief in their ability to report a concussion may affect how they respond when faced with these situations (Carpenter et al., 2020).

Athletic Identity

Identity can be described as a person’s self-identification based on their goals, values, and beliefs that are used to shape their behaviors (Waterman, 1985). Most individuals have multiple identities that they associate with and are organized into a ranking order of the likeliness of use (Curry & Weaner, 1987). Oftentimes, individuals seek out opportunities that align with the identities that are important to them and tend to commit large portions of their time to develop a higher identity (Curry & Weaner, 1987). A person’s time in college is thought to be an important time for identity development because it is used by individuals to guide their current

and future behaviors (Downs & Ashton, 2011). Our identities are formed based on our own experiences (personal identity) and others' opinions of us (Tusak et al., 2005).

Some common identities that individuals commit to are sports, academics, peers, kinship, and romantic identities (Curry & Weaner, 1987). College athletes tend to develop a high athletic identity because of the time commitment required when participating in sporting events such as practice and competitions (Brewer et al., 1993). However, this may not be the case for club sports participants. Participants of club sports may commit more of their time identifying with a different identity because they have other values outside of sports.

Athletes tend to develop a high athletic identity because of the time commitment required when participating in sporting events such as practice and competitions (Brewer et al., 1993). Athletic identity was described by Brewer et al. (1993) as, "the extent to which an individual associates themselves with being an athlete" (p. 237). Athletic identity is expressed as a self-concept and can also be described as a social role (Brewer et al., 1993). As a result, athletic identity can be influenced by their beliefs as well as by someone else's beliefs (Brewer et al., 1993). People with high athletic identities will attribute greater importance to their involvement in sports and will translate events that happen during their day to be associated with an athlete role (Brewer et al., 1993).

The most popular measure of athletic identity is the Athletic Identity Measurement Scale (AIMS) which was created by Brewer and his colleagues in an attempt to find a measuring marker to assist in the investigation of the perceived strength of athletic identity (1993). The AIMS is used to evaluate the levels of athletic identity an individual possesses (Brewer et al., 1993). The AIMS assesses the strength and exclusivity of the athletic role by having the athlete rate the importance of sports identity relative to other identities they may associate with

(Wiechman & Williams, 1997). Brewer and associates tested the AIMS across three populations (male and female psychology students, intro-level psychology students, and collegiate male varsity football players) for reliability and internal consistency (1993). The AIMS showed adequate internal consistency ($\alpha=0.93, 0.83, \text{ and } 0.81$) and had test-retest reliability of 0.89 across all populations (Brewer et al., 1993). The survey was originally ten items in total but was later dropped to a seven-item survey after a factor analysis was performed (Brewer & Cornelius, 2002). Following confirmatory factor analysis, three questions were dropped due to poor performance when administering the survey (Brewer & Cornelius, 2002). The AIMS has been normed and shown reliability in athletes, non-athletes, males, and females in a sample of 2,865 individuals ranging from the ages 13-55 (20.61 ± 3.86) (Brewer & Cornelius, 2002).

The AIMS is a popular measurement of athletic identity in various populations. The AIMS has been used to examine athletic identity in the high school population. When comparing the high school male to the football players investigated in the Brewer (1993) study, high school males had essentially the same athletic identity ($M= 49.7$) as the football players (Wiechman & Williams, 1997). The AIMS has also been used to examine athletic identity in male youth soccer players. Mitchell et al. (2021) found that the AIMS can be used to represent an athlete's overall athletic identity as a single construct and the findings support the use of the AIMS for the measurement of athletic identity in male youth soccer players. Similar research was conducted by Griffith and Johnson (2002) in examining athletic identity in NCAA Division I and Division III track and field college athletes. The findings of this study found that Division I collegiate athletes ranked themselves higher in the athlete role than their Division III counterparts (Griffith & Johnson, 2002).

Individuals who dedicate too much of their time to the athlete role may be less likely to explore other identities, careers, education, and lifestyle options due to their large investment in sports (Brewer et al., 1993). People with high athletic identity are at risk of emotional strain when they experience an injury that impairs their ability to perform and when transitioning out of competitive sports (Brewer et al., 1993; Russell et al., 2018). Strong identification may result in longer adjustment periods and could increase levels of anxiety, depression, and stress as they are working through this phase of their career (Russell et al., 2018). A high athletic identity that is exclusive in nature has been associated with poor coping skills and can be extremely difficult for an athlete to transition out of at the conclusion of their athletic career (Brewer et al., 1993). Participants have a difficult time with the transition because they described being a representative of their programs and teams as part of their athletic identity (Newton et al., 2020).

Gender

Numerous factors can influence athletic identity in a positive and negative way. One such factor that can influence athletic identity is the athlete's gender and gender-role orientation. Lantz & Schroeder (1999) defined gender role orientation as, “the degree to which an individual views themselves as being either masculine or feminine” (p. 546). Lantz & Schroeder discovered that respondents who satisfied masculine roles had a higher athletic identity and athletes who fulfilled feminine roles had lower athletic identities (1999). In another study, Wiechman & Williams (1997) found that male high school athletes scored higher on the AIMS than female athletes. Van Raalte et al. (1992) completed a research study that included psychology and kinesiology students and found male students to have a higher athletic identity than female students. Phoenix et al. (2003) found similar results in male college students on the AIMS subscales of identity and exclusivity. Alternatively, two other studies found that gender had no effect on an individual's

athletic identity (Handley et al., 2018; Tusak et al., 2005). Based on the current literature, gender may play a role in athletic identity scores, but the evidence is not conclusive to make a strong correlation.

