Examination of Intramural Sport Officials’ Training, Development and Performance: A Mixed Methods Study

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Examination of Intramural Sport Officials’ Training, Development and Performance:

A Mixed Methods Study

A Dissertation Presented to the Faculty of the College of Education and Social Work

West Chester University

West Chester, Pennsylvania

In Partial Fulfillment of the Degree of Doctor of Education

By

Daniel J. Comas

May 2023
Dedication

I dedicate this dissertation to my parents, Arthur Jr. and Gail, whose love and encouragement guided me through this journey. Thank you both for your hard work and sacrifices over the years. I would not be who I am today without the two of you. My hope is that this work makes you proud to call me your son.
Acknowledgments

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Abstract

Sports officials play a significant role in organized sports, yet academic research surrounding their training, development, and performance is minimal. Across the nation, athletes are attempting to safely resume play after the COVID-19 pandemic, and many sports officials have decided that they will not return to their respective fields or courts. More robust training and development within intramural sports programs on college campuses could be the solution to recruiting and retaining sports officials.

This mixed methods study examined intramural sports officials’ training, development, and performance within a collegiate intramural sports department. This study utilized a two-phase explanatory sequential mixed methods design (quan → QUAL) based on a theoretical framework consisting of experiential learning and social learning theories. During Phase I of this research study, 34 intramural sports officials were surveyed regarding the rule knowledge prior to and after their traditional intramural basketball officials’ training. Phase II of this study consisted of observations, video review, and semi-structured post-game interviews among 6 intramural sports officials over a two-week period.

Quantitative results showed a statistically significant increase in scores between the pre- and posttest with the traditional intramural basketball officials’ training used as the intervention. Differences in scores were explored in consideration of officials’ gender, playing experience, and officiating experience. Qualitative results captured the officials’ experiences regarding decision-making, crew dynamics, rules knowledge, and game management after the video review. The data collected provided compelling results and will be used to create recommendations for improved intramural official development programs in the future.
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Chapter I: Introduction

In the United States, 15.4 million students are enrolled in grades 9-12, and just under 8 million of these students participated in high school sports during the 2018-2019 season (NFHS, 2020). Participation in sports promotes health and well-being, builds confidence, and often maintains positive mental health; yet, without sports officials, these students would not be able to compete on a playing field or court equitably or safely. In any organized sport, someone must officiate the game or match. Those who officiate sports competitions are known as officials or referees. The primary role of a sports official is to manage gameplay by deciding whether any rules or regulations have been broken and ensuring players’ conduct is fair and safe (Kittel et al., 2021). Players, coaches, parents, and spectators depend on sports officials to enforce sport-specific rules of the game and hold every participant accountable for their actions. Specifically, the decisions that sports officials make are called rulings. These crucial in-game rulings include calls such as offsides in soccer, pass interference in football, goaltending in basketball, hooking in ice hockey, and outs in baseball or softball. A proficient sports official has the ability to run or manage the game; stop play when needed; announce fouls, penalties, and violations confidently; and interact with coaches and their partner sports officials.

Sports officials must maintain a strong reputation of being dependable, honest, and trustworthy. Hence, NASO’s (National Association of Sports Officials) mission is to advocate for all sports officials and to be the leading source of officiating information, programs, and services. NASO supports officials by providing education, training materials, seminars, and government relations. One of NASO’s main goals is reducing negative portrayals of sports officials. Further, they aim to emphasize the integrity and accomplishments of sports officials (NASO, 2022). Much like the United States government, there is a national governing body for
sports-specific rules but also a state governing body with differing adoptions in each state.

NASO works to build a professional alliance between these state legislatures in an effort to improve the overall officiating. NASO sponsors national summits that help bring officiating groups and leaders together (NASO, 2022). Through these types of opportunities, NASO allows members to network with each other when moving to a new geographic location or connecting a newer sports official to a potential mentor.

Many sports advocates, who are often former athletes, want to give something back to the athletic world so they take on sports officiating as a second job (Titlebaum et al., 2009). NASO promotes motivating factors to become an official as staying physically active, earning extra money, escaping from everyday life and problems, camaraderie, community, and developing life skills (NASO, 2022).

Across the nation, athletes are attempting to safely resume play after the COVID-19 pandemic, and many sports officials have since decided that they will not return to their respective fields or courts (Niehoff, 2022). A survey of state high school associations indicates that approximately 50,000 individuals (roughly 20% of the entire workforce) have discontinued their service as high school officials since the 2018-2019 season, the last full school year unaffected by the pandemic (Niehoff, 2022). NASO estimates that as of 2022, closer to 30% of officials left officiating because of the pandemic, and 20-25% of them are never expected to return (Solomon, 2022). Since March 2020, NASO’s membership has dropped from 29,000 to 23,000 (Solomon, 2022). NASO’s membership decline is worrisome as their organization is a leading activist in the efforts to recruit new sports officials across all sports.

This decline in registered sports officials and NASO membership has had a trickle-down effect. Across the country, games have been suspended and canceled, and parents and coaches
are asked to step up to compensate for the lack of available sports officials. In Massachusetts, hundreds of youth hockey games were canceled because no one could referee them (Medina, 2022). While in Indiana, youth soccer organizations are asking parents and coaches to fill in and officiate their games (Medina, 2022). The state of Michigan has recently begun to utilize junior varsity soccer players to fill in as sideline judges at high school soccer games and only sends one head official to manage the field of play (Dvorak, 2021). Similarly, postseason basketball tournaments have been suspended in New York City because of the referee shortage (Medina, 2022).

Football is the most popular boys’ sports program in the United States with over 1 million participants in 2019 (NFHS, 2020). In an attempt to combat the shortage of sports officials, high school football games are being rescheduled from Friday nights to other nights of the week so that the shrinking cohort of sports officials can cover the games (Keilman, 2021). In an attempt to cover all games, California high school football referee crews decreased in size from five-person crews to four-person crews in 2021 (Keilman, 2021). While rookie high school football sports officials used to officiate five years at the lower level before working a varsity game, they now call high-profile varsity games in their first year of officiating (Solomon, 2022).

This sports officials shortage has been an issue for decades as a result of the decline in sportsmanship, but it appears that the COVID-19 pandemic has worsened it (Niehoff, 2022). During the course of the COVID-19 pandemic, many sports officials realized they had no interest to return to the field or court. This shortage reflects a nationwide downward employment trend in lower-wage jobs, such as food service and retail (Dvorak, 2021).

The most alarming demographic information about sports officials within the United States is that the median age is 54 years old, with only 18% of officials being under the age of 40.
years old (Ridinger et al., 2017). As these sports officials become closer to retirement, it is crucial that we begin to train the next generation of sports officials. Titlebaum, Haberlin, and Titlebaum (2009) stated that “virtually everyone with an interest in improving the numbers and quality of sports officials must become involved in recruitment and retention” (p. 102). More robust training and development within intramural sports programs on college campuses could be the solution to recruiting and retaining younger sports officials.

Although the history of intramural sports dates back to as early as 1857, higher education institutions did not widely adopt intramural sports until 1916 (Milton et al., 2012). The National Intramural-Recreational Sports Association (NIRSA) was founded in 1950 and has grown to over 4,500 active members serving an estimated 8.1 million students annually (NIRSA, 2022). NIRSA members develop healthy lifestyle practices as college and university students to help support their continued development (NIRSA, 2022). Campus recreation professionals and members of NIRSA must be willing to act as educators and develop the next generation of sports officials. The framework is readily available on college campuses and should be utilized to a higher degree.

Many universities across the country have enhanced their campus recreation programs and facilities to promote lifelong physical activity, contribute to overall health and wellness, and encourage social engagement (Cooper et al., 2012). Sports leagues or tournaments played between teams or individuals that are within a single educational institution are defined as intramural sports (Cooper et al., 2012). Participation in intramural sports provides college students with an ideal, on-campus opportunity to maintain a healthy level of physical activity. Regular physical activity through intramural sports has shown to have numerous health benefits for college students, which include weight control, reduced risk for cardiovascular disease,
reduced blood pressure, increased energy levels, reduced risk for developing osteoporosis, increased mood states, and reduced stress levels (Cooper et al., 2012). Stress reduction, self-esteem, higher grade point average (GPA), student development, and ease of social integration are all benefits associated with involvement in intramural sports (Artinger et al., 2006). Participation in collegiate recreational sports programs also benefits the college’s retention goals, since it helps to integrate students socially into the university (Artinger et al., 2006). Many universities are attempting to link the classroom experience with the co-curricular experience, and intramural sports are a wonderful example for both participants and sports officials. Co-curricular activities supplement academic curriculum, especially as they are more experiential than classroom based learning (Rutter & Mintz, 2016). For most college students, it is outside of the classroom that they learn about interpersonal relationships, intimacy and emotions, and develop an adult identity and a sense of direction (Rutter & Mintz, 2016).

Recreational sports programs can provide this outlet for growth. For example, students working within a college recreation program experience positive outcomes as they can work on campus with their peers and gain leadership opportunities (Kampf & Teske, 2013). Working in a college recreation program provides employees from different academic backgrounds new skills that can help them in their careers (Kampf & Teske, 2013).

Several studies have examined the correlation between intramural sports and university retention (Forrester et al., 2018). One study found that 100% of the students employed by campus recreation returned to campus the following Fall semester compared to a university-wide 69.5% retention rate during the same time period (Kampf & Teske, 2013). Students who entered the recreation center by swiping their ID cards more than ten times in the Fall semester also had a 98.4% Fall-to-Fall retention rate (Kampf & Teske, 2013).
There are many benefits to sports officiating at the university level. According to Walker et al., (2018) sports officiating builds character and increases social interactions on college campuses, in addition to other benefits. Warner, Tingle, and Kellet (2013) conducted research surrounding the recruitment, retention, and advancement of sports officials. From the survey results, Warner, Tingle, and Kellet identified four themes: staying a part of the game, competition and challenge, compensation, and socialization into the community (Warner et al., 2013). Three themes contributed to sports official retention: problematic social interactions, training/mentoring, and the lack of referee community (Warner et al., 2013). In this research, I aim to address these retention issues and encourage intramural officials to continue progressing in the officiating ranks.

Many states have revised recruitment strategies and implemented modern technologies to recruit new sports officials under the age of 30 (Houle, 2022). Local officiating associations have started setting up social media on various platforms, such as Twitter, Facebook, and Instagram, as a means to recruit potential newcomers. They also use social media to inform the community that there is a need for officials, advertise when a new sports officiating training class starts, provide the game assignor’s contact information to those interested, and publish images of officials having fun working games (Houle, 2022).

Although there are clearly benefits to sports officiating and a critical need for new sports officials to enter the industry, the quality of intramural sports officials’ performances can be inconsistent. At the site of this study, surveys are regularly sent to all participants at the end of the intramural season requesting feedback on the quality of the physical facilities, scheduling of games, referee performance, and scorekeeper performance. An open-ended question at the end of the survey allows participants to voice their ideas for recommendations for the next academic
year’s season. Across all sports, a consistent discontent around the quality of intramural sports officials’ performances is evident. For instance, inexperienced sports officials can be frustrating for athletes (Dyer, 2018), and students will quickly disengage from intramural sports if they sense the officials are not adequately trained (Dyer, 2018). In order to keep students involved in intramural sports and minimize participant injuries, intramural departments should invest the necessary time and resources into training intramural officials (Dyer, 2018).

Recreational sports administrators begin training their student intramural sports officials by reviewing sport-specific and departmental rules in a classroom setting. Next, the intramural sports officials participate in positioning and mechanics stations on the field or court. These stations allow for dynamic instruction and active learning because they stimulate the actual officiating experience (Gaskins et al., 2002). Technological advances have dramatically improved the entire landscape of sports officials’ development in recent years. Web or mobile-based testing has replaced outdated pen and paper forms. Performance assessments include video breakdowns with an audio recording instead of live on-court observations.

Many recreational sports administrators believe that training concludes with the last night of the intramural pre-season clinic (Gaskins et al., 2002). However, training should continue into the beginning of regular season games, where referees first have to apply their new knowledge (e.g., rule interpretations, play situations, and dealing with participants) (Gaskins et al., 2002). Sports officiating is a unique skill because each game differs from the next. Sports officials can learn and develop from these variables that affect the game flow and dynamics. I have identified a gap in the literature concerning evidence-based research in the training, development, and performance assessment of intramural sports officials.
Purpose of Study

This mixed methods study examined intramural sports officials’ training, development, and performance within a collegiate intramural sports department. During the first phase of this research study, I collected and analyzed the rule knowledge for 34 intramural sports officials prior to and after their traditional intramural basketball training. This training consisted of four weeknight evenings and lasted approximately nine hours in length. Participants completed a survey to share more about themselves including: the officials’ gender identities, the highest level of experience playing basketball, years of experience as an intramural basketball official, and referee certification credentials, if applicable.

The second phase of this study was an added layer of training for six intramural sports officials for the first time ever in program history. This phase consisted of observations, videotapes, and post-game focus group interviews among intramural sports officials. These different training methods are utilized within the larger sports officiating community to help improve officials’ training, development, and future performance. This study focuses on undergraduate students employed by the intramural department at a mid-Atlantic institution of higher education. Despite their strong interests, many frustrating problems may occur for novice sports officials who lack proper training (Gaskins et al., 2002). This observation and focus group added second layer of training is designed to enhance intramural sports officials’ performance on the court and strengthen their sense of belonging within the campus recreation department and the University. In addition, the focus group interviews will create greater participation in a community of practice by providing additional opportunities for officials to continue to learn and become better sports officials.
Rationale for Study

NASO’s and NFHS’ data demonstrate there currently is a critical shortage of sports officials across the United States. Sports officials, athletes, and the surrounding communities are the key stakeholders who are affected by this scarcity of sports officials. Sports officials are asked to do more work with fewer resources on a nightly basis. Participant safety is at greater risk with less experienced sports officials governing their play. The non-participating students, parents, staff, and all other persons who have a relationship with the school lose their community spirit.

This study is a part of a larger call to action to recruit the next generation of sports officials. Intramural sports departments within higher education can be the solution to this shortage of sports officials. Even though intramural sports have had a place on these higher education institution’s campuses for so long, there must be a more intentional effort to train and develop intramural officials so that they can perform at higher levels both on their institution’s campus as well as in their local communities after graduation.

Collegiate recreational sports professionals (full-time higher education employees who work in campus recreation departments) play an integral role as educators and advocates for the future of sports officiating. Impactful instructors contribute to robust training programs, which in turn allows new officials to learn the necessary skills to officiate correctly. The most readily accessible instructors for an intramural sports program may be on the campus recreation professional staff or a local high school or college sports official (Gaskins et al., 2002).

Positionality

I am a full-time employee within a campus recreation department with great familiarity with the intramural sports program and many of the student officials. I have eight years of
experience officiating high school basketball and two years of experience officiating NCAA men’s basketball games. In the offseason, I attend multiple instructional camps to improve my own level of officiating performance and am a proud member of the International Association of Approved Basketball Officials (IAABO), NASO, and NIRSA.

Sports shaped my entire life from a young age and ultimately influenced my decision to begin a career in campus recreation. I spent my nights, weekends, and summers on courts and fields at local recreation centers playing anything from informal pickup games to local intramural, travel, and club leagues; AAU tournaments; and interscholastic competitions. Specifically, basketball shaped my identity and who I was within my high school homeroom, social friend group, and outside of school. My athletic abilities and God-given height of 6’6” allowed me to receive an athletic scholarship to play men’s basketball and earn a bachelor’s degree. Basketball motivated me to do well in the classroom in order to stay eligible to participate in varsity athletics. The availability of basketball officials during my time in high school and college allowed me to be in the position that I am in today.

I grew up around referees. My father and uncles all refereed as second jobs to help pay for all of the “extras” in my childhood, whether that was pizza and cheese fries on a Friday night, presents at Christmas time, or summer vacations. These family members were role models to me at an early age, and like any child, I wanted to be just like them. I would attend their games, watch from the sidelines, and see them drenched in sweat after the games ended. While I did not truly understand the nuances of officiating, I developed a sense of respect for sports officials because I admired the time and effort my father and uncles sacrificed to officiate. Refereeing is my way of giving back to a sport that gave me so many opportunities for advancement.
Rules Knowledge

Rules and regulations provide players, coaches, parents, and sports officials with written standards of what is legal and illegal during a game or match. These rule sets regulate everything from the timing of the game, the size of the field or court, the weight of the game ball, which direction a team will attack or defend, what constitutes a foul or violation, and the penalties for specific actions. For the purpose of this study, it is important to clarify that every sport has its own unique rule set, and there is minimal overlap between sports.

Rules knowledge is an area that every official can improve upon, and it is imperative that sports officials know their sport’s rules and regulations, as lack of rule knowledge and misapplication of the rules can lead to a multitude of problems on the playing field or court and can cause a sports official to lose credibility. For example, if a basketball referee grants possession of the ball to the wrong team after a technical foul free throw, it costs the opposing team an opportunity to score. When this rule is misapplied, one team is at an unfair advantage while the other team’s players, coaches, parents, and fans are enraged at the referee. This entire scenario can be avoided with proper knowledge and application of the rules.