Race

The role of race has also been studied to determine the influence on an individual's athletic identity. The few available studies to consider the effect of race on athletic identity have been ambiguous in their outcomes. One study of Division I NCAA football players found that African American student-athletes had significantly higher AIMS scores in comparison to their Caucasian counterparts (Harrison et al., 2011; Rae & Jenkins, 2021). In another study, the athletic identity of Black American football athletes was studied at Predominantly White Institutions (PWIs) and Historically Black Colleges and Universities (HBCUs) (Rae & Jenkins, 2021; Steinfeldt et al., 2010). Steinfeldt et al. (2010) found athletes attending PWIs reported significantly higher levels of athletic identity than those at HBCUs. Other studies have found higher athletic identity scores in Caucasian Division I student-athletes than in their African American counterparts (Brown et al., 2003; Melendez, 2009). In contrast to the above findings, a recently published study found no significant differences in athletic identity between races (Huml et al., 2019; Rae & Jenkins, 2021). The reason for these differences is not fully understood and opens a window for further investigation of the role of race on athletic identity.

Level of Involvement

The level of competition and years of participation in sport has also been shown to influence an individual's athletic identity. Lavallee et al. (1997) discovered that as individuals became more involved and committed to their respected sport, the athlete took on a greater athletic identity role. Similarly, Van Raalte et al. (1992) reported that psychology and

kinesiology students showed an increase in their athletic identity with the level of involvement in sports. Tusak et al. (2005) also found that athletic identity increases with the level of involvement and athletes commit to the athlete role without exploring alternative identities. Wiechman & Williams (1997) previously reported that males had significantly higher athletic identities than females and discovered that years of experience in sport accounted for 4% of the variance in AIMS scores in high school athletes. Athletes who were involved in more sports during their high school career reported having a higher athletic identity than those that specialize in one sport (Downs & Ashton, 2011). High school athletes who anticipated playing sports in college also had significantly higher athletic identities (Wiechman & Williams, 1997).

High school athletes planning on participating in college athletics have shown to have an increased athletic identity but there is little research on the athletic identity of those wanting to participate in collegiate club sports. Students joining club sports may experience a change in their athletic identity coming out of high school. Upon the shift into one's college years, individuals may decrease their participation in traditional organized sports and therefore might also show a decline in their athletic identity (Downs & Ashton, 2011). Club athletes may experience a decrease in their athletic identity because of the change and transition out of traditional and organized sanctioned high school sports and the low stakes involved with club sports (Lavallee et al, 2008; Downs & Ashton, 2011; Helms & Moiseichik, 2018).

Yukhymenko–Lescroart (2014) found that collegiate athletes reported a significantly higher athletic identity and a significantly weakened academic identity compared to their fellow club sports counterparts. Club sports participants could also show a decreased athletic identity because they prioritize a different identity over their athlete identity. The decline in their athletic identities may allow the club sports athletes to invest in other roles such as peer and student roles

(Lally & Kerr, 2005). These changes in role may be mitigated by the benefits of participation in organized sports.

Age

Age can be an influential factor in an individual's athletic identity. Different studies have shown that athletic identity tends to increase from late childhood into adolescence and remain steady until reduced sport involvement is faced (Brewer & Petitpas, 2017). As an athlete gets older, they tend to engage in other activities and roles, thus decreasing their athletic identity (Van Raalte et al., 1992). Van Raalte et al. (1992) found a negative correlation between age and athletic identity. A similar study conducted by Brewer (1993), found a negative relationship between athletic identity and age in collegiate student-athletes. Athletic identity has been shown to decline from a relatively young age after college due to the importance of the athlete role decreasing over time as a student-athlete matures (Miller & Kerr, 2003).

Conclusion

The underreporting of concussions is a problem throughout the United States as only about half of all concussions are being reported (McCrea et al., 2004). It has been found that athletes often do not report their concussions to medical professionals because of a lack of knowledge and wanting to please their social support groups (Baugh et al., 2014). These reasons for not reporting signs and symptoms of a concussion align with two major controls that form a person's identity: 1) the individual's beliefs and 2) the opinions of other people directly in the individual's life (Tusek et al., 2005). Athletic identity could potentially serve as a motivator of concussion reporting in athletics because identity influences an individual's behavior. To date, there is a lack of research that examines the effect of athletic identity on concussion-reporting

attitudes in club sports athletes. Further research is needed to examine if there is a relationship between athletic identity and intention to report concussions in club sports athletes.

CHAPTER 3

ATHLETIC IDENTITY AND INTENTION TO REPORT CONCUSSIONS IN COLLEGIATE CLUB RECREATIONAL ATHLETES

Introduction

To date, there are nearly 2 million students participating in club sports in the collegiate setting, and the numbers continue to grow each year (Morris et al, 2021). Participation in club sports has been on the rise and injury rates are following a similar trend. Among the few studies available in the literature, club sports resulted in an injury rate of 18.3 injuries per 1,000 sports interactions, and intramural sports, reported 10.28 injuries per 1,000 sports interactions (Arthur-Banning et al., 2018). On the other hand, NCAA sports reported having 13.79 injuries per 1,000 sports interactions (Arthur-Banning et al., 2018). This provides evidence that club sports athletes may be at a greater risk for injuries than NCAA collegiate athletes and club sports need similar medical coverage to that of NCAA-sanctioned competitions and practices.

The rise of participation in sports resulted in clinicians observing an increase in the number of concussions sustained during practices and competitions. In total, there is an estimated number of 1.6 to 3.8 million concussions sustained per year in the United States while participating in competitive sports and recreational activities (Langlois et al., 2006). The incidence rate could potentially be higher than what is currently recorded because only about 50% of all concussions are reported to coaches or medical professionals when they occur (McCrea et al., 2004).

Concussions in club sports have increasingly been a problem that is often overlooked because there is a lack of oversight from the NCAA and a limited number of sports medicine staff in the campus recreation field (Lifschutz, 2012). Lifschutz (2012) and Beidler et al. (2018),

reported that only 35% of club sports programs had access to athletic training services. If an injury occurred while participating in practice or competition, the athlete and coaching staff were solely responsible for the return to play decision-making if a medical professional was not available for the formal assessment of an injury (Lifschutz, 2012; Beidler et al., 2018). Conn et al. (2003), estimated 3.7 million sports and recreation injuries occur annually that require emergency room visits. Of those injuries, 1.1 million sports and recreation injuries involved the head or the neck region, of which 17.2% were concussions.