Plessner & Harr (2006) developed a social cognition approach to refereeing in sports by outlining how an official comes to make a final decision. This claim includes four factors that influence how referees make decisions: (a) written rules, (b) physical context, (c) social context, and (d) unwritten rules (Plessner & Harr, 2006). Plessner & Harr identified that the knowledge of the written rules is the utmost important factor in decision-making because, without the proficiency of written rules, an official will not be able to succeed or advance to the higher levels of officiating (Plessner & Harr, 2006).
Problem Statement

Collegiate recreational sports departments must recruit and educate the next generation of sports officials to reduce the critical shortage. As discussed previously, Titlebaum, Haberlin, & Titlebaum (2009) claimed that “Virtually everyone with an interest in improving the numbers and quality of sports officials must become involved in recruitment and retention” (p. 102). There needs to be a call to action for all avid sports fans, sports officials, and campus recreation administrators to address this critical shortage of sports officials globally.

Many intramural sports organizations have difficulties finding and training sports officials at a high level despite this being a main component of their job duties (Walker et al., 2018). Providing highly-trained officials creates a safer environment for all participants which leads to an enjoyable experience for all parties involved. These officials also help portray a positive image of the intramural sports program and resolve disputes (Gaskins et al., 2002).

While all the basic rules, regulations, and expectations are reviewed during these pre-season trainings, intramural sports officials actually develop by applying these skills during the regular season games (Dyer, 2018). Unfortunately, in my experience, intramural sports administrators typically end up dedicating their time and efforts during the regular season to the day-to-day operations of running the league. This operation includes communicating with team captains and sports officials about scheduling games and playoff brackets, scheduling participant and intramural sports official disciplinary meetings, and other administrative tasks. Ultimately, these responsibilities end up taking precedence over the evaluation of the sports officials’ performances on a nightly basis.
Research Questions

The main research question that guided this study was, in what ways can we improve the training and development of intramural sports officials to perform at a higher level?

In addition, three sub-questions guided this study:

1. In what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to an officials’ understanding of the playing rules and regulations?
2. How do intramural sports officials respond when given the opportunity to reflect on their officiating performance during a particular intramural basketball game?
3. In what ways do intramural basketball officials report that watching themselves on videotape helped improve their officiating performance?

Rationale for Methods

This study employed a mixed-methods explanatory sequential design consisting of a quantitative phase followed by a qualitative phase (Creswell & Plano-Clark, 2017). This study used a quan-QUAL design as this combination was most likely to provide the context needed in order to improve the intramural sports program. Specifically, my study used quantitative research to collect data on student officials’ knowledge of the written rules prior to stepping on the actual court. I believe that collecting this quantitative data early in the training and development process allowed me to have a concrete starting point of where officials were within their understanding of the rules before they began to officiate scrimmages and games. Then, the study shifted to a larger, qualitative lens using observations and focus group interviews to gain a better understanding of student officials’ experiences while on the court. The focus group interviews allowed these officials to reflect on their own and their partners’ officiating performances. I
anticipated the themes identified from the qualitative feedback would help reshape the intramural student officials’ training for future seasons and benefit the intramural sports program as a whole.

**Significance of Study**

This study is significant because it addressed a more prominent issue in many intramural sports programs, the substandard level of intramural sports officials. This issue is often not communicated with supervisors or higher-level administrators as most competitions occur in the evenings and on weekends outside of standard administrative work hours. These higher-level administrators tend to only observe a small scope of the intramural sports program, typically during championship competitions or high-profile events when the top-tier intramural sports officials are scheduled to work.

Training and development methods typically only found at the higher level of collegiate and professional sports include the use of observations, video breakdowns, and focus group interviews. The addition of these training mechanisms makes bringing these methods and technologies to intramural sports quite different and innovative. The qualitative focus group interviews will lead to next-level thinking, especially within the decision-making and effective communication categories. Exposing intramural officials to this degree of training at such an early age could catapult their performance levels on the court in a short amount of time. I hope the extra time invested gives these intramural officials the confidence to continue officiating in their local communities after graduation.

**Limitations**

A significant limitation of this study would be the high dependence on the intramural sports officials’ engagement level. All of the student officials are undergraduate student
employees enrolled in academic classes at a mid-Atlantic institution of higher education. Many students view intramural sports officiating as a part-time job at the student recreation center, and many have not yet developed a passion for officiating.

Secondly, due to the variety of sports offered within intramural sports programs, student officials typically referee multiple sports throughout the academic year, depending on the season. The variety of sports offerings can be a limitation as basketball may not be every intramural sports official’s strongest sport. Intramural student officials who are less interested in this specific sport often prefer to be scheduled as scorekeepers or scheduled for a lower level of competition.

The amount of time allotted for the training places limitations on the depth of the content reviewed at the training and video review session. The training sessions give brief ten-minute overviews and explanations of the rules, while a full hour could be dedicated to each of the ten rules in the National Federation of High School Sports (NFHS) basketball. The same concept is true for the focus group interviews surrounding the video review. Multiple hours can be spent breaking down each and every possession in a forty-minute game, but I am limited to twelve single plays in a one-hour time slot.

Because I am only researching this phenomenon at one institution, it may be hard to draw conclusions about intramural sports officiating as a whole. That being said, this sample size consisted of the sports officials at one institution in the mid-Atlantic region. Comparably, my specific qualitative sample size is smaller when compared to other research on sports officiating, which often have sample sizes of upwards of 50 participants.
Summary

In this chapter, I introduced the purpose, need, and current state of affairs in sports officiating. Next, I described the current study’s purpose, rationale, and problem statement. I also detailed an overarching research question followed by three sub-questions and provided an overview and justification for the study’s mixed methods design. Finally, I defined the significance of the study and addressed limitations connected to my sample.

Chapter II begins with a literature review that outlines the content necessary for framing this study. The literature review will focus on (a) decision-making, (b) video review, and (c) psychology within sports officiating. The chapter then concludes with my theoretical framework, which combines the intersection of Kolb’s (1984) experiential learning theory and Bandura’s (1977b) social learning theory.
Chapter II: Literature Review

The purpose of the literature review is to examine previous research on sports officiating and training practices. First and foremost, I would like to introduce the general importance of sports and why we need better sports officials. Participation in sports promotes health and well-being, builds confidence, and often maintains positive mental health. Coaches’ and athletes’ success depends on their performance on their field or court, and at the higher levels of play, sports can be considered a career. Poor officiating and incorrect calls can affect these coaches’ and athletes’ future scholarships or contracts. Additional research on the training and development of sports officials can prevent these situations from happening in future games or tournaments.

In this chapter, I will review three areas of sport-officiating literature: (a) decision-making, (b) video review, and (c) psychology within sports officiating. The objective of the literature review is to look at past research and provide a baseline understanding of effective training, professional development, and performance evaluation of sports officials worldwide. Then, I will present my theoretical framework, which combines the intersection of Kolb’s (1984) experiential learning theory and Bandura’s (1977b) social learning theory. These theories imply the necessity of experience and observation in learning best practices of sports officiating. Individuals must referee games to experience live gameplay, make mistakes, and learn from their own errors. In order to further develop, sports officials also need to observe other sports officials and follow a model to imitate these behaviors on the court or field. A review of current literature shows a need to do more research on the three areas listed above.
Decision-Making

Human beings make countless decisions over a lifetime, many of which are repeated daily. There are different types of decisions that individuals must make, and in ‘repetitive decision-making,’ individuals rely on their prior knowledge and experiences to come to a final conclusion (Betsch & Haberstroh, 2012). Experience helps individuals make decisions in the complexity of the real world. Examples of repetitive decision-making include daily routines, such as hygiene practices and commuting to work or school. On the other hand, humans are often faced with more complex decisions that include variables such as weather, timing, location, traffic, and other personal preferences (Betsch & Haberstroh, 2004). The complex decision-making process requires a blend of ‘deliberate processing’ (calculated, resource-consuming processing) and ‘rule-based processing’ (heuristic, efficient) (Betsch & Haberstroh, 2004). This process can also differentiate one individual from the next individual as two people can think very similarly but not exactly the same. The balance of deliberate and rule-based processing will vary based on the individual which connects to sports officiating. Some sports officials are extremely rule focused while other sports officials prefer to promote a ‘flow’ to the game. An example of this in the sport of basketball would be a hand-checking foul or a three-second violation. By definition, a hand-checking foul could be called on almost every possession of the game, but many sports officials choose not to call it to enhance the ‘flow’ of the game. Offensive players are often positioned in the free-throw lane for three seconds or more but unless they present an obvious advantage or an immediate scoring opportunity, basketball officials typically disregard this violation.

The study of decision-making focuses on humanity’s information processing ability and how each individual chooses an optimal course of action (Rilling & Sanfey, 2011). Our most
important decisions are made through interpersonal interactions. These decisions are influenced by our environment at work, school, home, and social events. Because our decisions have to do with interpersonal interactions, social learning shapes human behavior (Rilling & Sanfey, 2011).

Sports officials must practice both deliberate and rule-based decision-making during a game or match. Deliberate processing includes factors such as the time remaining, score, number of fouls on certain players or teams, and calls that have already been adjudicated in the game. Rule-based processing is more straightforward in calling the obvious fouls or violations. Sports officials have an extremely difficult job due to the multiple variables of the game or match that they must consider and process prior to making a decision on a ruling. These variables include the game’s speed, the situation’s complexity, the participants (players, coaches, and trainers) involved in the match, and the behavior of the spectators at the sporting event (Guillen & Feltz, 2011). Because officials constantly make difficult decisions, coaches, players, and spectators often criticize them for mistakes (Guillen & Feltz, 2011). Despite the criticism, the same coaches, players, and spectators depend on sports officials to enforce the laws of the game and keep the game safe, fair, and fun.

Kittle et al. cited decision-making as the most important skill for successful performance in sports officiating (Kittel et al., 2021). Sports officials develop their decision-making skills by officiating both games and simulated drills as well as video review (Kittel et al., 2021). One essential attribute of effective referee performance is quick, accurate decision-making (Guillen & Feltz, 2011). In addition to speed and accuracy, sports officials prioritize portraying their competencies during games. For example, a focus group comprised of nine sports officials expressed that in order for sports officials to be viewed as competent in the eyes of coaches, players, and spectators, they must make critical decisions, demonstrate accurate judgment, and
be firm in their decisions (Guillen & Feltz, 2011). To better understand how officials make these critical decisions, Plessner & Harr (2006) developed a social-cognition approach to refereeing in sports, which focuses on how people use an information processing framework to understand themselves and others. When making a ruling on the court or field, sports officials follow the basic steps of social-information processing: perception, encoding/categorization, memory processes, and information integration (Plessner & Harr, 2006).

This particular study defines perception as the visual perspective from which the sports official observes the athlete’s behavior. A case study found that different viewing positions caused many discrepancies between the way that referees, coaches, and observers view critical basketball plays (Plessner & Harr, 2006). Considering that the sports official can only make decisions on what they are able to see clearly from their positioning on the field or court, it is important to understanding an official’s perspective. As a sports official sees a play, they code this visual information into a category based on their prior rule knowledge (Plessner & Harr, 2006). As sports officials become more experienced, they will be able to easily identify and categorize specific movements. Memory processes may rely on the official’s prior knowledge of certain participants to aid in the decision-making process. In the final step of social information processing, the official integrates their encoded and categorized knowledge of the athlete’s performance with the information retrieved from memory to form a judgement.

An example of the social-information processing step, perception, can be applied to a soccer match as follows: an event (a player’s tackle) would trigger the referee’s perception (viewpoint of the tackle) to categorize this event (as a foul or no foul) to process the information (assessing the severity of the tackle) to issue a behavioral response (free kick and yellow card) (Plessner & Harr, 2006). In order for sport officials to process all of this information correctly,
they must possess strong governmental knowledge (i.e., the written rules or laws of the game) (Plessner & Harr, 2006).

The information gained or formed prior to an event can influence officials’ judgments (MacMahon & Mildenhall, 2012). In basketball, referees hold pre-game conferences where they identify coaches and players involved in the game and highlight certain playing styles that the officials may encounter (MacMahon & Mildenhall, 2012). If an official or crew of officials already has experience with the same team, they are more prepared to referee their next game (MacMahon & Mildenhall, 2012). Related knowledge of teams can enhance the sports officiating crew’s decision-making accuracy. By becoming familiar with a specific team’s strategy, style, and personnel, sports officials will be less surprised by certain plays and be on high alert for atypical situations.

In addition to game preparation, studying the way that officials make decisions in real-time can help us understand why a call was ruled incorrectly and further improve a sports official’s education. Larkin, Mesagno, Berry, and Spittle (2018) performed a comprehensive case study of in-game decision-making for three Australian football umpires. While wearing a voice recorder, umpires were instructed to “think out loud” while officiating to provide a “running commentary” of what occurred on the field of play and the processes by which they arrived at a decision (Larkin et al., 2018). Video footage was recorded from multiple angles and was timestamped to match the running commentary. Three to five days after the match, researchers conducted semi-structured interviews which included reviewing eight video clips to dive deeper into the participant’s decision-making. Three prominent themes were identified in the analysis of the semi-structured interviews: knowledge of gameplay, player intention during gameplay, and decision evaluation from the sports officials (Larkin et al., 2018). These three themes heavily
influenced my current research to include video footage and semi-structured focus group interviews.

When a sports official makes an official decision on the court or field, players, coaches, partner officials, spectators, and outside observers often have an unofficial opinion of the call. Some parties agree while other parties disagree with the decision regardless of their point of view on the play. The accuracy of these decisions has been under growing scrutiny for decades because of technological advances, especially video review. Sports at all levels are now videotaped and key plays are replayed by players, coaches, and spectators. This has led to the evaluation of several different methods of data collection across professional sports.

Players’ and coaches’ careers are at stake when inaccurate rulings are made on the field of play in professional sports. It is important to acknowledge how difficult officiating sports can be for even the most highly trained professionals. Even though sports officials pass certification exams and complete required training from their supervisors of officials, they still make mistakes. Studies show that Major League Baseball (MLB) plate umpires have an 86% accuracy rate when calling balls and strikes but a 49.9% accuracy rate when a pitch is near the border of the strike zone (Moskowitz & Wertheim, 2011). Field umpires in baseball have a much higher call accuracy, above 95% (Moskowitz & Wertheim, 2011).

While MLB umpires make just two types of calls (accurate and inaccurate), the National Basketball Association (NBA) referees are evaluated on four basic types of calls: correct calls, incorrect calls, correct non-calls, and incorrect non-calls (Moskowitz & Wertheim, 2011). The NBA league office even goes as far as publishing a last two-minute report (L2M), grading each referee’s calls and non-calls in any game that was at or within three points in the last two minutes of the fourth quarter and overtime, when applicable (Gong, 2022). The L2M reports exist to
educate fans and spectators of the NBA about the rules and clarify decisions made by referees. (Gong, 2022).

Call accuracy can be analyzed at all levels of sports. Wahl-Alexander et al. (2019), analyzed 20 college students who were officiating volleyball during an intramural sports season. Two GoPro cameras were situated in each corner of the gym on a tripod stand so as to not interfere with the gameplay and recorded the entire matches. Every rally was individually evaluated and coded based on the students’ levels of engagement and accuracy when on the referee stand (Wahl-Alexander et al., 2019). Following a previous study’s protocol (Hastie, 1996), each official was scored as ‘actively involved,’ ‘passively involved,’ ‘distracted,’ or ‘off-task’ (Wahl-Alexander et al., 2019). This process was repeated for every official on every single rally. At the same time, the observer also coded the officials’ decision-making on each rally as correct or incorrect. Official decisions were also coded within five separate rule sets or categories: in/out rule, service fault, net fault, four-hit rule, and catch rule (Wahl-Alexander et al., 2019). Finally, both data sets were correlated to identify which calls were most frequently scored incorrectly and whether or not the referee was actively engaged in that specific rally. The results of this study indicated that although there was no significant difference in the correctness of officiating decisions from the preseason (90%) to formal competition (94%), active involvement substantially increased from preseason (75%) to formal competition (85%) (Wahl-Alexander et al., 2019). The increase of active involvement over time represents experiential learning theory, that students learn by doing. These findings confirm that learning takes time and students need deliberate practice to improve, which has informed my own research because it exemplifies the way that practice increases involvement in sports officiating.
Each study or governing body has its own unique method or system to evaluate its sports officials. Different from basketball, baseball, and volleyball, visual search is crucial for soccer referees to gather task-specific information regarding fouls (Van Biemen et al., 2022). Elite soccer referees also must have excellent anticipation in specific game situations. When they combine these anticipatory skills and visual search, soccer referees can prepare for any outcome. This study highlighted the importance of visual search behavior to help referees be proactive during games and anticipate different game situations.

The steps of the decision-making process are as follows: perception, categorization, and information integration (Van Biemen et al., 2022). Van Biemen et al.’s definition of perception, specifically related to sports officials, included the idea of visual search behavior. Visual search behavior is measured by examining search rate, fixation locations, and gaze entropy (Van Biemen et al., 2022). The search rate, for the purpose of this study, is the mean number of fixations per second over the entire video clip or, in simple terms, how long the football referee saw the play (Van Biemen et al., 2022). The fixation location is separated between the foul committer and foul receiver, the referee’s position, and distance between the players (Van Biemen et al., 2022). Lastly, gaze entropy measures the degree of structure in the observed behavior. A higher gaze entropy value indicates a greater degree of randomness (Van Biemen et al., 2022).

In this study, Van Biemen et al. classified referees as either elite or sub-elite football referees based on the highest-level game they had officiated in the Netherlands. Each referee officiated a pre-season soccer game and wore mobile eye-tracking glasses to capture their viewpoint leading up to their decision to call fouls (Van Biemen et al., 2022). Four active referees of the Royal Dutch Football Association (KNVB) analyzed 159 foul situations and each
came to a decision independently for 80 of these situations (Van Biemen et al., 2022). Both referees agreed to the ruling in order for the call to be deemed correct or incorrect. If both officials could not agree to the ruling, the play was not used in the statistical analysis (Van Biemen et al., 2022). While elite referees did call more plays correctly compared to sub-elite referees, statistics showed comparable results when comparing the referees’ fixation locations and gaze entropy (Van Biemen et al., 2022). Because gaze allocation is crucial to sports officiating, sports official development programs should include training on where referees should look during games. They should also focus on how to interpret this information, considering that both sets of referees were similarly capable of recognizing and calling plays (Van Biemen et al., 2022).

Samuel et al. (2020) developed a model specifically for soccer referees, which emphasized that referees must know where to run and where to look in order to execute important decisions. When deciding where to run, officials were given two operational mechanisms: (a) using the diagonal system of control and (b) anticipating the action’s location (Samuel et al., 2020). There are some factors that can influence knowing where to run and where to look. These factors include experience, prior knowledge of teams’ playing styles, present playing style, and referee’s fitness level (Samuel et al., 2020).

Officials were given two operational mechanisms when determining where to look: detecting visual stimuli and an efficient fixation/duration ratio (Samuel et al., 2020). Influencing factors included both a referee’s location on the field and contextual information such as player’s previous fouls (Samuel et al., 2020). While this model is similar to van Biemen et al.’s (2022) study on visual search, it adds an additional, important component of where the soccer referee
should decide to run. Sports officials’ decision-making accuracy should improve if their training includes correct positioning.

**Video Review**

As technology has improved and video is more accessible, video review has expanded to all facets of sports, including sports officiating. Video review is when participants watch films of their performance in previous games or matches. Researchers have studied the way that video-based methods can help assess officials’ decision-making processes in controlled classroom settings (Kittel et al., 2021). The ongoing COVID-19 pandemic has accelerated the development of innovative solutions to implement video into training protocols. When spectators were not allowed to watch these games or matches in physical gyms or fields, most clubs or institutions pivoted to streaming the games to their fanbases. These clubs and institutions purchased the necessary video equipment, trained or hired event staff, and created YouTube channels or digital networks for live streaming. Even when spectators were allowed back into physical games or matches, video streaming remained an extremely popular viewing option. Video streaming is here to stay as sports move past the COVID-19 pandemic.

The Federation Internationale de Football Association (FIFA) announced that online courses would be offered to referees, advisors, and instructors to keep referees active during the suspension of in-person events due to COVID-19 (Boschilia et al., 2020). Specifically, the Brazilian Football Confederation (CBF) Referees Commission required a virtual pre-season for their referees for the first time in 2020. (Boschilia et al., 2020). Video courses encompassed themes such as handball, offside, tactical fouls, game control, as well as rule changes in soccer for the 2020-2021 season (Boschilia et al., 2020). In addition to the video courses, referees took video tests where they had to analyze and evaluate moves and plays (Boschilia et al., 2020). The
CBF divided Brazilian referees into ‘belonging groups’ to develop psychological skills and discuss topics such as anxiety, resilience, and decision-making. These groups also hoped to minimize the impact of the pandemic on the referees by adding a social aspect to their everyday life. The inability to gather in-person forced FIFA and referee instructors to innovate and ensure referee preparedness for resuming gameplay when governing bodies lifted COVID-19 restrictions.

Wilson and Mock (2013) performed a study focused on 30 Canadian hockey officials, which collected their self-reported age and certification level and they also completed a Rathus Assertiveness Schedule (RAS) to determine their own general pattern of behavior (Wilson & Mock, 2013). RAS scores range from -90 to +90, with higher scores indicating more assertive behavior and lower scores indicating less assertive behavior (Wilson & Mock, 2013). Each sports official watched ten randomly-selected penalty and non-penalty situations from the National Hockey League (NHL) (Wilson & Mock, 2013). Each sports official watched each clip out of context (as if it happened in the first period of the game with a one to one score) and decided whether the situation warranted a penalty (Wilson & Mock, 2013).

Results showed that sports officials with a higher certification level and more assertiveness were more likely to make correct penalty calls (Wilson & Mock, 2013). However, sports officials with the same or higher certification level but lower assertiveness were the least likely to make a correct penalty call (Wilson & Mock, 2013). Wilson and Mock concluded that self-assertiveness is an essential trait of making correct calls as a sports official. Integrating video reviews and focus group interviews may increase the assertiveness of sports officials, thereby increasing the number of correct calls made during a game.
The Malaysian Rugby Union developed a video-based instrument to measure the performance of 132 rugby referees’ decision-making skills (Nazarudin et al., 2015). This rugby referee decision-making test provided referees with 18 edited video clips, which included several game events leading up to a player’s infraction or non-infraction (Nazarudin et al., 2015). The 18 video clips were divided into three sets: grade 1 (easy), grade 2 (moderate), and grade 3 (difficult) (Nazarudin et al., 2015). From these 18 video clips, six were evaluated to show tackles, four to show kicks, four to show scrums, and four to show lineouts (Nazarudin et al., 2015). The findings indicated that there were no significant differences in decision-making across age levels but there were significant differences across experience levels (Nazarudin et al., 2015). Sports official educators must utilize innovative approaches (e.g., video simulators) and continuously plan interventions when educating new sports officials to encourage peak performance levels (Nazarudin et al., 2015). While video review is practice-based, psychology is theory-based, one is not more important than the other.

Psychology

The mental fortitude of sports officials is pertinent to their performance on the court or field. Being a sports official is physically demanding as it involves standing, squatting, walking, or running for extended periods of time. There are no substitutes for sports officials so they must have the cardiovascular endurance to officiate an entire match or game. However, sports officiating also requires mental preparation, as sports officials need advanced psychological skills to perform effectively (Guillen & Fletz, 2011). As sport psychology evolves, there seems to be two separate categories of literature or expertise: performance enhancement and mental health counseling (Hill & Mellano, 2021). This literature review focuses on the performance enhancement aspect with a brief comment on mental health counseling. Officials must stay
focused, composed, and set realistic goals (Guillen & Fletz, 2011). The emphasis of mental
fortitude is on effective communication, sports official biases, and self-efficacy.

Ollis et al. (2006) adopted an ethnographic study and spent 18 months working in
collaboration with the Rugby Football Union Elite Referee Unit. Their study combined long-
term participant observation with in-depth interviewing, indirect observations, and the collection
of artifacts, including the existing protocol, coach feedback forms, and strategic reports (Ollis et
al., 2006). Four key themes emerged from this study: personal analysis, interpersonal analysis,
group analysis, and organizational analysis (Ollis et al., 2006). Throughout these analyses, sports
officials acknowledged that development was ‘non-linear’ and reflected upon memories of well-
refereed games, highly-assessed games, poorly-refereed games, and games where “big lessons
were learned” (Ollis et al., 2006). Rugby officials were promoted based upon their ‘deliberate
practice’ of individualized training and development and the ‘deliberate experience’ officiating
games (Ollis et al., 2006). Deliberate practices were separated into four separate categories: (a)
target specific skills that can improve performance, (b) require hard work and intense
concentration on the part of the learner, (c) are not intrinsically rewarding, and (d) require
specialist feedback from a coach or instructor (Ollis et al., 2006). This study suggests that the
deliberate experience of officiating games leads to the growth and development of rugby
referees. These sports officials were able to learn from each match and make adjustments for
their future assignments. Further, the acknowledgment of ‘non-linear’ progression is important
for young sports officials not to become discouraged if they perform poorly in a game or match
early in their officiating career. Decision-making is not a skill that comes easily but sports
officials can develop better decision-making over time with additional game experience.
Sometimes the sports officials’ decision to not call a foul or violation is the best decision for better game flow. Basketball officials have a philosophy that they should impact the game as little as possible (MacMahon & Mildenhall, 2012). An example of this philosophy linked with game management is for officials to be mindful of their consistency with ‘50-50’ calls (MacMahon & Mildenhall, 2012). Sometimes calls are hard to make, which results in a ‘50-50’ call, a case which is an extremely close decision that could be ruled in either team’s favor. Sports officials constantly communicate with one another on the court or field to ensure that calls are consistent between both teams. For example, if a foul call is made toward one team and a similar play occurs on the other end, a foul needs to be called on that end as well. It is in the referee team’s best interest to call it the same and for sports officials to be in constant communication with all parties involved, including players, coaches, and scorekeepers (MacMahon & Mildenhall, 2012). Since ‘50-50’ calls are difficult to make, seeing and experiencing more close calls allows sports officials to gain consistency and take their officiating to the next level.

**Effective Communication**

Sports officiating requires effective communication and management of player behaviors. The most prominent communication studies in sports officiating have been conducted by Ian Cunningham. Eleven interviews were conducted with sports official development managers and coaches from Australia to explore conceptualizations of effective officiating communications. Four significant themes emerged: personal qualities of the official, one-way communication, ‘situation monitoring’, and skilled interactions (Cunningham et al., 2014). Personal qualities of the referee are somewhat of an intangible trait that is difficult to label and is referred to as an “x-factor” in sports officials (Cunningham et al., 2014). The sports official development managers and coaches defined preferred characteristics in officials which included: as respectful,
professional, emphatic with players, approachable, decisive, confident, and resilient (Cunningham et al., 2014). The openness and willingness to interact with players and coaches as opposed to coming across as over-authoritative can go a long way (Cunningham et al., 2014).

One-way communication is the “display” skill needed to deliver messages to players and coaches (Cunningham et al., 2014). The officials’ one-way communication is managed through a control of body language, facial expressions, and other behaviors (Cunningham et al., 2014). One-way communication includes physical displays such as posture, whistle use, hand signals, and flagging, which help convey the officials’ credibility and authority (Cunningham et al., 2014).

‘Situation monitoring’ is another critical skill that requires having a “feel for the game”, which includes being aware of the score, time, and importance of the competition (Cunningham et al., 2014). With this type of “feel for the game”, sports officials can adjust their judgement according to the needs of each situation (Cunningham et al., 2014). Without manipulating the game, officials can use preventative communication and adapt their rule interpretations based on the given game situation (Cunningham et al., 2014).

Perceptive situation monitoring leads to skilled interactions, the fourth theme identified. In their interviews, the sports official development managers and coaches identified three main components of interaction while officiating: adapting responses, frequency and length of interaction with players and coaches, and the appropriateness of these interactions (Cunningham et al., 2014). This theme indicates how sports officials manage conflict on their respective court or field.

Cunningham et al. (2018) conducted semi-structured interviews with 14 sports officials to better understand strategies for managing sports officials’ interactions with players. Twenty
video recordings involving player-official interactions across multiple sports were shown to each official during these individual interviews (Cunningham et al., 2018). Three individual themes emerged from this study on how sports officials manage communication with players on the field or court: (a) anticipating players’ reactions and modifying the presentation of self, (b) asserting and preserving officials’ credibility, and (c) listening to and allowing players to tell their side of the story (Cunningham et al., 2018).

**Sports Official’s Biases**

A large body of research has been published on sports official’s bias. Below, I highlight three examples: home field advantages, height-based bias, and own-race biases. Because the home team has a familiarity with the court or field of play, weather, and fanbase, they are said to have a benefit over the visiting team known as home field advantage. However, home field advantage can also be encouraged by sports official bias because sport officials may give their home team the “benefit of the doubt” in 50-50 calls. The height-based bias study found that shorter referees called more fouls than taller referees in the sport of basketball. The final study around own-race bias found that professional basketball referees slightly favored players of their own race and disfavored those of other races after an analysis of foul calls.

Lovell et al. (2014) compiled referee decisions from ten English Premier League soccer matches and then had three professional soccer referees review and assess the calls in isolation via video playback. The evaluating referees assessed and tallied each decision made by the match referee for every game as correct, contentious, or incorrect (Lovell et al., 2014). They also coded which team benefited from the call, home or away (Lovell et al., 2014). The survey results confirmed that the home-field advantage or phenomenon is noticeable in the referees’ decision-making, as 267 of the 317 calls were scored as correct, with a slight advantage to the home team.
(Lovell et al., 2014). The home team is favored in correct calls, 53% compared to 47%; contentious calls, 69% to 31%; and incorrect calls; 71% to 29% (Lovell et al., 2014). It is important to highlight the disparity in contentious and incorrect calls favoring the home team significantly because if sports officials had more training and knowledge to combat bias, they would not make as many calls in the favor of the home team.

In another study focused on sports officials’ bias, Gift and Rodenberg (2014) analyzed 4,463 regular season NBA games from 2008 to 2012 to test for implicit height-based biases. The researchers collected the following characteristics from referees: age, years of NBA officiating experience, varsity-level college basketball playing experience, undergraduate degree status, graduate degree status, height, and race (Gift & Rodenberg, 2014). In this study, referee height is the primary variable of interest, and each officiating crew was divided into one of three categories according to the crew’s average height: 6’0” and under, between 6’0” and 6’3” and 6’3” and above (Gift & Rodenberg, 2014). Overall, shorter NBA referee crews call 3.6% more personal fouls per game than taller NBA referee crews (Gift & Rodenberg, 2014).

Price and Wolfers (2011) conducted a study, based on box-score data from the 1991 to 2003 NBA seasons, to examine the racial biases of NBA referees in 2011. These seasons included more than 600,000 foul calls (Price & Wolfers, 2011a). Price & Wolfers concluded that their findings indicated own-race bias, in which referees favor players of their own race (Price & Wolfers, 2011a). It is important to note that this study only coded whether a player or referee was black or non-black and did not specify the races of non-black players and referees. Statistics revealed that referees called up to 4% fewer fouls against players of their own race (Price & Wolfers, 2011a). Findings showed that these players scored 2.5% more points as well (Price & Wolfers, 2011a). This research gained so much publicity that David Stern, former NBA
commissioner at the time, responded by ordering the NBA to publish a study based on their own data. Stern claimed that NBA referees are “the most ranked, rated, reviewed, and statistically analyzed and mentored group of employees of any company in any place in the world” (Price & Wolfers, 2011b). The NBA then went on to analyze more than 148,000 calls over a two-and-a-half-year period to demonstrate that there are no referee biases, further discrediting the earlier study (Price & Wolfers, 2011b). However, the NBA study may lack validity as Price & Wolfers (2011b) analyzed a much smaller sample size, 148,000 foul calls in a two-and-a-half-year period, compared to more than 600,000 foul calls over a twelve-year period. The role of bias in sports officials’ training and development must be acknowledged even though the scope of my study did not include referee bias.

**Self-Efficacy**

Sports officials’ decision-making is constantly under the utmost scrutiny, but sports officials must continue to remain confident in their own abilities. Albert Bandura (1977a) defined self-efficacy as people’s belief in their ability to exercise control over their own functioning and events that affect their lives. Bandura (1977a) identified four major sources of self-efficacy: mastery experiences, social modeling, social persuasion, and psychological responses.

Mastery experiences allow people to strengthen their senses of self-efficacy (Bandura, 1977a). A person’s ability to perform a task adequately has an impact on their self-efficacy. If they fulfill the task, their self-efficacy is strengthened; however, if they fail to deal with the task, their self-efficacy can be weakened (Bandura, 1977a). Another important source of self-efficacy is witnessing other people succeed. For example, individuals seeing people like themselves
succeed raised their belief that they also possess the capabilities to master comparable activities when given the same opportunity (Bandura, 1977a).

Similar to witnessing the success of another individual, verbal encouragement helps people overcome self-doubt and give their best effort to their current tasks (Bandura, 1977a). An individual’s emotional reactions and responses also play an essential role in self-efficacy. For example, emotional states and physical reactions impact a person’s perception of their abilities in a particular situation (Bandura, 1977a).

Recent research on sports officiating has focused on self-efficacy. In effect, sports officials must believe in their own abilities to see plays and make the correct rulings; with this in mind, it is interesting to analyze how officials view themselves before a game even begins. In Turkey, 192 basketball referees completed an 18-item referee self-efficacy scale (REFS), and a ten-item general self-efficacy form (GSE) (Karacam & Pulur, 2017). Both forms included questions with a five-point Likert grading format. All of these items fell into one of the following five categories: physical fitness, game knowledge, decision-making, pressure, and communication (Karacam & Pulur, 2017). The REFS and GSE scores were very similar among sports officials of all demographics (Karacam & Pulur, 2017). However, male referees scored themselves higher in the following categories: physical fitness, game knowledge, decision-making, and pressure; communication was the one category where females scored themselves slightly higher (Karacam & Pulur, 2017). This study may reflect that female sports officials have lower self-efficacy; therefore, referee educators need to focus more on self-efficacy in the training portion. Working towards referee self-efficacy both in and out of the game should be a part of the training processes of basketball referees as this may positively contribute to their future performances (Karacam & Pulur, 2017).
A similar self-efficacy study examined the relationship between officiating and the playing experience of handball referees in Kuwait. Handball referees completed a similar demographic information questionnaire, number of years of refereeing experience, as well as a 13-item referee self-efficacy scale (REFS) which assessed game knowledge (GK), decision-making (DM), pressure (PR), and communication (CM) (Alsharji et al., 2019). The findings of this study demonstrated significant positive correlations for all four categories, as both refereeing and past playing experience positively correlated with decision-making and communication categories (Alsharji et al., 2019). This indicates that playing experience in any given sport improves referees’ confidence, decision-making, and communication, because they have more practical knowledge through participation (Alsharji et al., 2019).