Unfortunately, the diagnosis of a concussion is largely based on the self-reporting of symptoms as many times the signs and symptoms of a concussion are not visible to coaches and other personnel that are there at their practices and competitions (Williamson & Goodman, 2006). The detection and diagnosis of a concussion can also be difficult due to the athlete's tendency to underreport or mask symptoms they are experiencing in anticipation of a more rapid return to activity (McCrea et al., 2004). The diagnosis of a concussion is many times reliant on the athlete's self-reporting therefore, it is important to understand why athletes do not report their symptoms.

Numerous reasons have been theorized for the under-reporting of concussions and current literature suggests intention may provide the leading reason. In 1991, Ajzen stated, "intentions capture the motivational factors that influence a behavior and are indicators of how hard people are willing to try in order to perform a behavior" (pg. 181). Ajzen (1991) also concluded that a person is more likely to perform a behavior in question when they have a stronger intention to engage in the behavior. The Theory of Planned Behavior (TPB) states that a person's attitude, perceived subjective norms, and perceived behavioral control are quality predictors of a person's intention to perform a specific behavior (Ajzen, 1991). Attitudes,

subjective norms, and perceived behavior control all interact and influence each other to create a person's intent, which then influences the person's behavior (Ajzen, 1991).

A person's intention to report a concussion may further be complicated by personal factors such as athletic identity. Athletic identity was described by Brewer et al., as, "the extent to which an individual associates themselves with being an athlete" (1993, pg. 237). People with high athletic identities will attribute greater importance to their involvement in sports and will translate events that happen during their day to be associated with an athlete role (Brewer et al., 1993). Wayment et al. (2019) found an athlete's athletic identity can be a negative motivator and they are often reluctant to report potential concussion symptoms. Reporting a head injury or concussion symptoms during a game or practice is at odds with their athletic identity goals, particularly if the athlete deems playing with pain as part of the game or if their symptoms do not interfere with playing capabilities (Petrie et al., 2014; Sanderson et al., 2016). Athletes with a high athletic identity may be less likely to report a concussion because they do not want to jeopardize what they deem important (playing time, satisfying coaches, and teammates). This theory has not been examined in club sports athletes; therefore, the purpose of this study is to examine the presence of athletic identity in club sports and determine the influence of athletic identity on concussion reporting in club sports participants.

Methods

Participants

A convenience sample of 149 club sport athletes on an active club sports roster at Georgia Southern University during the 2022-2023 calendar year participated in the present study. Club sport athletes were chosen for this study as they may experience changes in their athletic identity because of the potential transition out of more prevalent high school-sanctioned

sports and into the low stakes involved with club sports compared to the NCAA programs offered at college institutions (Lavallee et al, 2008; Downs & Ashton, 2011; Helms & Moiseichik, 2018). Participants ranged from 18-28 ($M = 19.95 \pm 1.810$) and participated in sports for an average of 11.16 years ($SD = 5.34$). Inclusion criteria included athletes actively participating in one of the 21 club sports at the university (See Table 1). Exclusion criteria included athletes that were academically ineligible or suspended from club sports participation.

Table 1

Club Sports Offered During 2022-2023 Academic Year

Archery (0)	Baseball (9)	Bass Anglers (0)
Cheer (11)	Dance (16)	Dodgeball (2)
Equestrian (7)	Fencing (8)	Men's Lacrosse (29)
Men's Soccer (4)	Men's Ultimate (6)	Men's Volleyball (18)
Quidditch (10)	Shooting Sports (1)	Southern Clay Target (0)
Swimming (2)	Tennis (2)	Water Polo (0)
Women's Soccer (3)	Women's Ultimate (3)	Women's Volleyball (13)

Note. Number of responses from each team are indicated in ().

Instrument

A 17-item survey was developed by combining demographic questions with two previously validated scales from the Athletic Identity (AIMS) and the Intention to Report

Subscale (Theory of Planned Behavior Scale). Demographic questions included: participants' age, sex, year in college (freshman, sophomore, junior, senior, graduate student), the sport they currently play, number of previous concussions, number of previous dings or bell ringers, and previous concussion education.

Athletic Identity Measurement Scale (AIMS; Brewer et al., 1993). Athletic Identity (AI) was measured with the AIMS. The AIMS contains 7 items and is rated on a 7-point Likert-type scale. Questions are scored on a scale of one “strongly disagree” to seven “strongly agree”. The AIMS contains three subscales including social identity (“Most of my friends are athletes”), negative affectivity (“I feel bad about myself when I do poorly in sport”), and exclusivity (“I have many goals related to sports”; Brewer & Cornelius, 2002, p. 104). A one-dimensional score was calculated by summing all seven questions, leading to a score that ranges between 7 and 49. Elevated scores indicate a higher association with the athlete role. Across three studies completed by Brewer et al. (1993), AIMS showed good internal consistency ($\alpha = 0.93, 0.83$, and 0.81) and had a 14-day test-retest reliability of 0.89 in university students. The AIMS also showed reliability in athletes, non-athletes, males, and females (Brewer & Cornelius, 2002). Cronbach alpha was favorable for athletic identity ($\alpha = 0.82$) in the current study.