One way to prepare new officials to deal with difficult decisions and discouragement is to encourage mental toughness. Mental toughness is deemed a vitally important characteristic in sports officiating due to the challenges and adversities that an official may face during their games or matches. Micoogullari et al. (2017) sent a Sports Mental Toughness Questionnaire (SMTQ) to 159 Turkish soccer referees, containing 14 items which measured three dimensions of toughness: confidence, consistency, and control. Key demographic data included: gender, age, education level, level currently working as a referee, and length of time having a referee license or certification (Micoogullari et al., 2017). The study showed that soccer officials with 15 or more years of officiating experience scored significantly higher in all categories than officials with 0 to 5 years and 6 to 10 years of experience (Micoogullari et al., 2017). Mental toughness increases with experience, but adequate training and preparation may supplement new sports officials’ lack of experience to improve their mental toughness.
Almost every sports official in the same level of competition (i.e., youth, high school varsity, NCAA Division 2) has a similar referee education and level of understanding of the written rules (Terekli & Cobanoglu, 2019). The difference between these sports officials is their interpretation of the rules (Terekli & Cobanoglu, 2019). Terekli and Cobanoglu (2019) went as far as developing a mental suitcase for soccer officials, which included: leadership, courage, personality, proactive officiating, self-efficacy, and effective communication through positive speech and focus. A good official is separated from a great one when a referee embodies these traits. This interpretation of the rules recapitulates Plessner & Harr’s (2006) social cognition approach to refereeing in sports and the social context and unwritten rule factors on how a decision is made.

Conclusion

This literature review provided a broad overview of the importance of sports and properly trained officials. Relevant literature involving sports officiating training, development, and performance assessment within multiple sports, levels of play, and sports official experience levels contributed to this review. Three key themes supported this review: (a) decision-making, (b) video review, and (c) psychology within sports officiating. These themes reflect the theoretical framework based on experiential learning theory and social learning theory developed in the next section.

Theoretical Framework

Collegiate-level intramural sports officiating is a strong developmental opportunity available to students seeking on-campus employment. Specifically, most campus recreation departments have created a training and development system to ensure sports officials receive the necessary training to succeed. Given that students typically learn best by doing and actively
participating in the education process (Gaskins et al., 2002), sports officials’ trainings typically begin with basic components such as rules, definitions, mechanics, hand signals, and positioning on the field or the court. While these training components are essential, a variety of other skills separate the quality of sports officials. These skills are personal temperament and on-court experiences that are not written in traditional rulebooks, casebooks, or manuals.

Researchers have stated that it is essential to incorporate other aspects of teaching so that officials can achieve success beyond elementary stages (Gaskins, 2004). Stations or physical gameplay are the other activities that can be added to on-court experiences. The primary goal of intramural sports officials’ training and development is to educate student officials to perform at their highest level possible. In order to learn the most from these student officials, this study’s theoretical framework combines two theories: experiential learning and social learning theory. Figure 1 illustrates how these two theories interact within this study.
Note. The figure above explains the study’s theoretical framework. Experiential learning theory and social learning theory merge in the aspects of abstract conceptualization and motivation. Both theories occur within a community of practice.

The following sections discuss the intersection of experiential learning theory and social learning theory as they pertain to intramural sports officials' training, development, and performance.

**Experiential Learning Theory**

Experiential Learning Theory (ELT) can be a pertinent theoretical lens to better explore how intramural sports officiating promotes learning and development (Kolb, 1984). Kolb (1984) offers a “working definition of learning” described as “learning is the process whereby knowledge is created through the transformation of experience” (p. 38). Almost all literature on
sports officiating cites Kolb’s (1984) ELT because physical participation in sports officiating is an educational process. In order for sports officials to grow and develop, they must actively work games and learn from their mistakes. Experiential learning theory works in four stages: concrete learning, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984).

**Sports Officiating as Experiential Learning**

Traditionally, sports rules and procedures can be introduced in a classroom as a mode of concrete learning. After concrete learning, reflective observation similarly facilitates learning through witnessed models and examples, which occurs in a static environment. In contrast, activities such as a bicycle race, which incorporates multiple variables and changing environments, encapsulate abstract conceptualization and active experimentation. For example, before a race, an official can imagine their concrete learning and reflective observation in the actual practice they seek to perform. Then, during the activity, officials learn to apply rules, handle complex situations, and make decisions based on a changing environment (Grover, 2014). Active experimentation cannot be effectively simulated in a static environment. The actual learning takes place during the race event when officials are enabled to put their concrete learning, reflective observation, and abstract conceptualization into practice through active experimentation (Grover, 2014). After the traditional introduction of information in a classroom setting, sports officials step out onto the court or field and apply what they have learned through active experimentation. This is where mistakes are made in real-time, and adjustments can be made for future games as needed.

**Social Learning Theory**
Similarly, social learning theory considers that people learn from each other through observational learning, which results in imitation and modeling (Bandura, 1977b). Bandura (1977b) emphasizes that the process of social learning occurs in four stages: attention, retention, reproduction, and motivation.

In order for social learning to occur, a person must pay attention to a model (Bandura, 1977b). The characteristics of the model influence the learner’s attention. If the model is colorful, dramatic, attractive, prestigious, competent, or like oneself, then the learner is likely to pay more attention (Bandura, 1977b). Having this experienced model to lead training and development complements experiential learning theory as well.

**Sports Officiating as Social Learning**

An example of a suitable model in the sports officiating community would be that of a high-profile NBA or NCAA Division 1 official (or even an experienced intramural sports official) that can be “imitated” (Faircloth & Cooper, 2007). Intramural sports officials can choose an official of similar gender, ethnicity, physique, or someone they strive to mirror in appearance or behavior. Having this ‘model’ attracts new officials’ attention, gives them a person to study, and in essence, retains them throughout the season because seeing someone who has reached their goals engages and motivates them (Faircloth & Cooper, 2007). Once this official has identified and studied their model, it is their turn to reproduce or imitate this prestigious official. This model allows the official to feel more comfortable and confident in their abilities and should motivate them to want to officiate higher-level competition.

**Communities of Practice**

Participation in a *community of practice* provides additional opportunities for officials to continue to learn and develop. Communities of practice are groupings of individuals “who share
a passion for something and learn how to do it better as they interact regularly” (Lave & Wenger, 1991). Community of practice members share resources such as experiences, tools for success, and problem solving skills (Grover, 2014). Specifically, cycling officials discussed how they learned from the narratives and experiences of others by sharing information and seeking advice and described these out-of-classroom experiences as having a significant role in their learning process (Grover, 2014). In this scenario, collective learning is the outcome of the interaction between officials, even though it is not necessarily intentional (Grover, 2014).

Summary

Both experiential and social learning theories work hand and hand in the learning, training, and development of intramural officials. By immersing student sports officials in a large community of practice, fundamental knowledge is taught, self-reflection ensues, and active experimentation occurs in the games and scrimmages. This community of practice also encourages further learning and encouragement as these officials see more (atypical) plays on their court or field.

This chapter began with a comprehensive outline of sports officials' purposes, duties, and experiences. Next, I described the guiding theoretical framework, providing models from Bandura’s social learning theory (1977b) and Kolb’s experiential learning theory (1984). Although previous literature has made many discoveries at the professional sports levels, this study provides similar research at the collegiate recreational sports level. This study will specifically provide evidence-based research on intramural sports officials' training, development, and performance assessment. In the next chapter, I will provide details of the methodology employed in this study.
Chapter III: Methodology

The purpose of this study was to examine the training and development of intramural basketball officials through an explanatory sequential mixed methods study employing a survey design (e.g., pre- and post-tests) and a case study approach (e.g., video reviews and reflections). In the study’s first phase, I used a survey design to gain an understanding of intramural basketball officials’ sport-specific rule knowledge prior to and after pre-season training. In the second phase of the study, I used a case study approach to examine the same intramural basketball officials actively refereeing intramural competitions through direct observations, field notes, video reviews, and self-reflection by the intramural basketball officials.

Overview

The overarching question for this explanatory sequential mixed method (quan \( \rightarrow \) QUAL) was: *In what ways can we improve the training and development of intramural sports officials to perform at a higher level?* This broad question was addressed through three sub-questions:

1. In what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to an officials’ understanding of the playing rules and regulations?
2. How do intramural sports officials respond when given the opportunity to reflect on their officiating performance during a particular intramural basketball game?
3. In what ways do intramural basketball officials report that watching themselves on videotape helped improve their officiating performance?

Mixed Methods

According to Creswell and Plano-Clark (2017), combining quantitative and qualitative data allows the researcher to obtain a more complex insight into the research problem (p. 39). A
mixed methods approach provides a way to utilize multiple data collections that offset quantitative and qualitative research restrictions.

Researchers use a mixed method design when they lack confidence that a single type of evidence can adequately address the problem (Creswell & Plano-Clark, 2009). Quantitative surveys address the need for understanding a population’s viewpoints, while qualitative research explores individuals’ perspectives in greater depth (Creswell & Plano-Clark, 2009). Researchers lose the ability to generalize results when they study a few individuals qualitatively (Creswell & Plano-Clark, 2009). Yet, quantitatively examining a large population diminishes the understanding of any one individual (Creswell & Plano-Clark, 2009). Thus, the combination of both will allow for a more complex understanding of the individuals being studied.

According to Creswell and Plano-Clark (2017), an explanatory sequential design occurs in two distinct phases. The design occurs in two phases: 1) collection and analysis of quantitative data, and 2) collection and analysis of qualitative data to explain or expand on the first phase of results (Creswell & Plano-Clark, 2017). Quan → QUAL studies emphasize addressing the study’s purpose within the qualitative methods. Researchers who use this design aim to explain quantitative results using qualitative data (Creswell & Plano-Clark, 2017). This design allows for flexibility because the second phase can rely on information from the first phase (Creswell & Plano-Clark, 2017). The final analysis report contains two separate sections, quantitative followed by qualitative, which provides a clear delineation for readers (Creswell & Plano-Clark, 2017).

Survey Design

A survey design studies a sample of a particular population and provides a quantitative description of their trends, attitudes, or opinions (Creswell, 2009). Survey design is a practical
solution that allows researchers to quickly gather data from large audiences through mobile and online delivery tools. Mobile learning is beneficial to survey design because of the convenience and accessibility of an online survey. Mobile learning provides individuals with the flexibility to complete a survey on their own using their smartphones (Szymoniak et. al., 2021). The data gathered from survey design allows for many different analyses and presentations of data including visualization graphics.

Surveys are a frequently utilized instrument within the sports officiating industry as there are typically clusters of sports officials within a local community, state, university, or national association. These communities provide an easily identifiable and responsive participant sample, since the intended participants are already engaged in sports officiating and do not need to be recruited. An analysis of the literature on sports officiating research examined 386 articles published from 1971 to 2018 (Hancock et al., 2021). Results found that 317 of these articles used a quantitative study design, and 125 utilized a survey design (Hancock et al., 2021). Surveys allow researchers to easily collect key demographic information such as age and years of experience or level currently officiating. Surveys also include research or theory-based questions pertaining to sports officiating in the form of Likert scales, multiple choice, and true or false questionnaires. However, a consequence of using surveys is that many of the questions are comprised of multiple-choice or true or false options. As a result, participants may use context clues, make educated guesses, and choose the correct answer but not truly understand why this answer is correct. There is also no access to specific feedback on why the participant chooses the incorrect answer in a survey design setting. While survey design allows researchers to quickly gather data from large audiences, the case study approach in the second phase of this study
allows me to gain a deeper insight into officials’ misunderstandings, mistakes, or incorrect calls during games.

**Case Study Approach**

I utilized a case study approach to guide the qualitative phase of this study. Previous research shows that there is a great concern among the age of current referees. The median age of referees was 54 and only 18% of referees were under the age of 40 years old (Ridinger et al., 2017). There continues to be a struggle recruiting younger men and women in officiating and there is a great worry as to who will replace the veteran referees when they retire. In order to learn more about these younger men and women’s experience on the court, it is important to gather descriptive self-reflections from this target population. Therefore, I wanted to understand the ways intramural basketball officials report that watching themselves on videotape helped improve their officiating performance and I wanted to analyze how these officials reflected on their officiating performance during a particular basketball game. Of the 386 articles found in the analysis of literature on sports officiating research, 53 conducted a post-competition analysis, and 27 included interviews (Hancock et al., 2021). This design is popular in sports officiating more generally but has rarely been conducted on the intramural sports officials’ population.

While different methodologists use varying case study approaches, I chose to use Yin (1981) and Merriam (1985) to guide this study, as opposed to Stake (1995), as their epistemologies more closely matched my theoretical framework. Yin’s (1981) positivist interpretation of a case study is that it must occur at the same time that the studied event occurs and that the researcher has little control over the factors. For example, each basketball game is different from the next, and the researcher cannot exhibit any control over made or missed shots,
fouls, violations, or the game's final outcome. I used a multiple holistic case study approach as each game was different from the others.

According to Yin (1981), the following factors influence data collection in a case study: the investigator’s skills, study-specific training, and the development of an investigation protocol. My background as a basketball official allows me to have the particular skill set of officiating games and reviewing my own game films. The data which informs this study came from video documentation, post-game focus group interviews, and participant self-reflection. Through his approach, Yin (1981) also intended for researchers to answer the “how” or “why” questions concerning the phenomenon of interest. In order to answer these questions, during post-game interviews, I asked the officials to rationalize their calls on the court.

Merriam’s (1985) definition of a case as a single entity in which there are boundaries is directly related to a single entity (i.e., referee crews). Merriam (1985) also elaborated on the term particularistic, which meant to focus on a particular situation, event, program, or phenomenon, which translates directly to my choice to use the observation, video review, and focus group interviews conducted post-game in this study. Both Yin and Merriam’s approaches differ significantly from Stake’s constructivist approach.

Stake’s (1995) constructivist epistemology is not conducive to my particular research because there are written rules and regulations that govern the sport of basketball. The constructivist belief is that there is no single truth or reality which will not assist the intramural basketball officials’ development. The flexibility of Stake’s (1995) case study design allows researchers to make significant changes even after they proceed from design to research. As many of the intramural sports officials in this study were new to sports officiating, it was
essential to have a list of structured questions to ask in the post-game interviews to collect significant qualitative data.

**Figure 2**

*Study Design*

![Study Design Diagram]

*Note.* The chart above explains the study’s design. The green boxes indicate the type of research method used (Quan and QUAL), while the yellow boxes represent the research design used (survey design and case study approach). The red boxes demonstrate the instrumentation used to collect the data, while the blue boxes indicate how this data was analyzed.

Figure 2 shows Phase I and Phase II of the research. Phase I used a survey design method to collect data via pre- and post-tests from 34 intramural sports officials. All 34 officials took a pre-test prior to the first night of intramural basketball training. The results of this test provided an understanding of their intramural sports officials’ rule knowledge before they received any
formal training from the intramural sports department. After one week of training, all 34 intramural sports officials took a post-test to measure their rule knowledge again.

After completing the post-test, Phase II began using a case study approach which included 6 intramural sports officials randomly selected, given their availability to officiate, from the original cohort of 34. They officiated an intramural basketball game, and I observed from the indoor track above. I filmed the intramural basketball game and then replayed the videotape for the intramural officials to analyze in the conference room post-game. The reflections from the focus group interviews provided additional qualitative data, which was coded using a constant comparative method.

**Description of the Setting**

This study was set in a Student Recreation Center (SRC) at a four-year public university in the mid-Atlantic region of the United States. The university’s total undergraduate enrollment is over 14,000, with approximately 60% female and 40% male students. Of these students, many live on campus (40%), with most first-year students choosing to live in on-campus housing (92%). Overall, more than 2,100 unique undergraduate students participate in intramural sports, with five-on-five basketball and flag football being the most popular offerings. This particular intramural sports program offers multiple leagues for students of all skill levels to join, including high competition, low competition, co-recreation, women’s, fraternity, and sorority leagues. Each league champion gets their team’s name hung on an intramural championship banner in the SRC.

All trainings took place in a large group exercise studio inside of the SRC. The intramural basketball games were played on the basketball courts located on the second floor of the SRC, while the focus group interviews were conducted in the conference room located on the ground
floor. This site is where intramural sports traditionally take place, and it is also particularly accessible for student referees who may not be able to travel off campus for a similar experience (e.g., to referee middle school or high school competitions). All games occur in the evenings, and intramural referees are assigned games at times that did not conflict with their academic class schedules.

Participants

All participants (N = 34) were full-time students employed by the intramural sports program and were at least 18 years of age. These students applied for the intramural sports official job with a starting pay rate of $9.00/hour during the first two weeks of the Fall 2022 semester. The full-time employee, graduate assistant, and undergraduate supervisors within the intramural sports department interviewed each applicant and made hiring decisions based on the applicant’s resume and interview performance. While no experience was required for this position, previous experience playing or officiating sports was preferred.

Students can continue employment as an intramural sports official as long as they are an enrolled student at the institution. While the majority of intramural sports officials are first- and second-year students, some upper-class students are also employed in this role. The intramural sports department paid for and provided all training prior to each sport-specific season. The Fall intramural season includes flag football, dodgeball, and indoor soccer, and all intramural officials received training in each sport. In order to be scheduled to officiate these sports, an intramural sports official must attend the mandatory pre-season training. Only students whom the intramural sports department employed were eligible to participate in this study.
Table 1  

Participant Demographics

<table>
<thead>
<tr>
<th>Participant #</th>
<th>Gender</th>
<th>Experience Officiating Basketball</th>
<th>Experience Playing Basketball</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>2</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>3</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>4</td>
<td>Man</td>
<td>2+ years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>5</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in middle school</td>
</tr>
<tr>
<td>6</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
</tr>
<tr>
<td>7</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Never played</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>9</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>10</td>
<td>Man</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>11</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>12</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>13</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>14</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>15</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>16</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Never played</td>
</tr>
<tr>
<td>17</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>18</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>19</td>
<td>Woman</td>
<td>2+ years</td>
<td>Never played</td>
</tr>
<tr>
<td>20</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>21</td>
<td>Man</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>22</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>23</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
</tr>
<tr>
<td>24</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>25</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>26</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
</tr>
<tr>
<td>27</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>28</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>29</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
</tr>
<tr>
<td>30</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
<tr>
<td>31</td>
<td>Man</td>
<td>2+ years</td>
<td>Recreationally</td>
</tr>
<tr>
<td>32</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
</tr>
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<td>Man</td>
<td>0-1 year</td>
<td>Never played</td>
</tr>
<tr>
<td>34</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
</tr>
</tbody>
</table>

Note. All data shown above was self-reported on the initial pre-test.

I chose college students as the participants in this study for several reasons. First, although I interact with many student participants in my staff position, they are much more than
just a convenient group to use as a sample. For many of these students, intramural officiating is their introduction to the craft of refereeing and often their first form of employment after high school, making them the ideal focus group for this study. The college experience is a highly transformative period for many young adults. Many of the extracurricular activities that students participate in become a valuable part of the rest of their lives. As discussed in Chapters I and II, there is a critical shortage of sports officials across the country, and I posit that university students can potentially be the future of sports officiating, if trained appropriately.

Survey Participants

All participants (N = 34) who completed the informed consent waiver contributed to the quantitative data. In order to introduce this research proposal, I attended the October intramural sports department all-staff meeting so that all participants could become familiar with myself and have the opportunity to ask questions prior to the first night of basketball training. I met with all intramural sports officials prior to the first night of basketball training, read my recruitment script, and answered questions. I also e-mailed all intramural sports officials who could not attend the training the participant recruitment letter. In this e-mail, I described the study, including the time involved, potential risks and benefits, and protocols. I also clarified that only students over the age of 18 would be able to participate and that anyone under the age of 18 would be ineligible. These intramural sports officials completed a pre-test after filling out the informed consent waiver via Qualtrics on the first night of basketball training. Lastly, intramural sports officials completed a post-test prior to the final night of basketball training. There was no direct cash compensation for participation in this study. However, intramural officials received an hourly wage regardless of their
involvement in this study. As part of regular practices, students, whether or not they are participating in this study, were paid for all training, refereeing, and post-game reflections.

**Case Study Participants**

After the quantitative data collection, I selected a smaller group from the larger pool of intramural sports officials, according to their availability, to participate in Phase II of the study. In all, six students participated in Phase II, constituting of two separate officiating crews. All six of these basketball officials expressed consent on the informed consent waiver. After confirming their availability to officiate on selected observation dates and times, I randomly selected students to participate in the study.

While observing these intramural officials referee basketball games in the SRC, I took field notes, collected timestamps of key plays, and videotaped the entire game. Approximately 10 minutes after the game, the three intramural sports officials and I conducted a focus group interview to review key plays, fouls, violations, signals, mechanics, and communication between players, captains, and the officials themselves. All interviews were recorded via Zoom and transcribed verbatim.

**Instrumentation**

I carefully selected a combination of instruments that would provide a baseline understanding of intramural sports officials’ rule knowledge and a better understanding of how training and video review aided intramural sports officials in post-game reflections. The following sections will provide an in-depth explanation of the survey design, observation protocol, and the focus group interview structure utilized in this study.
Survey Procedure

All participants (N = 34) had a pre- and post-test score to measure their individual rule knowledge of the sport of five-on-five basketball. I used SPSS to conduct a descriptive analysis and run a dependent t-test of the participants’ pre- and post-test scores and the differences in the means and standard deviations. The pre-test survey data collected included the following information from each participant: name, consent to participate in the survey, gender identity, year(s) experience as an intramural basketball official, basketball officiating certifications held outside of the intramural sports program, attendance of the Spring 2022 5-on-5 basketball training, and highest level of experience playing basketball.

Both the pre- and post-test were comprised of 30 multi-choice questions pertaining to the National Federation of State High School Associations (NFHS) basketball rules and regulations. No questions on the pre- or post-test were identical but have similarities since the tests were designed to measure rules knowledge before and after the intramural sports officials’ training. The ten rule categories found in the NFHS basketball rulebook are: (1) court and equipment, (2) officials and their duties, (3) players, substitutes, and equipment, (4) definitions, (5) scoring and timing regulations, (6) live ball and dead ball, (7) out of bounds and throw-in, (8) free throw, (9) violations and penalties, and (10) fouls and penalties (NFHS, 2020).
### Table 2

**Survey Design**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Pre-Test Questions</th>
<th>Post-Test Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule 1. Court and Equipment</td>
<td>9, 10, 11</td>
<td>7, 8, 9</td>
</tr>
<tr>
<td>Rule 2. Officials and their Duties</td>
<td>12, 13, 36, 37, 38</td>
<td>10, 11, 12, 33, 34, 35, 36</td>
</tr>
<tr>
<td>Rule 3. Players, Substitutes, and Equipment</td>
<td>15</td>
<td>8, 13</td>
</tr>
<tr>
<td>Rule 4. Definitions</td>
<td>16, 17, 19, 20, 25, 27, 30, 32, 33</td>
<td>14, 16, 18, 22, 24, 25, 26, 31, 32</td>
</tr>
<tr>
<td>Rule 5. Scoring and Timing Regulations</td>
<td>18, 33, 35</td>
<td>13</td>
</tr>
<tr>
<td>Rule 6. Live and Dead Ball</td>
<td>14, 21, 22</td>
<td>18</td>
</tr>
<tr>
<td>Rule 7. Out of Bounds and Throw-ins</td>
<td>21</td>
<td>18, 19</td>
</tr>
<tr>
<td>Rule 8. Free Throw</td>
<td>18, 23, 24, 27, 28, 29</td>
<td>20, 27, 28</td>
</tr>
<tr>
<td>Rule 9. Violations and Penalties</td>
<td>13, 25, 30, 31</td>
<td>14, 19, 21, 29, 30, 32</td>
</tr>
<tr>
<td>Rule 10. Fouls and Penalties</td>
<td>17, 23, 26, 27, 28, 34</td>
<td>11, 15, 17, 20, 23, 24, 25, 26, 27</td>
</tr>
</tbody>
</table>

*Note.* This chart indicates which NFHS basketball rule category each question in the pre- and post-tests assessed.

### Case Study Procedure

Six intramural sports officials participated in Phase II, the case study. The case study utilized two different methods (observation protocol and focus group interviews) to collect data. Each regular season intramural basketball game required a crew of three officials. Two of these crews participated in this case study. The observation protocol and focus group interviews
occurred on the first and second nights of the regular season and were then repeated one week later.

**Observation Protocol**

The three intramural basketball officials were instructed to officiate a basketball game to the best of their ability while I observed this game from the indoor track above the playing court. The game was filmed with a specific emphasis on the intramural sports officials. Instead of following the position of the physical basketball, I ensured that all three referees were always in the camera frame. When one official called a foul or violation, the video zoomed in on this individual to examine their positions, mechanics, and signals, especially when the official reported fouls to the score table.

While filming, I commented on each possession to assist with the post-game focus group interviews. I wrote fieldnotes with specific timestamps as to when key plays, fouls, violations, signals, mechanics, and communication between the players, captains, and the three intramural sports officials occurred. After the game, I took 10 minutes to compile my notes on the game, queue up specific plays, and connect the iPad to the conference room television.

**Focus Group Interview Protocol**

I conducted a focus group interview with the three intramural sports officials immediately after they completed officiating the game. Each crew of three intramural sports officials went through this process twice, once on the first or second night of the regular season and again one week later. Three introductory questions were asked in the opening minutes of the interview prior to the video review. These questions focused on the intramural sports officials’ experience refereeing the specific game, particular plays that stood out to the officiating crew, and any questions regarding the playing rules and regulations.
After all initial questions were answered, I showed twelve video clips to the three officials. Each individual official watched themselves and the calling official on each video clip that was shown. The officials then answered follow-up questions about what they saw and what they liked or disliked about their behavior or the calling officials’ behavior. This practice motivated the officials to analyze themselves and the calling officials regarding positions, play-calling accuracy, etc.

In accordance with the purpose of this study, the videos were shown in this order: correct, incorrect, gray, and correct. However, the participants were unaware of this organization when watching the video clips. I presented in the following order: one positive correct (no) call, one incorrect (no) call, one gray (no) call, and another positive correct (no) call, for each official. These prepared questions, paired with specific video clips, opened up the discussion for each intramural sports official to self-reflect on what they saw on film.

In closing, each intramural sports official was asked how they perceived their performance after they had been given the opportunity to reflect on their positioning, decision-making, signals, mechanics, reporting, etc., by watching it on videotape.

**Procedures**

This section will describe the procedures that I followed in the mixed methods study. Prior to collecting data, I obtained IRB approval and gained consent from the intramural officials. Additionally, I created a timeline for data collection, which is depicted visually in Figure 3.
Data Collection

*Note.* The chart above illustrates the chronological sequence of data collection in the study. The yellow boxes show the quantitative portion while the green boxes show the qualitative portion of the study.

Phase I of the data collection occurred during the regularly scheduled pre-season intramural basketball officials’ training during the month of November 2022. Participants used Qualtrics to complete the informed consent, pre-, and post-tests. Phase II began on the first night of regular season games and continued for approximately two weeks. I video-recorded the intramural basketball games with an iPad and streamed the video for intramural officials during the focus group interviews. All focus group interviews were recorded via Zoom without video to protect the anonymity of the participants.
Data Triangulation

Note. This study used the pre- and post-test, observation protocols and focus group interviews to triangulate data across multiple instruments.

Three types of data were collected and triangulated in this study. Pre- and post-tests generated quantitative data involving intramural basketball officials’ knowledge of the playing rules and regulations. The observation protocol and focus group interviews provided qualitative data of intramural officials’ reflections on their performance of enforcing the playing rules and regulations. Next, I will describe my unit of study used in the qualitative segment of this mixed methods study.

The Unit of Study

The focus of Phase II of this study is to specifically learn more about the collective unit of six intramural basketball referees. The study focuses on a unit to yield results that are generalizable to this specific population of intramural officials. There was not a specific focus on one individual official or a crew of three officials, but an emphasis on overarching themes found in the entire group of six officials.
Researcher’s Bias

As a researcher and a sports official, I inevitably brought biases to this study. As a result of my officiating experience, I instinctively view plays from a sports official’s perspective. If there is a conflict or a 50-50 (difficult to deliberate) call, I often side with the sports official as I understand their rationale and perspective in certain instances. I have been in similar situations and want the officials to get these calls correct for the good of the game. If the sports official makes an incorrect decision, I am more forgiving than a non-sports official or spectator, and I try to understand why they made an incorrect call.

Secondly, I am an advocate for the next generation of sports officials. I look at the bigger picture and the long-term potential in these intramural sports officials. Rather than being concerned about the outcome of a single intramural game, I am more concerned about setting these officials up for future successes. I want each and every intramural sports official to become certified at the state level and officiate games after graduation, which requires me to take a supportive approach to working with the referees.

To mitigate these biases, I focused on my role as the researcher and sided against the sports officials on 50-50 calls to encourage critical thinking and deeper conversations in the focus group interviews. I also internalized the idea that intramural sports officials deserve critical, non-biased feedback from my observations, so siding with them on specific decisions or calls during the research would not benefit them in future games.

Observer’s Paradox

According to observer’s paradox, participants often respond and perform differently, knowing they are part of the research study. While I positioned myself on an indoor track overhead of the physical basketball court, the intramural officials were still aware that I was
present and videotaping them. Individuals tend to act or speak differently when a camera or microphone is involved in an interaction. By repeating this process with multiple games and two different crews of intramural sports officials, behaviors should have become more normalized or consistent in later games. Also, I hoped that asking open-ended questions in the focus group interviews would generate natural, non-generic responses.

**Threats to Validity**

While I addressed validity threats connected to researcher bias and the observer’s paradox above, the following sections will identify this study's internal and external validity. I have acknowledged three separate threats to the internal validity of the study: (1) maturation, (2) testing instrumentation, and (3) social interactions, as well as three separate threats to the external validity of this study: (1) volunteer bias, (2) student sampling, and (3) the Hawthorne effect.

**Internal Validity**

Internal validity describes the degree to which a cause-and-effect relationship cannot be explained by other factors. I have recognized three separate threats to the internal validity of the study: (1) maturation, (2) testing instrumentation, and (3) social interactions.

**Maturation.** Participants in this study may mature or change after attending the intramural basketball training and participating in the first round of observation and focus group interviews. In Phase I of the study, some participants showed up to the first night of training without any exposure to the rules and regulations of basketball, causing their pre-test scores to be extremely low. After receiving formal training in the rules and regulations, these participant scores could increase dramatically in the post-test. This maturation process is also true for Phase II of the study, as the first observation takes
place on the first or second night of the regular season, which may be the participants’ first experience officiating a real basketball game. Their responses within the focus group interview may be significantly different on the first night of the regular season when compared to the second observation in the second week of the regular season.

**Testing Instrumentation.** While the pre- and post-tests both asked the same number of questions, allowed the same time limit to complete the test, and did not repeat any of the questions, participants may have scored higher in the post-test because of their familiarity with the testing format. Since the pre- and post-tests did not ask the same exact questions, they may measure slightly different things, which could have an effect when comparing the scores of each test. Participants’ unfamiliarity with rule-based terminology may also lead to guesses or incorrect answers and affect their ability to comprehend questions.

**Social Interactions.** The last threat to internal validity was social interactions which could pose a threat as all study participants are intramural sports officials at one University. The participants had all worked together for at least the first twelve weeks of the semester, if not longer, which created social connections and relationships. In addition, some participants live together, socialize outside of the workplace, or worked in previous intramural contests with each other. Their close relationships have the potential to influence the outcome of discussions in the focus group interviews if there is an unknown or comfortable social dynamic between the participants.

**External Validity**

External validity refers to the way in which the results of a study can be generalized to other situations of groups. I have recognized three separate threats to the external validity of the study: (1) volunteer bias, (2) student sampling, and (3) the Hawthorne effect.
Volunteer Bias. When participants engage in research, it is expected that they do so voluntarily. The characteristics of the volunteer participants also differ from the general population. Participants may volunteer to participate in research for specific purposes (e.g., weight training or online shopping habits), which may influence how they respond during the research process. Since the study participants volunteered to be a part of this study, using these volunteers could have added an additional layer of potential biases.

Student Sampling. Building from the volunteer bias, it is common to use university students from a single university as the main participants in dissertation-level research. While this provides an accessible participant sample, it also results in selection bias, which reduces the ability to make generalizations about a broader population of participants. Although volunteer bias and student sampling may be viewed as threats to external validity, this specific population was targeted in this research due to the critical shortage of registered sports officials. A greater emphasis on training and development within intramural sports departments on college campuses could be the solution to recruiting and retaining younger sports officials.

Hawthorne Effect. The third threat to external validity that I would like to recognize is the Hawthorne effect, which was particularly relevant during phase II of my study. The Hawthorne effect is the way in which research participants may change their behavior or performance because they know they are being researched. For example, in my study, the participants knew that they were being observed and filmed while they officiated a game of basketball, which may have encouraged them to make certain decisions during the game. Additionally, this also may have caused an extra layer of
anxiety or nervousness if a mistake was potentially made as it was on film and would be reviewed at the completion of the game with myself and the crew.

**Analysis and Coding Procedures**

For this study, I analyzed quantitative data and interpreted qualitative data. During Phase I, the quantitative data was initially collected through Qualtrics and then transferred into the Statistical Package of Social Sciences (SPSS) to analyze the pre- and post-test results. For Phase II of the case study, I utilized Dedoose to apply a constant comparative coding method to analyze the qualitative data from the observations and the focus groups.

**Statistical Analysis**

During Phase I of the study, participants completed a pre-test prior to the first night of intramural basketball officials’ training and a post-test prior to the final night of intramural basketball officials’ training. I used the SPSS results to analyze both descriptive and inferential statistics. Categorical data around gender identity, years of experience as an intramural basketball official, basketball official certification level outside of the intramural sports training, attendance of the previous year’s intramural basketball training, and the highest level of experience playing basketball were also collected prior to the pre-test. A t-test was used to compare the means and standard deviations of the pre- and post-test groups. Since this data collection was gathered one week apart, a composite t-test was run under the assumption that the intervention, intramural basketball training, will cause an increase in correct scores from the pre-test to the post-test.

**Coding**

Qualitative data was collected during Phase II of the research study through a case study design. The case study design used two instruments to collect data: the observation of regular
season intramural basketball games and the post-game focus group. Both units of analysis were examined using the constant-comparative method. The constant comparative method involves breaking down the data into discrete or separate ‘incidents’ (Glaser and Straus, 1967) and coding each ‘incident’ into categories. Incidents from individual interviews can be compared to separate interviews and connected to one another through coding. Glaser & Strauss (1967) used grounded theory to develop the four stages of constant comparative coding which are: comparing incidents applicable to each category, integrating categories and their properties, delimiting the theory, and writing the theory. The coding process involved first and second-cycle coding. The first coding cycle is used to initially summarize each observation and focus group using in vivo coding. The second cycle focuses on identifying re-occurring themes and sub-themes found across the multiple data sets. The themes identified are used to answer the qualitative research questions.