Theory of Planned Behavior Scale: Intention to Report Subscale (Register-Mihalik, Linnan, et al., 2013). The intention to report concussion signs and symptoms was measured with an intention to report subscale. The subscale was refined and validated in a juvenile population by Register-Mihalik, Linnan, et al. (2013). The subscale contains 3 items scored on a 7-point Likert-type scale ranging from one “strongly disagree” to seven “strongly agree”. The scale is scored by summing the 3 responses. Scores can range between 3 and 21. Higher scores on this questionnaire indicate a more favorable intention to report concussions. The reporting intention

scale has a Cronbach alpha of $\alpha = 0.94$ for internal consistency (Register-Mihalik, Linnan, et al., 2013). Cronbach alpha was also favorable in the current study ($\alpha = 0.97$).

Procedures

Approval from the University's Institutional Review Board (IRB) was obtained prior to any data collection. The investigator attended various club sports practices to explain the study by reading a recruitment script (See Appendix B). The participants were informed that participation in the study is completely voluntary, and they may withdraw from the survey at any time without consequence. Once participants were enrolled in the study, they were given a QR code to scan with their phones. The QR code contained a link where the participants completed the survey through Qualtrics. The investigator reminded the participants that the surveys would be kept confidential, all responses were anonymous, and they may withdraw from the study at any time without consequence. Club sports participants were instructed to read the questions carefully and were encouraged to answer the survey questions as honestly as they could in their entirety. The survey was also sent out via IMLeagues (an interactive online program that allows universities to interact with clubs and intramural teams) to reach club sport participants that gather outside of the Recreational Activity Center. Survey completion took approximately 5 to 10 minutes to complete.

Statistical Analysis

All analyses were calculated using IBM SPSS Statistics for Windows, version 27.0 (IBM Corp., Armonk, N.Y., USA), with an alpha level set *a priori* at 0.05. Descriptive statistics were calculated for the demographic variables of age (means and standard deviation), sex (frequencies), year in college (freshman, sophomore, junior, senior, graduate student frequencies), race/ethnicity (frequencies), club sport played (frequencies), years of sports played

(means and standard deviations), number of previous concussions (frequencies), number of previous dings or bell ringers (frequencies), and previous concussion education (frequencies). Collected data were examined for outliers. Score range, percentages, and mean/standard deviation were used to determine the presence of athletic identity in club sport athletes. A one-sample t-test was conducted to address the first research question to examine differences between club sports and previously published AIMS scores for high school athletes. A correlation analysis utilizing Pearson and Spearman's Rho correlations was carried out. Any non-significant relationships were eliminated.

Results

When participants were asked about their current year in school, sophomores and freshmen made up the majority of the sample (34.7% and 28.5%, respectively). Among this sample, 56.9% of the participants identified as being male, and 42.4% identified as female. Most of the club athletes identified as White/Caucasian (72.2%), while the others identified as Black/African American (16%), Hispanic/Latino (5.6%), Asian or Pacific Islander (3.5%), and Biracial (2.8%). Sports providing the greatest number of responses were received from: lacrosse (20.1%) and men's volleyball (12.5%), followed by dance (11.1%), women's volleyball (9.0%), cheer (7.6%), and quidditch (6.9%).

Most of the participants indicated that they had not previously received concussion education (70.1%). Twenty-eight club athletes (19.5%) reported a history of a concussion, while thirty-eight athletes reported a history of a ding/bellringer (26.5%). One concussion (11.8%) was the most commonly reported number of previous concussions sustained among seventeen club athletes. One ding/bell ringer (18.8%) was also the most commonly reported among twenty-seven club athletes when asked to count the total number they received.

The scores on the AIMS ranged from 8-49. Differences in average athletic identity for each sport can help to explain the range in scores in this study. Those participating in men's soccer, baseball, women's volleyball, and dance had a higher average athletic identity than participants in club fencing, women's ultimate frisbee, and quidditch (See Table 2). The average score for athletic identity reported on the AIMS for the total sample was relatively moderate ($M = 35.24 \pm 7.77$). Examination of the relationship of demographic variables to athletic identity identified that the total number of years participated in sport was significantly associated with athletic identity ($r = .387, p < 0.001$). Club athletes who have participated in sports for a greater number of years had a higher athletic identity. Age was also found to be negatively associated with athletic identity ($r = -0.23, p = 0.006$) with older participants displaying lower athletic identity scores.

Table 2

Average AIMS Scores for Each Club Sport

Club Sport	Average AI on AIMS
Baseball	39.88
Cheer	35.18
Dance	38.19
Dodgeball	20.00
Equestrian	34.29
Fencing	30.00
Men's Lacrosse	36.20
Men's Soccer	43.50
Men's Ultimate Frisbee	32.50
Men's Volleyball	33.70

Quidditch	26.70
Shooting Sports	20.00
Swimming	28.00
Tennis	39.50
Women's Soccer	36.67
Women's Ultimate Frisbee	28.33
Women's Volleyball	38.92

The intention subscale scores ranged from 3-21. There was a moderate-high intent to report ($M = 16.82 \pm 4.60$). Correlation analyses utilizing Pearson and Spearman's Rho correlations to examine the relationship between athletic identity, age, sex, club sport played, and years played in sport, previous history of concussions, concussion education, and intention to report a concussion. Both analyses revealed no statistically significant relationship between athletic identity, age, sex, club sport, years in sport, concussion education, previous history of concussions, and intentions to report a concussion (See Table 3 and Table 4). Therefore, a linear regression was not run in this study because there were no significant correlations found between the variables of interest.

Table 3

Pearson and Spearman's Rho Correlations Examining the Relationship Between the Indicated Variable and Intention

Variable	Pearson Correlation	Significance (2-tailed)
Athletic Identity	0.131	0.119
Age	0.017	0.836
Number of Years in Sports	-0.033	0.695

Number of Previous Concussions	-0.098	0.242
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Table 4

Spearman's Rho Correlations Examining the Relationship Between Indicated Variable and Intention

Variable	Spearman's Rho Correlation	Significance (2-tailed)
Sex	0.034	0.690
Club Sport Played	-0.032	0.699
Previous Concussion Education	0.126	0.133

A one-sample t-test was conducted to examine the differences between AIMS scores in club athletes and the study being replicated by Cook (2020) in high school athletes. There was a significant difference between the current sample and the high school sample, $t(143) = 10.40$, $p < 0.001$. Based on the analysis, club sport athletes held lower athletic identities compared to the athletic identities of the high school athletes.