**Limitations of Methodology**

While the current mixed methods study uniquely provides quantitative and qualitative insight into the training and development of intramural sports officials, multiple limitations present opportunities for future research. First, it is important to highlight that these intramural officials entered this research at different ages, with different officiating levels and different levels of basketball knowledge, all factors which may skew the data in one direction, both positively and negatively. Students who have participated in this training for multiple years may score high on the pre-test, which limits their potential growth on the post-test. The questions asked on the pre- and post-tests are written in a multiple-choice format, which means that answers do not always represent students’ true understanding of the content material.

Lastly, future studies should examine an entire intramural season from pre-season to post-season. While my study is limited to the pre-season and first two weeks of the regular
season, it would be beneficial to the sports officiating industry to analyze data from rules
knowledge tests and focus group interviews as the regular season and playoffs progress. I would
hypothesize that the additional time and effort dedicated to both rules study and video review
would increase the student officials’ performance on the court and their motivation to continue to
officiate.

**Informed Consent and Protection of Human Subjects**

I received approval to complete this study through my university’s Institutional Review
Board (IRB). Prior to beginning the data collection, I met with the participants at a monthly
intramural sports department all-staff meeting, where I discussed the project overview.
Specifically, we discussed the purpose of the study, the time commitment required to participate,
how I would protect their privacy, and whom to contact in case of research-related concerns. All
participants signed the informed consent form prior to beginning data collection on the first night
of intramural basketball training. Any participant who was not yet 18 years of age was excluded
from this study.

The participants’ identities were protected in multiple instances. In Phase I, all
participants’ names were removed from the survey and focus group data and replaced with
pseudonyms. In Phase II, all video recordings of the actual games were deleted immediately after
the focus group interview as they are not part of the data in this study. All focus group interviews
were audio recorded via Zoom, and participants were directed not to use names in these
interviews. The audio recordings from the focus group interviews will be stored on my
password-protected laptop computer for three years before being destroyed.
Summary

Chapter III provided an overview of the methodologies used in this mixed methods study. This research used an explanatory sequential mixed method design (quan → QUAL). The data collection took place over a one-month period during the Fall 2022 academic semester and included 34 intramural sports officials at one University. Data was collected for this study in two phases. Phase I included completion of a pre- and post-test via Qualtrics, while Phase II included observation and focus group interviews of the officials’ performance during intramural basketball games. In Chapter IV, I will discuss the data collection results, beginning with the quantitative data from Phase I, followed by the qualitative data collected from Phase II.
Chapter IV: Results

In this chapter, I examine the data collected through an intramural basketball officials’ training program. Throughout this explanatory sequential mixed-methods study, I sought to answer the following research question: *How can we improve the training and development of intramural sports officials to perform at a higher level?* This question was examined through the following sub-questions:

1. In what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to officials’ understanding of the playing rules and regulations?
2. How do intramural sports officials respond when given the opportunity to reflect on their performance?
3. In what ways did intramural basketball officials report that watching themselves on videotape helped improve their officiating performance?

During Phase I of the study, I collected quantitative data from 34 participants using thirty-question multiple choice pre- and post-tests conducted through Qualtrics. Participants completed the pre-test prior to the beginning of the first night of intramural basketball officials’ training and then completed the post-test one week later at the conclusion of the training. Using the data from these two instruments, I answered my first research question by calculating participants’ overall scores, means, and standard deviations on the pre- and post-tests.

All participants (N = 34) were full-time students employed by the intramural sports program and were at least 18 years of age. Of the 34 participants in this study, 20 identified as men (58.82%), and 14 identified as women (41.18%). In terms of their officiating experience, most were fairly new to their role: 23 participants had 0-1 years of officiating experience (67.64%), 8
participants had 1-2 years of experience (23.52%), and only 3 participants had been officiating for 2+ years (8.82%). In addition, playing experience varied widely, with 17 participants who played competitively in high school (50%), 1 participant who played competitively in middle school (2.94%), 12 participants who played recreationally (35.29%), and 4 who never participated in basketball (11.76%). Participant demographics were also recorded in Table 4.1.
Table 4.1

Participant Demographics

<table>
<thead>
<tr>
<th>Participant #</th>
<th>Gender</th>
<th>Experience Officiating Basketball</th>
<th>Experience Playing Basketball</th>
<th>Pre-test Score</th>
<th>Post-test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>4*</td>
<td>Man</td>
<td>2+ years</td>
<td>Competitively in high school</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in middle school</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>6*</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Never played</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>8</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>10*</td>
<td>Man</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>11</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>13</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>15</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>16</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Never played</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>18</td>
<td>Woman</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>19</td>
<td>Woman</td>
<td>2+ years</td>
<td>Never played</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>20</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>21*</td>
<td>Man</td>
<td>1-2 years</td>
<td>Competitively in high school</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>22*</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>23</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>24</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>25</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>26</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
<td>16</td>
<td>N/A</td>
</tr>
<tr>
<td>27</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>28</td>
<td>Man</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>29</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Recreationally</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>30</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>31*</td>
<td>Man</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>32</td>
<td>Man</td>
<td>1-2 years</td>
<td>Recreationally</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>33</td>
<td>Man</td>
<td>0-1 year</td>
<td>Never played</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>34</td>
<td>Woman</td>
<td>0-1 year</td>
<td>Competitively in high school</td>
<td>17</td>
<td>19</td>
</tr>
</tbody>
</table>

Note. This is a table displaying the participants’ self-reported genders, experience officiating basketball, experience playing basketball, and pre- and post-test scores.

* Denotes that participant was selected for Phase II of the study.
Pre- and Post-Test Results

For the quantitative phase of the study, I distributed pre- and post-tests that consisted of 30 similar questions based upon the knowledge that a basketball official needs in order to successfully referee an intramural, collegiate basketball game. These pre- and post-test assessments of intramural basketball officials’ knowledge of the game aimed to address my first research question, which was focused on examining the ways current intramural sports officiating training practices at a 4-year higher-education institution contribute to officials’ understanding of playing rules and regulations.

Table 4.2 provides the pre- and post-test means and standard deviations. Data analysis showed an overall increase of 1.59 questions answered correctly from the pre-test to the post-test for intramural sports officials.

**Table 4.2**

*Pre- and Post-test Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>15.41</td>
<td>3.63</td>
</tr>
<tr>
<td>Post-test</td>
<td>17.00</td>
<td>4.12</td>
</tr>
</tbody>
</table>

A paired sample t-test was used to compare the results of the pre-test to the post-test. Using a significance threshold of $P < .05$, I was able to determine that there was a statistically-significant difference ($P < .003$) in the mean assessment scores for all participants between the pre- ($M = 15.41$, $SD = 3.63$) and post-tests ($M = 17.00$, $SD = 4.12$) as shown below in Table 4.3.
Table 4.3

One Sample T-Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean Difference</th>
<th>SD</th>
<th>T</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test – Post-Test</td>
<td>-1.61</td>
<td>2.90</td>
<td>-3.18</td>
<td>32</td>
<td>.003*</td>
</tr>
</tbody>
</table>

Note. *Statistically significant at $P < .05$.

Overall, participants gained an average of 1.59 correct answers after the training. However, I wanted to further understand whether there were differences in performance based on participants’ formal experiences in playing basketball or their attendance at an earlier training in Spring 2022. To examine these differences, I ran a one-way analysis of variance (ANOVA) test.

**Differences in Level of Playing Experience**

Following my analysis of the overall mean score participants obtained on pre- and post-test data, I used a one-way ANOVA to examine the differences in how students with and without competitive high school basketball experience performed on the pre- and post-test assessments.

Table 4.4 illustrates the mean and standard deviations between the two groups, those who played competitively in high school and those who did not play competitively in high school. Participants self-reported their level of playing experience, and answers were grouped into two categories: (a) competitive high school basketball experience and (b) non-competitive high school basketball experience. Students who played high school varsity, junior varsity, or club-level basketball were classified as having competitive high school experience. In contrast, participants who played recreationally through high school (intramural or recreational leagues), competitively in middle school (junior varsity – varsity experience), recreationally at some point
in their life (e.g., physical education class, after-school programs, local recreation center, etc.), or never played basketball at all were classified as not having competitive high school basketball experience.

**Table 4.4**

*Experience Playing Basketball*

<table>
<thead>
<tr>
<th>Playing Experience</th>
<th>N</th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Did not play competitively in high school</em></td>
<td>18</td>
<td>14.39</td>
<td>16.50</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>3.18</td>
<td>4.37</td>
</tr>
<tr>
<td><em>Played competitively in high school</em></td>
<td>16</td>
<td>16.56</td>
<td>17.60</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>3.85</td>
<td>3.85</td>
</tr>
<tr>
<td><em>Total</em></td>
<td>34</td>
<td>15.41</td>
<td>17.00</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>3.63</td>
<td>4.12</td>
</tr>
</tbody>
</table>

*Note.* The table above shows the comparison of pre- and post-test scores between two basketball subgroups based on their competitive-play experience.

For participants who played competitively in high school, the mean was 2.17 correct answers higher (15.08%) than those who did not play competitively in high school on the pre-test. On the contrary, those who did not play competitively saw a greater improvement with 2.11 more questions answered correctly on the post-test (7.03%) compared to 1.04 more questions answered correctly (3.47%) for the participants who played competitively in high school.

Using a significance threshold of $P < .05$, I was able to determine that there was a statistically significant difference in the mean assessment scores between the two subgroups’ pre- and post-test scores, as shown below in Table 4.5.
Table 4.5

One-Way ANOVA for Experience Playing Basketball

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>47.53</td>
<td>1</td>
<td>47.53</td>
<td>3.964</td>
<td>.056</td>
</tr>
<tr>
<td>Within Groups</td>
<td>359.69</td>
<td>30</td>
<td>11.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>407.22</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post-Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>87.97</td>
<td>1</td>
<td>87.97</td>
<td>5.893</td>
<td>.022*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>32.87</td>
<td>29</td>
<td>14.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>520.84</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *Statistically significant at $P < .05$.

A one-way ANOVA was conducted to compare the participants’ scores based upon their experiences playing basketball. Using an ANOVA, I did not discover a statistically significant difference in the post-test scores of students who played basketball competitively in high school versus those who did not ($P = .022$). The difference in pre-test scores based on playing experience was not statistically significant ($P = .056$).

**Differences in Level of Officiating Experience**

I also used a one-way ANOVA to examine the differences in how students with and without prior intramural officiating experience performed on the pre- and post-test assessments. Prior intramural officiating experience was measured based on whether the participants had completed the previous year’s training which was required to be an intramural official at the site-study institution. Table 4.6 illustrates the mean and standard deviations of participants’ self-
reported participation in the Spring 2022 basketball trainings between a set of two groups: those who attended the Spring 2022 intramural basketball trainings and those who did not.

**Table 4.6**

*One-Way ANOVA for Experience Officiating Basketball*

<table>
<thead>
<tr>
<th>Officiating Experience</th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not attend the Spring 2022 officials’ training</td>
<td>N 16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Mean 14.13</td>
<td>15.56</td>
</tr>
<tr>
<td></td>
<td>SD 4.08</td>
<td>4.37</td>
</tr>
<tr>
<td>Attended the Spring 2022 officials’ training</td>
<td>N 16</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Mean 16.56</td>
<td>18.93</td>
</tr>
<tr>
<td></td>
<td>SD 2.71</td>
<td>3.24</td>
</tr>
<tr>
<td>Total</td>
<td>N 32</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Mean 15.34</td>
<td>17.19</td>
</tr>
<tr>
<td></td>
<td>SD 3.62</td>
<td>4.17</td>
</tr>
</tbody>
</table>

Using a significance threshold of $P < .05$, I determined that there was no statistically significant difference in the mean assessment scores between students who had previously attended trainings as part of the institution’s process for preparing intramural officials (see Table 4.7).
Table 4.7

ANOVA for Experience Officiating Basketball

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>40.02</td>
<td>1</td>
<td>40.02</td>
<td>3.25</td>
<td>.081</td>
</tr>
<tr>
<td>Within Groups</td>
<td>394.22</td>
<td>32</td>
<td>12.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>434.24</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post-Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>9.90</td>
<td>1</td>
<td>9.90</td>
<td>.577</td>
<td>.453</td>
</tr>
<tr>
<td>Within Groups</td>
<td>532.10</td>
<td>31</td>
<td>17.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>542.00</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. *Statistically significant at *P* < .05.

A one-way ANOVA was conducted to compare the participants’ experiences officiating basketball. While the pre-test score of 0.81 was not statistically significant, it may have become significant with a larger sample size.

**Summary of Quantitative Results**

Analysis of the quantitative data from this study provided a statistical benchmark for where intramural basketball officials’ rules knowledge stood prior to, and after, the department-hosted intramural basketball officials’ training. However, the small number of individuals in each subgroup (N = 15 to 18) limits the degree to which the findings are generalizable to the larger population of intramural sports officials.

Following the quantitative phase of this sequential mixed methods study, I gathered qualitative data through focus-group interviews. Two separate crews, of three intramural sports officials each, were interviewed as a team immediately after they completed officiating a game. Each crew of three intramural sports officials went through this process twice, once on the first
or second night of the regular season, and again one week later. For each focus-group interview, I observed and filmed an intramural basketball game from the indoor track above the court and selected 12 plays of interest to analyze with the crew of officials. These interviews were conducted in a conference room. Reflections from the focus-group interviews were coded using a constant comparative method.

A Case Study of Intramural Basketball Officials

Following the collection of quantitative data and randomized selection of six intramural basketball officials, I observed an intramural basketball game and conducted post-game, semi-structured interviews in subgroups of three officials. The case study utilized two different methods to collect data: (a) observation protocol, and (b) focus group interviews. The qualitative examination of this study focused on the how and why intramural basketball officials made certain decisions during their games. To analyze the qualitative data, I began by following my theoretical framework based on Kolb’s Experiential Learning Theory (1984) and Bandura’s Social Learning Theory (1977b). In order for sports officials to independently apply their rules knowledge that was taught at the pre-season training, both of these theories came into effect.

Within the semi-structured interviews, I aimed to examine all three of my research questions. In my first research question, I asked in what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to an officials’ understanding of the playing rules and regulations? In my second research question, I asked, how do intramural sports officials respond when given the opportunity to reflect on their performance? Lastly, in my third research question, I asked in what ways did intramural basketball officials report that watching themselves on videotape helped improve their officiating
performance? In review, these three research questions focused upon the analysis of on-court officiating performances and self-reflections.

Using Dedoose and first and second-cycle coding techniques, I analyzed the data through a constant comparative method. The following four themes emerged from this coding technique: knowledge of playing rules, game management, reflection on decision-making, and overall takeaways from video review.

Participants

Out of all the intramural officials available to officiate on selected observation dates and times, six were randomly selected to participate in the case study. Of the six participants, all identified as males.

Participant 4

Participant 4 was one of the highest-scoring participants from Phase I of the study, with a score of 21 on the pre-test and 24 on the post-test. This participant attended the Spring 2022 intramural basketball training and self-reported 2+ years of officiating experience in high school. He was PIAA certified in the sport of basketball and also played competitively in high school.

Participant 6

Participant 6 scored slightly above the mean in Phase I of the study, with a score of 16 on the pre-test and 18 on the post-test. This participant attended the Spring 2022 intramural basketball training and was in his second year of officiating intramural basketball. He held no officiating certifications but had played basketball recreationally at some point in his life (e.g., physical education class, after-school programs, local recreation center, etc.).
**Participant 10**

Participant 10 scored slightly below the mean in Phase I of this study, with a score of 15 on the pre-test and 16 on the post-test. This participant did not attend the Spring 2022 intramural basketball training and was in his first year of officiating intramural basketball. He held no officiating certifications but had played basketball recreationally through high school (i.e., intramurals or recreational leagues).

**Participant 21**

Participant 21 was one of the higher-scoring participants from Phase I of the study, with a score of 21 on the pre-test and 22 on the post-test. This participant did not attend the Spring 2022 intramural basketball training and was in his first year of officiating intramural basketball. He was PIAA certified in the sport of basketball and also played basketball competitively in high school.

**Participant 22**

Participant 22 scored below the mean on the pre-test but significantly improved on the post-test in Phase I of the study, with a score of 14 on the pre-test and 20 on the post-test. This participant attended the Spring 2022 intramural basketball training and was in his second year of officiating intramural basketball. He held no officiating certifications but had played basketball recreationally through high school (i.e., intramurals or recreational leagues).

**Participant 31**

Participant 31 scored above the mean on the pre-test but scored much lower on the post-test in Phase I of the study, with a score of 20 on the pre-test and 15 on the post-test. This participant did not attend the Spring 2022 intramural basketball training and was in his first year
of officiating intramural basketball. He held no officiating certifications but had played basketball competitively in high school.

**Qualitative Results**

Four major themes emerged from the qualitative analysis of the officials’ post-game, focus group interviews: (a) knowledge of playing rules, (b) game management, (c) reflections on decision-making, and (d) officials’ self-reflection on their performance during video review. In the following sections, I will review and analyze each theme in the context of the research questions.

**Knowledge of Playing Rules**

With Sub-Question 1, I sought to examine in what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to an officials’ understanding of the playing rules and regulations? While pre- and post-tests provided quantitative data, focus-group interviews allowed the intramural officials the time and space to ask about specific rule clarifications with the observer. In order to facilitate this discussion, I showed video snippets of the officials’ involvement in case plays and prompted in-depth explanations of the rules in question.

**Proficiency of Some Playing Rules**

In terms of the knowledge of playing rules, the officials demonstrated consistent enforcement of several rules and regulations. The intramural officials called obvious fouls and violations and showed an understanding of the consequences of their calls which included the next possession of the ball being awarded to the correct team or to an individual shooting free throws. Fouls called in the act of shooting always resulted in free throw attempts, while other common fouls were inbounded at the closest out-of-bounds throw-in spot. Officials also
understood where they should be positioned on the court (e.g., lead, center, or trail) and made adjustments as the game needed. Yet, intramural officials demonstrated an inconsistent understanding of the following rules: (a) alternating possession, (b) backcourt violations, (c) five-second closely guarded violations, (d) illegal screens, (e) kickball violations, (f) timing rules, and (g) unsportsmanlike conduct official warnings and technical fouls.

**Inconsistent Understanding of How to Apply Playing Rules**

Intramural basketball officials’ pre-season training took place over the course of five evenings for a total of roughly ten hours, with approximately two hours strictly dedicated to playing rules and regulations. The 2022-2023 NFHS basketball rules book has 96 pages and the 2022-2023 NFHS basketball case book has 92 pages dedicated to this content. Thus, covering every rule in-depth in this short amount of time was extremely difficult. While the pre- and post-tests results gave me an idea of where intramural officials stood in terms of their rules knowledge, the focus group interviews provided a more in-depth analysis of whether the officials were able to apply the rule in real-time.

**Alternating Possession.** At the start of every basketball game, there is a jump ball between the two teams to determine which team gains control of the ball for the first possession of the game. The alternating possession arrow should then be set so the team who did not obtain control of the opening jump ball will receive the next alternating possession. The alternating possession occurs either at the next “jump ball” or at the beginning of the second half of play.

On the first night of the season, an official asked, “What determines which team gets possession after a jump ball? I never understood that” (Focus Group 1, Participant 10). Given that this play occurs multiple times per game, this is a crucial rule for officials to understand. To clarify, another official on the crew noted, “The scorekeeper will keep track of this in the
scorebook for us. They’ll write purple, white, purple, white, etc. in the book and cross it off every time there is a jump ball so we’ll know who gets it” (Focus Group 1, Participant 22). In this example, one official on the crew fully understood this rule and likely would have been able to award the correct team possession of the ball if this violation occurred during the game. This official understood that the crew checks with the scorekeeper when a jump ball occurs to ensure that they give the correct team the ball for the next possession. Without this knowledge, it is unlikely that officials on the game would know how to adjudicate this violation and know which team to give possession of the ball. In retrospect, the pre-season officials’ training did not include a clear explanation of the “alternating possession” rule. There was a greater emphasis on the physical opening toss for the jump ball, the initial positioning of the officials, and how to transition into the first possession of the game. An official’s knowledge of this rule, accompanied by an awareness of which team the alternating possession arrow favors, will help an official better manage future games.

**Backcourt Violation.** Officials in both crews raised questions about backcourt violations in focus group interviews during the second week of the season. Once an offensive team has established possession of the basketball completely past the division line (halfcourt), they are no longer permitted to bring the ball into the backcourt. If the offensive team or the ball does touch the division line, it is deemed to be a backcourt violation and a turnover.

In one instance, a video clip was displayed showing a potential backcourt violation, and the crew of intramural officials exhibited a long pause but no dialogue surrounding the play. The researcher asked the crew, “What is needed for the team to technically have front-court status?” One official initially responded, “[that the team needed] body” (Focus Group 4, Participant 31), a partially correct answer. After a request for clarification, another official responded, “body and
the ball” (Focus Group 4, Participant 4). Given the officials now had clarification on the rule, and all officials expressed understanding that both feet (body) and the basketball must be over the line to have front-court status, the researcher showed the video clip a second time and asked them to re-analyze the play. One official answered that “all three [both feet and the ball] are over the line” (Focus Group 4, Participant 31), indicating that the offensive team has front-court status. Together, the officials then worked to determine whether a backcourt violation had occurred. As the play was shown a third time, one official observed that “the player steps on the [division] line but it’s close and not blatantly over the line by a full step or two” (Focus Group 4, Participant 4). This acknowledgment that the player’s foot was on the division line prompts another official to proclaim that “even if his foot touches the line, I’m not going to call backcourt” (Focus Group 4, Participant 6). These two responses revealed that there was a lack of understanding of the backcourt violation rule and a clear uncertainty between the officials. After a brief silence, all three officials looked around the room at each other, smiling seemingly because they realized they did not have definite knowledge of whether a player’s foot being on the line should be called a backcourt violation. With hesitation, each official voiced their opinion as to whether the play shown was a backcourt violation. The responses were mixed and even generated follow-up questions to get clarifying information before giving their “final answer”. Below are the officials’ initial responses:

Participant 6: “I think it’s backcourt.”

Participant 31: “So does the ball also need to be in the backcourt or just a foot?”

Participant 4: “So since he has a full possession in the front court, when he steps on the line in the backcourt, that’s a backcourt violation I think, right?” (Focus Group 4)
At this point in the conversation, all three officials were engaged and appeared to want to know the correct ruling on this play. I asked each official for their “final answer” before revealing the correct ruling:

Participant 4: “[Backcourt] is my final answer.”

Participant 6: “I feel like once he established himself over halfcourt that any body part, well I don’t want to say any body part but I do feel like if his foot is on the line then yes, it is backcourt. So yes, backcourt violation is my final answer.”

Participant 31: “I think you are trying to trick us. For the sake of the argument, I’m going to say no backcourt on this play.” (Focus Group 4)

After audible laughter, I revealed that the correct ruling for this play was a backcourt violation, which was not called by these officials during the game. For basketball officials at any level, the backcourt rule is somewhat complex as there are multiple variables that must be considered, both feet, the basketball, and their positioning on the court, and through analysis and discussion of their actions on the court, the officials were able to identify the correct call. While these intramural officials were able to correctly identify the general concept of backcourt violations, the technicality of the rules were omitted in their responses. The officials showed that they understood that the offensive team was not allowed to go from the frontcourt to the backcourt, but were not able to distinguish what three items (both pivot feet and the basketball) needed to be established in the frontcourt or what specifically needed to be in the backcourt for a violation (the ball or any part of the player in control of the ball).

Another intramural official asked a question regarding the backcourt rule after video review of a violation that they had called correctly. This official posed a hypothetical scenario, “Let’s say the defender tips [the ball] and then it goes backcourt. Then, it wouldn’t be a
backcourt [violation], correct?” (Focus Group 3, Participant 10). In NFHS rules, once the offensive team establishes clear possession in the front court, the offensive team cannot be the first team to touch the ball in the backcourt, or it is a violation. To specifically answer the intramural official’s question, if the defense deflects the ball and is the last to touch the ball in the frontcourt, then the offensive team can be the first to touch the ball in the backcourt. An official’s ability to recognize a deflection is not always easy as the deflection may occur outside of their primary coverage area (PCA). This question was particularly insightful because it demonstrated the official’s abstract thinking skills. The officiating crew watched a video of a backcourt violation that was correctly called, and the conversation could have ended there, but this official’s follow-up question showed that he wanted additional clarification in case the defender tips the ball in a future game. Asking these advanced questions not only increases the likelihood of this official adjudicating future backcourt violations correctly but makes his crew stronger through his ability to assist on these types of plays. The officials’ conversations and questions about the backcourt violation in the focus group interviews indicated the complexity of the rule. This was a prime example of experiential learning theory in action: encountering plays in real-time; calling the play, potentially incorrectly; and then learning from mistakes to grow as an official. Next, I will focus on illegal screens, another rule in which officials demonstrated a lack of understanding and uncertainty.

**Illegal Screen.** The screen rule can be extremely complex as there are eight articles to define this particular rule in the 2022-2023 NFHS basketball rulebook. A screen is legal action by a player who, without causing contact, delays or prevents an opponent from reaching a desired position.
The crew of intramural officials were shown a play that involved a potential illegal screen. One official who was positioned in the lead position underneath the basket commented, “You’re talking about the screen underneath. I saw that but didn’t know what that was” (Focus Group 2, Participant 31). The play was rewound and replayed for the crew, the lead official again exclaimed, “So I saw all of this in real-time and just didn’t know what to call” (Focus Group 2, Participant 31). In this play, an offensive player committed an illegal screen, which should have resulted in a personal foul on the offending player and loss of possession for his team. Failure to call an illegal screen puts the defender at a disadvantage and causes them to play more physically and often foul in an attempt to regain an advantage. An official who calls an illegal screen must identify the jersey number of the player who committed the illegal screen and be aware of the location of the ball to properly resume play. Screening plays are extremely difficult for even veteran officials as there are many factors and variables that go into each and every screen that is set. Taking the time to identify, categorize as a screen, and review the screening rules should help this intramural official in future games. The next rule examined the five-second closely guarded violation, another infrequently called and also misunderstood rule across all levels of basketball.

**Five-Second Closely Guarded Violation.** Similar to backcourt violations, this rule was also brought up in focus group interviews by both sets of crews during the second week of the season. While both crews of officials had some sense of the rule, they did not know the specifics needed to properly adjudicate the rule. A five-second, closely guarded violation may be called against an offensive player with the ball when that player is guarded closely for five seconds or more, and does not shoot, pass, or dribble the ball. If a player is well-defended or trapped by an
opponent, this rule does come into play, although it is not very common. When this violation occurs, the offensive team loses possession of the ball, and it is deemed a turnover.

A play in which an official did not display the visible closely guarded hand count was shown on video to open up discussion in one of the focus group interviews. I asked the crew of officials if they could tell me what is the five-second closely guarded rule. This question generated incorrect and partial-information answers from all three individuals on the crew. One official noted that “there is a certain distance between the offensive and defensive player where we are supposed to count” (Focus Group 4, Participant 4), while another official chimed in after that and stated, “yes, I think it’s like three feet” (Focus Group 4, Participant 6). I clarified that they had the right idea but the distance was actually six feet, not three feet. The third official appeared very confused by this definition and added, “I’ll be honest, I didn’t know that was a rule going into game” (Focus Group 4, Participant 31). After clarifying the rule, we re-watched the play and determined that the defender closely guarded the offensive player for approximately four seconds and a violation should not have been called, however there should have been a visible five-second closely guarded count by the trail official on this particular play.

Interestingly, there was an extremely similar play in a different game and the video clip was shown to the crew of officials in their respective focus group. Again, I asked the crew of officials if they could tell me what is the five-second closely guarded rule. One official responded with a question “when the defender is 4 feet from the dribbler?” (Focus Group 3, Participant 10). After clarifying that 6 feet was the correct distance and there should be a visible count when the offensive player is either dribbling or holding the ball, the same participant stated, “I thought it was only when they were dribbling the ball and couldn’t get past the defender in five seconds, I didn’t realize it was on the hold too” (Focus Group 3, Participant 10).
With a perplexed look on his face, another official asked, “So let me get this straight, if the defense is up in your face for five seconds, it goes the other way? Like it’s a turnover?” (Focus Group 3, Participant 22). Again, I provided the correct information that it is a turnover, and the offensive team loses possession of the ball. One official responded, “I’ll be honest, I didn’t really know that rule and we only talked about it briefly in training” (Focus Group 3, Participant 10). A second official added, “So I remember seeing this in the training but I’ve never ever seen anyone ever call it in the NBA or anything” (Group 3, Participant 22). This official’s comment was not entirely incorrect or off-base as there are rule differences regarding the five-second closely guarded rule across the NFHS, NCAA Men’s, and NBA rulebooks.

**Kick Ball.** While the kick ball rule may seem straightforward, many players, officials, and spectators do not properly understand this rule. Kicking the basketball is a violation only when it is an intentional act; accidentally striking the ball with the foot or leg is not a violation.

In the opening of every focus group, I asked the officiating crew if there were any specific plays that they wanted to talk about or see on video before I started my pre-determined list of plays. One official immediately responded, “One call that I know I missed was that I ruled a kick ball on the offense but there is no such thing as an offensive kick ball and I realized that immediately right afterwards” (Focus Group 3, Participant 21). Before I could even find this play in my observation notes to put onto the conference room television, another official chimed in, “I was also confused on this play because they kicked it like a soccer ball” (Focus Group 3, Participant 10). All three officials laughed over his commentary and in response, the calling official guiltily added, “I even told the player sorry, I messed up, there is no offensive kickball. At least not in high school or college” (Focus Group 3, Participant 10). I then asked the other two officials on the crew their opinion on this ruling and one official quickly responded, “I have no
idea,” (Focus Group 3, Participant 22), while the other official was unsure and replied, “That’s a
good question because I’ve only ever seen the defense get called for it usually when they are
trying to stop a pass from getting through” (Focus Group 3, Participant 10). The three officials
looked at each other still searching for the correct answer when one official added, “If it’s
incidental then no, but if it’s like they are dribbling a soccer ball then no, they can’t do that!
(Focus Group 3, Participant 10). The officials’ confusion was in line with many other players,
officials, and spectators. In order to correctly call the violation, officials must judge whether the
kick was an intentional act, which is not always simple as there are many other variables (i.e.,
moving players, clocks, etc.) that also require the official’s attention. If a player kicks the
basketball intentionally, then a violation should be called, but if the ball incidentally strikes a
player’s foot or leg, then no violation should be called. An official’s ability to understand the
difference between unintentional and intentional is extremely important. In the play shown in
video review, the calling official correctly deemed that the offensive player intentionally kicked
the ball, which felt incorrect in the moment because it is extremely rare that an offensive team
would kick the ball when they have possession of the ball. The defensive team typically commits
this violation as they are looking to gain possession of the ball. At the conclusion of this
discussion, all three officials were prepared to discern whether the ball was intentionally kicked
in their future games.

**Timing Rules.** Although intramural basketball rules are modified to use a running clock
format, which means the clock runs continuously regardless if fouls or violations occur,
intramural games do follow official NFHS timing rules in the final two minutes of play.
Typically there is extra attention focused on the clock in the final seconds of the game as an extra
second can change the game’s outcome. Understanding the clock rules is essential as the whole
point of the game is to see which team can score more points within a specific time interval. Officials only signal for the clock to be stopped to indicate fouls, violations, timeouts, or injured players.

Unfortunately, only one of the four observation games was close in score in the final seconds, so there was only one discussion surrounding clock awareness within the officiating crews. In this particular game, one team was losing by three points and was fouled with seven seconds remaining. The team made both free throws to cut the deficit to one point and the clock began to run as soon as the ball went through the net. The winning team made a bad inbounds pass turning the ball over and gave the opposing team a chance to take the lead. In the chaos, the team with the lead fouled the opposing team with 0.2 seconds remaining. The calling official received immediate complaints from the fouling team as his call could potentially decide the winner of the game. The shooter went to the free throw line and made one of two free throws and the game ended in a tie. The final seven seconds were extremely frantic and players continued to complain after the game had ended, voicing their frustration over the foul call.

This video clip was shown to the crew of officials and they were told to keep a close eye on the scoreboard and the time remaining in the game. Before the clip can be played, one official exclaimed, “So it runs! And I saw that! But I didn’t know why it was running, so honestly I was confused. I thought that whoever was doing the clock knew what they were doing” (Focus Group 2, Participant 6). The official who was administering the free throw in the lead position explained, “My back was to the clock and I had no idea that it was running at this point” (Focus Group 2, Participant 4). This left the onus on the two outside officials who had a view of the scoreboard. While the clock showed 0.2 seconds remaining on the clock when one official blew his whistle for the final foul call, there should have been closer to 5 seconds remaining which
would have allowed an extra opportunity for either team to score after the second missed free throw. This call appeared controversial in the moment, as all of the players on the court were panicking as the ball was loose in the final seconds of a one-point game. In seeing the video, the calling official now recognized this issue, “So if the clock starts properly, there would have been more time remaining after my foul call” (Focus Group 2, Participant 31). While these few lost seconds at the end of the game may not seem overly important, the lost time triggered unnecessary player reactions and directly influenced the final score of the game. Unnecessary player reactions expands into the next topic, unsportsmanlike conduct official warnings and use of technical fouls.

**Unsportsmanlike Conduct Warnings and Technical Fouls.** A sportsmanship rating system was implemented within the intramural sports program at the institution in my study in order to reduce unsportsmanlike behavior. This rating system granted the intramural staff the authority to rate each team’s sportsmanship at the completion of each game. Below is the team sportsmanship rating system directly from the institution’s intramural sports handbook:
**Figure 5**

*Team Sportsmanship Rating System*

**Team Sportsmanship Ratings** – Intramural staff and game officials will evaluate teams and assign a sportsmanship grade following each game. Ratings are given based on the following criteria:

- **4: Excellent Sportsmanship** – Outstanding sportsmanship and conduct: All players cooperate fully with staff and officials, and the captain controls his/her team.

- **3: Acceptable Sportsmanship** – Team members and spectators are respectful of opponents and officials except for one or two minor incidents which may or may not merit a warning from the game officials or supervisor.

- **2: Sportsmanship Needs Improvement** – Verbal disagreement with the officials and/or conflict with the opposing team. Any team receiving one sportsmanship-related yellow card, technical foul, or unsportsmanlike conduct penalty will receive a 2.

- **1: Unacceptable Sportsmanship** – Team members continually show disrespect for the opposing team and officials. The team captain shows little or no control over the team. Any team receiving two sportsmanship-related yellow cards or one red card, two technical fouls, or two unsportsmanlike conduct penalties will receive a 1.