Discussion

This study sought to describe athletic identity in collegiate club sport athletes and examine the presence of a relationship between athletic identity and intention to report concussions. The average score for athletic identity in club sport athletes at Georgia Southern University was relatively moderate. Athletic identity was affected by years of participation in their respective sport where increased time in sport resulted in higher athletic identity. Age was also found to be negatively associated with athletic identity where the older the individual was, the lower their athletic identity. Athletic identity and intention to report concussion were not significantly related. Furthermore, age, sex, club sport, previous history of concussions, previous

concussion education, and years in sport had no significant relationship on the intention to report a concussion.

Few studies have examined athletic identity in collegiate club sport athletes despite the large number of college students participating in recreational sports. The results of this study found that collegiate club sport athletes demonstrate a moderate athletic identity score. Athletes participating in soccer, baseball, volleyball, and dance may have higher athletic identities because these sports are frequently thought of as traditional sports and they may have been participating in these sports longer than some of the nontraditional sports that others join in college (Lochbaum et al., 2022). Unfortunately, there are no cut-off scores reported in the literature to determine high and low athletic identity on the AIMS so, it is recommended to examine athletic identity as a scale running from low to high with respective characteristics.

Characteristics of low athletic identity include individuals focusing less on their athletic identity and investing more time exploring other identities outside of sports (Lally & Kerr, 2005). While characteristics of high athletic identity are spending more time with teammates and coaches as well as within their respective sport (Lavalley et al., 1997). This preliminary investigation provides supporting evidence that collegiate club athletes do demonstrate an athletic identity. Given that club sport athletes voluntarily join a team while in college, it is reasonable that they may not completely abandon an athletic identity from their organized sports participation (especially if they had high athletic identity). Club sport offers students an opportunity to continue to participate in sports while in college for those who do not have the opportunity to play at the varsity level (Rundio & Buning, 2021).

The reason and potential desire to participate in club sports and remain aligned with their athletic identities from previous sports participation have been previously examined. While the

anecdotal reason that athletes join club sports is to continue fulfilling their athletic careers, another reason is club sport allows these athletes to fulfill their physical activity needs during their collegiate years (Beidler et al., 2018). This seems to be true in a study that examined reasons why college students join a club sport. Rundio & Buning (2021) found that students joined a club sport because they wanted to learn more about the sport and continue developing new skills. However, their athletic identity may have decreased after high school because they may focus more on their other identities such as academic and social identities (Lally & Kerr, 2005).

Higher athletic identity scores were found in club sport athletes that participated in the sport longer. The findings in this study align with previous research that athletes take on higher athletic identities as they become more involved and committed to their respective sport (Lavallee et al., 1997). Similarly, Tusak et al. (2005) found that athletic identity increases with level of involvement in sport. The increased involvement often leads to athletes committing to the athlete role without exploring alternative identities. These findings are not extraordinary as it confirms the idea that as an athlete spends more time participating in their sport, the higher their athletic identity will be. Additionally, years of experience in a sport accounted for 4% of the variance in AIMS scores in the high school athlete population (Wiechman & Williams, 1997). While years of sport participation is commonly associated with the age of the individual, it is not surprising that age is also associated with athletic identity.

Age was found to be negatively associated with athletic identity. Surprisingly, the more years an athlete participated in sports, the higher their athletic identity was, and it appears that the older the individual was the lower their athletic identity. This aligns with the current literature available on the effect of age on athletic identity. Van Raalte et al. (1992) found a

negative correlation between age and athletic identity in their study. As an athlete gets older, they tend to engage in other activities and roles, thus decreasing their athletic identity (Van Raalte et al., 1992). Club sport athletes may initially have a higher athletic identity as they start their college career but may lower as they begin to explore other roles as they are about to transition out of sports. Transitioning out of sport may result from voluntary retirement to injury. However, in club sports, reporting injuries is rooted in self-reporting.

In our study, club sport athletes had a moderate to high intention to report a concussion. While there is no set score range for this subscale in the literature, this study provides initial information for club sports athletes. In 2013, Register-Mihalik, Linnan, et al. completed a study to assess the influence of psychosocial determinants from the Theory of Reasoned Actions and Planned Behavior (TRA/TPB) on concussion reporting intentions in high school athletes. The average score on the intention subscale in the high school population was similar to our findings ($M = 16.1$, Register-Mihalik, Linnan, et al., 2013; $M = 17.2$, Cook, 2020). Intention scores in our population were consistent with those high school athletes. Club athletes may experience fewer external pressures to underreport concussion symptoms to continue playing given the lower rewards associated with the campus recreation setting. Further, club athletes may be more likely to report their symptoms to a teammate, coach, or medical professional (Fuller et al., 2020). Our study indicates that club sport athletes have moderate to high intention to report a concussion but may have other factors that influence their perceived behavioral control.

In this study, club sport athletes reported a moderate to high level of intention to report. They may be more likely to report because they believe that they can perform the behavior of reporting and the comparative ease to report a concussive injury than those who do not have weekly access to medical professionals (Kroshus et al., 2014). Those who have everyday access

to athletic trainers would likely be more confident in reporting a concussion because of the availability of medical professionals and the perceived ease in comparison to those who have limited access to these resources (Wallace et al., 2017). Sport club athletes at Georgia Southern may be more confident in reporting their concussion because they have weekly access to athletic trainers at the Recreational Activity Center. Access to an athletic trainer may increase their intention and further support their athletic identity.

The relationship between athletic identity and intention to report concussion demonstrated no significant relationship. This was inconsistent with our hypothesis that athletic identity would be negatively correlated with intention. Club sport participants may not follow this idea because they may have other identities that they deem as more important than their athletic identities and they may not want to jeopardize the strength of the other identities. Therefore, they may be more likely to self-report a concussion to medical professionals. Wayment et al. (2019) found that concussion reporting in those with a high athletic identity was negatively correlated with concussion reporting immediately after injury and within 24 hours. In the same study, other identities such as academic identity positively corresponded to reporting immediately and 24 hours post-concussive injury (Wayment et al, 2019). Club sport participants may identify with their athletic identity, but additional identities could alter their behavior in reporting and increase their overall intention.

Another factor that could influence intention is the age of the participant. In this study, age was not associated with intention in this study. This finding is inconsistent with previously conducted research. In a study completed in 2020, Cook found that age was negatively associated with intention, explaining 6.9% of the variance in the intentions of reporting. Previous research has suggested that as athletes get older their intention to report decreases (Register-

Mihalik et al., 2017). It has been hypothesized that older athletes may feel pressure to underreport concussion symptoms to their coaches so they can remain in the game (McCrea et al., 2004). This may not be the case in club sports because of the low stakes involved with club sports compared to those playing in NCAA-sanctioned sports, and the athlete may be more invested in their overall health rather than playing time. An individual's identity outside of athletics may also help to explain whether they intend to report a concussion.

No significant relationship existed between years of participating in sports and intention. Previous research has proposed that athletes who have more experience in sport and playing through injuries may be less likely to report concussions because they do not want to let their coaches down (Curry, 1993; Nixon, 1994; Baugh et al., 2019). This may not be the case in the club sport population because the athletes may believe the benefits of reporting outweigh the consequences of not reporting. Club sport athletes may not have the pressure from their coaches to continue playing sports while they are injured.

There was no significant relationship between sex and intention. This is contrary to most of the current literature available. Previously, researchers found that females were more likely to report a concussion and intended on reporting future concussions more than their male counterparts (Kerr et al., 2016; Kurowski et al., 2014; Miyashita et al., 2016). A possible explanation for differences is males tend to have more in accordance with their masculine gender roles which encourages the mentality to overcome all challenges, winning at all costs, and defeating opponents (Steinfeldt JA et al., 2009). A different study found that female athletes were less likely to be concerned about the perceived negative stereotypes associated with caring about concussions (Bloodgood et al., 2013; Cook, 2020). Male athletes may be more

apprehensive about not appearing as weak individuals because toughness is exceedingly highlighted in many male sports (Chrisman et al., 2013; Cusimano et al., 2017).

Like gender, no relationship existed between the club sport played and intention. In previous studies, researchers found that individuals participating in contact sports were less likely to report a concussion (Chizuk et al., 2021; Weber et al., 2019). Common reasons for athletes in contact sports not wanting to report a concussion were “not wanting to miss the game” and “not wanting to let the coach down” (Chizuk et al., 2021, p. 7). Other reasons for not reporting a concussion found were “not wanting to let the team down”, and the athlete “did not think the injury was serious enough” (Kerr et al., 2016, p. 5; McCrea et al., 2004, p. 385; Register-Mihalik, Linnan, et al., 2013, p. 881). Chizuk et al. (2021) also found that limited/non-contact sport student-athletes intended to report more concussions than those in contact sports but did not differ in their reporting behaviors. This information should encourage investigators to dive deeper into the reporting behaviors of contact vs non-contact sports as well as investigate these behaviors in different sport populations.

In our study, twenty percent of the participants reported a previous history of a concussion and twenty-seven percent reported a history of a bellringer/ding. This is consistent with previous research conducted by Register-Mihalik et al. (2017), stating that twenty-six percent of their sample reported having at least one previous concussion. While the participants demonstrated a similar prevalence of concussion history, there was no association between concussion history and/or bellringer/ding on intention to report.

It is likely that athletes who reported a history of a concussion also reported a bellringer/ding. Similarly, most club sport athletes who reported a history of a bellringer/ding also reported previously having a concussive injury. The increase in reporting of

bellringers/dings over concussions could be due to terminology. The use of terms such as “bellringer” and “ding” is outdated and minimizes the severity of a concussion (Broglio et al., 2014). It is important to continue encouraging the proper use of terminology when talking about concussions as it leads to confusion and may be a contributing factor to the underreporting of concussions (Register-Mihalik, Guskiewicz, et al., 2013). Proper concussion education and the use of correct terminology have been hypothesized to improve concussion reporting intention. However, this is not the case in the current study, as relationships between prior concussion and intention to report were not significant.

Less than a quarter of the club athletes in the sample reported receiving concussion education, which is increasingly lower than other reports (Cook, 2020; Cournoyer & Tripp, 2014; McDonald et al., 2016). It is startling to see that so few of the club sport athletes had previous concussion education before coming to college. In Georgia, only parents and coaches are required to receive concussion education (Return to Play Act of 2013, 2014). It is increasingly concerning that athletes are not required to receive any form of concussion education as self-reporting is the most common form of diagnosis as many times the signs and symptoms of a concussion are not visible to coaches (Williamson & Goodman, 2006). In addition, the education the athletes reported receiving had no effect on their intention to report in this study.

Limitations

There were several limitations in this study. First, we presumed the athletes would answer all questions on the survey truthfully and honestly. Self-reporting on a survey can be subject to imperfect recall or social relevance. The athletic trainer at the Recreational Activity Center administered the survey via QR code at each of the club’s weekday practices. Some

athletes may have reported higher intention because they have a stronger rapport with the athletic trainer, and they believed that is what the athletic trainer would want them to select. Before completing the survey, participants were reminded that their responses were anonymous, and responses could not be traced back to them. The second limitation of this study was that data collection was completed over a period of time when some athletes were preparing for upcoming games. There is evidence that the time of season may affect an athlete's reporting as they may want to play in important games during tournament season (Register-Mihalik et al., 2017). Investigators avoided going to club practices during tournament season to help mitigate these effects. The final limitation was that our study only included one university where there was an athletic trainer available to the population of interest. Wallace et al. (2017) found evidence that those with everyday access to athletic trainers feel more confident in reporting concussions to medical professionals, but our study only included one university with an athletic training staff.

Conclusion

This study provides a preliminary glimpse into athletic identity in club sport athletes. In our sample, athletic identity appears to be moderate within club sport athletes. Those participating in men's soccer, baseball, women's volleyball, and dance were shown to have a higher average athletic identity than those participating in club fencing, women's ultimate frisbee, and quidditch. In our study, the total number of years participating in sports showed to influence athletic identity in club sport athletes. As athletes participated in sports longer, their athletic identities increased. Findings from this study aligned with previous research findings indicating a greater athletic identity as they become more involved and committed to their respective sport (Lavalley et al., 1997). Further, as an athlete gets older, they tend to engage in other activities and roles, thus decreasing their athletic identity (Van Raalte et al., 1992). Club

sport athletes may begin exploring alternative identities outside of their athletic identity when their college career ends.

Although the club sport athletes had a range of athletic identity, it appears that there was no relationship between the level of athletic identity and intention to report concussions.

Attitudes, subjective norms, and perceived behavioral control experienced by athletes have been thought to play a high role in the intention to report. This led to the proposition that athletic identity, as a social construct, would play a hefty role in the intention to report in club sport athletes. However, in our sample, this was not the case. Athletes may join a club sport to consummate their social needs, which develops their social norms, however, this may not have a great enough influence on their subjective norms to directly impact their intention to report a concussion. Athletic identity may not explain the intention to report, but it may change athletes' attitudes, subjective norms, and planned behavioral control encompassing concussive injuries. Future studies should examine the culture of club sports participation and how their attitudes, subjective norms, and perceived behavioral control affect athletic identities in club sport athletes and their intention to report a concussion.

CHAPTER FOUR

CONCLUSIONS AND FUTURE DIRECTIONS

Club sport participation has grown over the years and is gaining distinction at collegiate universities (Copp et al., 2017; Beidler et al., 2018; Steir et al., 2008; Morogiello et al., 2023). To date, there are nearly 2 million students participating in club sports in the collegiate setting, and the numbers continue to grow each year (Morris et al, 2021). With an increased interest in club sports among college students there could also be an increase in the number of concussive injuries in this population. Previous research has shown athletes are more likely to report their injuries if they have eased access to medical staff when the injury occurred (Wallace et al., 2017). It is important to note that based on this study, athletes were more likely to report their concussive injuries because they had athletic training staff available to them at their institution. If more institutions staff athletic trainers or other medical professionals at their recreational centers, we could potentially see an increase in reporting of concussive injuries.

In this study, we sought to determine if athletic identity was present in the club sport population. We found that our participants had a moderate to even high levels of athletic identity based on the club sport they participated in. It is likely that club athletes at different institutions would have similar athletic identities. Further, we examined whether athletic identity played a role in intention to report concussive injuries. There was no significant relationship between athletic identity and intention, but clinicians should not disregard the influence identity may play in reporting intentions. Even though athletic identity did not influence intention to report concussions in our study, other personal identities may be more influential in their reporting behaviors. Future research needs to be conducted to look at athletic identity and other identities

in club sport athletes at institutions of all sizes and divisions to see if their athletes' identities play a role in concussion reporting.

In the future, to ensure that these findings are generalizable to every collegiate club sport population, it is imperative that this study is repeated at different institutions across the country. Ultimately, the athletic identity of all club sport participants is not known therefore, it is difficult to predict whether an athlete will report a concussion based on this identity. Other factors such as age, sex, club sport played, years in sports, concussion education, and previous history of concussions may play a role in intention to report. These predictive variables need to be further explored in future studies conducted in the recreational population. Bringing awareness and building an understanding of this topic can serve as a catalyst for other institutions to determine the risk of underreporting concussions due to the athletic identity of their club athletes. By understanding their athlete's athletic identity and their intention to report concussive injuries, recreational centers can validate the need for medical staff at their facilities to ensure the safety of individuals participating in recreational activities.

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APPENDIX A

EXTENDED METHODOLOGY

Research Questions

1. How can we describe athletic identity in club sport athletes?
2. What is the relationship between athletic identity and the intention to report a concussion?

Hypotheses

1. H1: Club sport athletes will have an athletic identity but will vary on the sport they play and their level of involvement before leaving high school.
2. H2: There will be a negative relationship between athletic identity and intention to report concussions.

Inclusion Criteria

1. Enrolled as a student at Georgia Southern University (freshman, sophomore, junior, senior, graduate student).
2. Listed on the roster for their respective club sport on one of the 21 offered club sports at Georgia Southern University.

Exclusion Criteria

1. Non-student at Georgia Southern University (faculty and staff).
2. Academically ineligible and suspended from club sport participation.

Limitations

1. Athletes may report higher intention because they believe that is what the athletic trainer or primary investigator would want them to select.
2. Time of season may affect reporting as athletes may want to play in important games.

3. One university with an athletic trainer.

Delimitations

1. Convenience sample of club sport athletes at Georgia Southern University.

Assumptions

1. Club sport athletes will read the questions on the survey to their entirety.
2. Club sport athletes will answer truthfully and honestly.

Definitions

1. Concussion - A trauma-induced alteration in mental status that may or may not involve loss of consciousness (Broglia et al., 2014).
2. Identity - A person's self-identification based on their goals, values, and beliefs that are used to shape their behaviors (Waterman, 1985).
3. Athletic Identity - The extent to which an individual associates themselves with being an athlete" (Brewer et al., 1993).
4. Intention - "intentions capture the motivational factors that influence a behavior" (Ajzen, 1991).

APPENDIX B
RECRUITMENT SCRIPT



Hello,

You are receiving this flyer to inform you about a research study that is taking place at the Recreation Activity Center. My name is Kiersten Kuhlman, and I am a second-year graduate student in the post-professional athletic training program within the Department of Health Sciences and Kinesiology at Georgia Southern University. I am also a graduate assistant athletic trainer for Campus Recreation and Intramurals (CRI). In my study, I am trying to understand how club sports athletes' athletic identity affects their intention to report a concussion. To do this effectively, I want to survey athletes in the various club sports offered at CRI to see if athletic identity changes the athletes' willingness to report a concussion. This is where I need your help.

If you decide to take part in this study, you will be asked to complete a short one-time survey prior to or at the end of practice depending on the participant's preference. The survey which includes questions about you, your identity and your intention to report concussions which will take about 5-10 minutes to complete. No identifying information will be collected on the survey.

I believe this survey will help the athletic training staff understand why athletes may not report a concussion and help lead to better care for club athletes in the future. Completion of this study will also contribute to concussion research in club sports and help advocate for athletic trainers in campus recreation.

Allowing us to use your data for research and presentation is voluntary and your responses will remain completely confidential. If you choose to participate in this study, please complete the survey following this link or QR code. All participants have the right to stop at any time without affecting their status with club sports or any judgment made by the researchers. If you have any questions or concerns regarding this study, please email me (kk14254@georgiasouthern.edu) and/or my thesis advisor Dr. Tamerah Hunt (thunt@georgiasouthern.edu). Your time and cooperation are greatly appreciated.

Regards,
Kiersten Kuhlman, LAT, ATC

APPENDIX C

INSTRUMENTATION

Age:

Year In School (freshman, sophomore, junior, senior, graduate student):

Sex: ☐ Male ☐ Female ☐ Other/Prefer not to answer

What is your race/ethnicity?

Check all that apply

☐ Asian or Pacific Islander ☐ Black/African American
☐ Hispanic/Latino ☐ American Indian/Native American
☐ White/Caucasian ☐ Other _____

How many years have you participated in sports? _____

What club sport do you currently play? _____

Have you had a “ding” or a “bell ringer”? ☐ Yes ☐ No

If so, how many? 1 2 3 4+

Most recent (year) _____

Have you had a diagnosed concussion? ☐ Yes ☐ No

If so, how many? 1 2 3 4+

Most recent (year) _____

Have you ever received concussion education? ☐ Yes ☐ No

If yes, what type? _____

Please circle the number that best reflects the extent to which you agree or disagree with each statement regarding your sports participation.

1. I consider myself an athlete.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
2. I have many goals related to sport.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
3. Most of my friends are athletes.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
4. Sport is the most important part of my life.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
5. I spend more time thinking about sport than anything else.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
6. I feel bad about myself when I do poorly in sport.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
7. I would be very depressed if I were injured and could not play my sport.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

A concussion is an injury caused by a blow to the head or sudden movement of the body followed by a variety of signs and symptoms that may include any of the following: headache, dizziness, loss of balance, blurred vision, “seeing stars”, feeling in a fog or slowed down, memory problems, poor concentration, nausea, or throwing up. Getting “knocked out” or being unconscious does NOT always occur with a concussion.


Based on the previous definition, please circle the number that best reflects the extent to which you agree or disagree with each statement.

“When I experience possible concussion symptoms...”

1. I intend to report.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
2. I plan to report.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
3. I will make an effort to report.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

APPENDIX D

IRB APPROVAL

 GEORGIA SOUTHERN UNIVERSITY <small>RESEARCH INTEGRITY</small>	Institutional Review Board (IRB) PO Box 8005 • STATESBORO, GA 30460 Phone: 912-478-5465 Fax: 912-478-0719 IRB@GeorgiaSouthern.edu
To: From: Approval Date: Expiration Date: Subject:	Kuhlman, Kierstan Hunt, Tamerah; Langdon, Jody; Rudio, Amy Georgia Southern Institutional Review Board October 28, 2022 September 30, 2023 Status of Application for Approval to Utilize Human Subjects in Research Expedited
<p>After a review of the following proposed research project, it appears that (1) the research subjects are at minimal risk, (2) appropriate safeguards are planned, and (3) the research activities involve only procedures which are allowable.</p>	
Protocol #: Title: Maximum Number of Subjects: Purpose of Study:	H23122 Athletic Identity and Intention to Report Concussions in Collegiate Club Recreational Athletes 300 The purpose of the study is to examine the correlation between athletic identity, age, sex, club sport played, years in sports, and number of previous concussions on the intention to report concussions in club sport athletes.
<p>Therefore, as authorized in the Federal Policy for the Protection of Human Subjects, I am pleased to notify you that the Institutional Review Board has approved your proposed research with the understanding that you will abide by the following conditions:</p>	
COVID Safety Precautions Required Incentives	Precautions will be taken in accordance with current Georgia Southern policies to reduce the risk of the spread of communicable diseases (including COVID-19). Researchers will monitor the current transmission risk assessment by state and county using the COVID Data Tracker provided by the CDC and increase COVID safety measures as appropriate; follow the COVID safety guidelines of the organization whose facility they are using to conduct research; and any shared devices or equipment will be sanitized using standard sanitation methods. No monetary incentives are approved for this protocol.
Special Conditions:	None
<p>If at the end of this approval period there have been no changes to the research protocol, you may request an extension of the approval period. In the interim, please provide the IRB with any information concerning any significant adverse event, whether or not it is believed to be related to the study, within five working days of the event. In addition, if a change or modification of the approved methodology becomes necessary, you must notify the IRB Coordinator prior to initiating any such changes or modifications. At that time, an amended application for IRB approval may be submitted. Upon completion of your data collection, you are required to complete a Research Study Termination form to notify the IRB Coordinator, so your file may be closed.</p>	