- **0: Season-Ending Rating** – The team is completely uncooperative, resulting in multiple ejections or blatant unsportsmanlike conduct. Any team receiving three sportsmanship-related cards, technical fouls, or unsportsmanlike conduct penalties and/or causing the game to be ended early will receive a 0.

*Teams which receive a “0” rating are subject to immediate dismissal from league or tournament play*** (Intramural Sports Handbook, Page 10, Section D)

The NFHS has tried to combat poor sportsmanship in a variety of ways. Some examples include pre-seasons with players, coaches, parents, and administrators, pre-game, in-game and post reminders from public address announcers, and additional education around creating a positive environment. The NFHS Basketball Rules Committee added an official warning given for misconduct prior to the 2017-2018 high school basketball season. At any point in the game, the official has the right to stop the play and issue a misconduct warning that must be recorded in the scorebook. The NFHS Basketball Rules Committee deems that an official warning sends a
clear message to everyone in the gym and impacts the behavior of the game’s participants. This change in behavior creates a better atmosphere and, often avoids an officials’ need to administer a technical foul.

Sports officials frequently try to manage a game by speaking to players or coaches to unofficially warn them of their actions. Unfortunately, sports officials do not utilize the official unsportsmanlike conduct warning and subsequent technical fouls to their advantage when officiating competitive games. There should be a mutual respect for the game of basketball and certain behavior should result in technical foul, such as: undermining the integrity of an official, demonstrative acts in the resentment of a call or no-call, continuous complaining or criticism directed to or about an official, use of profanity, and excessive inquires. Next, I will share intramural officials’ experiences, frustrations, and reflections around the topic of poor sportsmanship.

Prior to even being able to turn on the recording for one focus group, one official began to vent about the unsportsmanlike conduct of a participant in his game. This official described the experience as:

Players were just coming up to the referees after we missed a call, or we made a call they didn’t like. It was just the whole entire game, and coming at someone else’s character just takes it too far (Focus Group 3, Participant 31)

Both partner officials agreed the game was “very chirpy, especially towards the end of the game (Focus Group 3, Participant 6), and that it was “a good high intensity basketball game that some people allowed their emotions to get the best of them” (Focus Group 3, Participant 4). While all three officials came to this conclusion, there were no unsportsmanlike warnings, technical fouls,
or ejections. One of these officials should have taken action to address this unsporting behavior to keep the players’ emotions under control.

There was one player in particular that two of the officials identified as a problem, but both officials failed to properly address his behavior. When speaking specifically about this player, one official asked, “He had words directed at me a couple times, is it normal to give a player a warning at this point?” (Focus Group 3, Participant 6). In response, another official exclaimed, “I gave that kid a warning about FOUR TIMES! If it was a one-time thing then I wouldn’t be bringing this up, but it almost felt like he was questioning whether I was a real referee or not” (Focus Group 3, Participant 31). I had not observed the four warnings during the observation, so I asked the two partner officials if they were aware. Neither official was informed of this information while on the court and this was the first time that they realized there was an issue. The frustrated official added, “I just didn’t know how many more warnings I was supposed to give. There were a couple times that they were asking questions then a couple times they were like ‘you are the worst referee ever!’ this, and that, etc.” (Focus Group 3, Participant 31). In conclusion, an official warning should have been assessed to this particular player and if he continued, then a technical foul should have also been assessed. An official’s ability to use these tools to their advantage can assist in controlling the temperament of a game. This particular observation game ended in a tie and a single technical foul free throw could have been the difference in who won and who lost. One official processed these consequences and added, “This comes back to the captain, too, if he knows and wants to keep his sportsmanship rating up then he shouldn’t let him continue or maybe even keep him in the game” in reference to the problem player (Focus Group 3, Participant 4).
**Interactions and Communication with Players.** Continuing along with the unsportsmanlike conduct theme, communication between players and officials is another area worth examining. Official’s interactions with players can contribute to keeping the game safe, enjoyable and fair. While all three officials have similar duties on the court, and they try their best to be consistent and communicate effectively, this is not always the case with players. Each player is unique as there is a difference between starters and substitutes, playing positions on the court, and roles within the team. Occasionally, players become frustrated with the game or the officiating performance and take this dissatisfaction out by directing comments to the officials.

The video review and focus group interviews were a great place to review specific plays that lead to interactions and communication with the players. After reviewing a correctly called foul, one official expressed his irritation regarding a specific player by pointing at the screen and beginning a dialogue:

> So this player here complained about almost every time that he or someone on his team went to the basket for a foul. Like he was complaining about it a lot. And I would just look at him and shake my head like ‘no way, man’. This is where the players really started getting on me and questioning my character. At the beginning of that half they said that “this ref is down here” then all of a sudden anytime that I blew my whistle they would say something disrespectful to me – which I don’t care about – it doesn’t bother me. (Participant 31, Focus Group 2)

While disagreement with one particular call in the heat of the moment may be deemed as acceptable, this calling official should have addressed the constant complaints on multiple occasions. The perfect opportunity to address this behavior came at the beginning of the half when this particular player singled P31 out as ‘this ref is down here.’ The more disrespect that
P31 tolerated, the further this particular player took the dialogue. This official needed to properly address the disrespect, whether the insults bothered him or not. His partner official added his perspective by saying:

So as a partner, my bad. We should have picked up on that and we could have even given one of those guys a technical foul. But going forward… I think it would have been beneficial for you to say like ‘hey y’all – can you watch x, y, z’ because if you were to give one of them a tech and we didn’t know that was going on this whole time then it’d be one thing. But it would have been good for one of your partners to come in and ‘T’ them up just so it’s not coming from you directly. It’s really beneficial during dead balls just for the crew to get together and talk about what we see and who’s getting on your nerves and who we need to look out for so that we can address it properly as a crew.

(Participant 4, Focus Group 2)

P4’s analysis of this interaction was exemplary for two reasons. First and foremost, the three officials are a crew and must protect each other on the court, whether this is helping on plays in dual coverage areas or their blind spots, providing information regarding the time remaining in the game, or addressing unsporting behavior. By apologizing for not picking up on this misconduct, P4 showed that he supported P31 on the court but was unaware of the severity of the situation. Secondly, P4 brought up a great point that sometimes you need to alert your partners of what’s going on in your area because they tend to get hyper-focused in their areas. If both partners are more aware of what this player is saying, they can listen more closely and issue a warning or technical foul. The importance of communication within the officiating crew cannot be stressed enough in high-intensity games. Still visibly flustered, the official added this final comment:
It’s just like the whole game they are talking and coming at me and saying things - it just felt like I was always just in a bad spot sometimes too which wasn’t like I was doing something wrong but when a foul was called or something – I was always just in that bad position where I needed to have the whistle then they turn around and I’m right there looking at them so I felt like that happened most of the times but nothing too, too bad (Participant 31, Focus Group 2).

While it is distressing to hear that this official had a negative experience on the court, his partner gave him excellent advice in this conversation. As there are so many moving pieces in a basketball game, officials often times are unaware of smaller issues is going on outside of their primary area of coverage (PCA). An official’s ability to communicate with their crew about what problems they see, and how they can be best addressed as a collective unit of three officials, will put them in the best position to succeed. Also, when an official knows that a partner may be feeling anxious or is the recipient of constant complaints from the players, a good partner will try to re-direct the attention to the players back to the game through diffusing conversation.

Game Management

With Sub-Question 2, I sought to examine how do intramural sports officials respond when given the opportunity to reflect on their performance? The experience of being able to watch plays on videotape allows intramural officials the opportunity to see how their crew may have applied or misapplied a rule to a specific play. In reviewing the videotape of an officiating crew’s performance, I intended to provide positive reinforcement on correct calls and negative reinforcement on incorrect calls. Also, by showing specific plays to an entire crew of officials, it granted the opportunity for a non-calling official to ask a question for clarification if needed. While the physical videotaping, field observations, and focus group interviews were a roughly
two-hour time commitment for the researcher and officials, the findings were extremely worthwhile.

One theme that appeared throughout all of the focus group interviews was game management. Good game management includes written rule enforcement, consistency, and the ability to deal with unusual situations. This game management aptitude may include using common sense to adjudicate plays not directly addressed in the rulebook and using proper discernment on particular rulings. Some fouls or violations must be called for the good of the game, while most can be avoided or prevented as a result of great game management and referee crew dynamics.

Control of the Game

While it may seem self-explanatory, the primary role of a sports official is to manage gameplay by deciding whether any infringements of the rules have occurred and to ensure the game is played in a fair and safe manner (Kittel et al., 2021). A proficient sports official has the ability to run or manage the game, stop play when needed, announce fouls, penalties, and violations confidently, and interact with coaches and their partner sports officials. Players and coaches will make in-game adjustments based upon how a crew of basketball officials call a game.

At the beginning of each focus group, the crew of officials were asked to talk about their general experience and reflections of that specific game prior to reviewing the video. After an extremely intense fraternity league game that ended in a tie, one crew of officials mentioned that not setting the tone early, not controlling the game, and being inconsistent made this game more difficult than it needed to be (Participant 6, Focus Group 2).
**Setting the Tone.** Every basketball game begins with a fresh slate, the score is 0-0, and neither team has any personal or team fouls recorded in the scorebook. If officials call certain fouls or violations and address poor sportsmanship with warnings or technical fouls in the opening minutes, players gain an understanding of how this game will be officiated and adjust their style of play so that they can remain on the court. In the opening segment of one focus group, one official stressed the importance of “setting the tone from the jump and letting them know that we are calling fouls early and anything that we see we are calling, ticky-tack or not” (Participant 6, Focus Group 2). Visibly frustrated with the crew’s performance, he continued to add, “I think being able to set the tone from the jump lets players know that we have to be less aggressive than they want to because these refs are calling whatever calls they see” (Participant 6, Focus Group 2). Failure to “set the tone” early can result in harder fouls and increasingly worse sportsmanship in the final segments of the game. Unfortunately, this was the case in this fraternity league game on night two of the regular season. Another official on this same crew added:

> Controlling the game and not allowing the players to play through as much physical contact would have been key because we needed to show that we were in control and not them. That could have nipped a lot of stuff in the bud early on. (Focus Group 2, Participant 4)

When too much physical contact is allowed, the game becomes more and more intense until the officials draw their line on what level of physicality will be accepted. Too much physicality often limits the number of points scored and can frustrate players and even entire teams. Again, one official recognized that frustration in this game was a result of:

> Letting [the centers] play through a lot because inside the paint is known as the most physical part of the court. So I was giving them the freedom to fight through the contact
for positioning inside the paint. I should have called and blew the whistle more so they knew that who was in control which could have put more restriction on allowing all of that contact inside of the paint. (Focus Group 2, Participant 4)

This official identified “the paint” as a problem area within his game and sensed that additional foul calls were needed to restrict the illegal contact in this area. This official’s reference to “the paint” is considered the area inside of the free throw lanes, which is often congested on plays to the basket and rebounding action. He was correct in his analysis that the lack of whistles lead to increased physicality and fouls that were not called.

Officials can dictate how a particular game of basketball will be played by the amount of whistles that they insert into a game. A partner official on this game added to the physicality inside the paint comment by stating, “When we didn’t blow the whistle, there were more problems than when we did blow the whistle... because when we don’t call it, they think we are incompetent, they think we don’t see anything or want to call anything” (Participant 31, Focus Group 2). When an official blows their whistle, the ball becomes dead and play stops whether the call is correct or incorrect. If there is no whistle then the play continues and one foul can lead to a retaliation foul and loss of control of the game. Again, this reflection on the power of his whistle should aid his officiating performance in future games.

**Consistency.** Another important concept that was discussed in the focus groups was the consistency of rulings between officials. Officials calling plays in a consistent manner goes a long way in earning and maintaining the respect of players, coaches, and spectators, and it is important to set this tone early in the game. With that being said, inconsistency of calls throughout a game can frustrate all parties involved and put the officiating crew in tough spots late in games. Reflecting back on this fraternity game, one official acknowledged that “we [the
officiating crew] missed calls during some stretches of the game. It was a little bit more inconsistent than I would have hoped for” (Participant 4, Focus Group 2). A combination of missed calls and inconsistency made this a challenging game to officiate. Adding to that comment, another official stated:

We need to keep that consistency of callings and making sure nothing gets too out of hand is definitely key to managing a high-paced basketball game, especially in the fraternity league... If we kept the calls coming in consistently, a lot of the complaining [from players] would have been a lot less than we received. (Participant 6, Focus Group 2)

Consistency from the officiating crew creates a notion of quality and builds confidence for not only the officials but all parties involved in the game. The official above was correct in his analysis that if they continued to call fouls and violations consistently, then the complaining from the players would have slowed, as the officials were in charge of the game. The officials’ failure to consistently make calls or address problem participants resulted in losing control of the game. This particular officiating crew’s ability to reflect on how their inconsistencies impacted this specific game and made it difficult in the final minutes is vital in their development. The next section will analyze the officials’ understanding of their PCAs. An official’s ability to officiate in their PCA consistently is crucial to their game management.

**Primary Coverage Area (PCA)**

Each official is responsible for their primary coverage area (PCA), roughly one-third of the playing court, when they are officiating. A great deal of time and effort was spent at the pre-season training explaining the responsibilities of the trail, center, and lead positions. Figure 6 shows the primary areas of coverage.
Note. The figure shows the primary coverage areas (PCAs) of the three officials on the basketball court. The lead official’s PCA is the area highlighted in blue, center officials’ PCA is green, and the trail officials’ PCA is red.

The three-person mechanics system is based on calling fouls and violations in your PCA and trusting your partner’s play calling in their PCA. There are times when an official misses a play in their PCA and sometimes a partner official needs to step up and call the foul or violation. As an official gains experience and advances in their officiating journey, they will gain a feel for when it is necessary to come out of their primary for the good of the game. The next section will
feature different examples of plays where calls outside of an official’s PCA negatively impacted the crew.

Often times, newer officials tend to watch the ball and overextend themselves into other officials’ PCAs. The first play of discussion was a foul called by the trail official on a drive to the basket on the opposite side of the court. The play began in the center official’s PCA and finished on the edge of the center official and lead official’s PCA. After showing the play to the officiating crew, I asked the calling official for his initial reaction. He stated, “From where I was at, it looked like his arm was being ripped down. I don’t know. That’s just from where I was standing but probably didn’t have enough leverage to call that” (Participant 31, Focus Group 2).

While the calling official gave his honest response, the key takeaway here is that he realized that he did not have enough leverage to call that from his position on the court. The non-calling officials expressed their viewpoints that they did not see a foul on the play and one official rationalized his non-call by articulating, “From my angle, it seemed like the offensive player initiated the contact so that’s why I let it play out personally… I don’t want for them to get bailed out” (Participant 4, Focus Group 2). All three officials received verbal complaints from players of the team that the call went against for the duration of the time it took to report the foul and shoot the two free throws. Players questioned the calling official as to why he called the foul from so far away and the other two officials as to why they did not call the foul as the play was right in front of them. Although this was not a positive play to re-live through video review, it was a great example for the three officials to learn to stay within their PCAs when officiating their next game.

A second play of interest involved two officials giving conflicting signals on a jump shot in the center official’s PCA early in the game. The trail official called a foul outside of his PCA while the center official signaled a tipped or blocked shot in his PCA. The trail official stated:
I made this call off the notion that the defender’s body was out of control… [but] after watching it, I understand that it isn’t my primary area to call in so I should have laid off it. I need to trust my partner. It’s his area and his judgment. It’s going to be a long night if I keep calling in front of him. (Participant 4, Focus Group 2)

This official was correct in his evaluation that it was ‘going to be a long night if he keeps calling in front of his partner.’ Experienced officials are able to determine whether or not their partners passed on a call or if their partners missed a call because they were potentially out of position, distracted or even had too many players in their area to officiate. Intramural officials were given directives at the pre-season training to only call outside of your PCA if there was a train wreck, crew-saver, or a strike right down the middle that the game absolutely needed. While Participant 4 called outside of his primary and may have been correct, he came to the realization that this was not a train wreck early in the game. This assessment and seeing the play on video reinforced this concept.

A third play involved an official correctly calling a foul outside of their PCA to assist their partner who was not in the optimal position on the court to see the play. The foul occurred on the edge of the center’s primary, on the outer edge of the free throw lane line. After showing the play, the center official was given the first opportunity to state why he did not call a foul on this play and he said:

If I was lead, I probably would have called it as the center but as the center [official] with a right handed shooter, I couldn’t truly see what happened. In real time, I saw the defender get close but I couldn’t really tell if he got the ball or arm so I didn’t blow my whistle. (Participant 22, Focus Group 1)
The other non-calling official added, “As soon as I saw him call it from lead, I was like, oh, that’s a foul” (Participant 10, Focus Group 1). While there was follow-up dialogue about improving the center official’s positioning by taking a few more steps down closer to the free throw line to be positioned underneath the shooter, the key takeaway should be the official’s correct call from outside of his PCA. Even though the play occurred in the center official’s PCA, the trail and lead on the other side of the court had a more open look on this play and effectively refereed where the center official could not. The lead official correctly called the foul on this play and was complimented on his courage to assist his partner and do what was best for the game. Inexperienced officials are often hesitant to call outside of their PCAs, so justifying why this call was appropriate should help increase his confidence to officiate plays outside of his PCA in future games.

The last PCA play that was worth discussing was a blatant, missed traveling violation. After watching the play on video, the official whose PCA the travel transpired in was asked why he didn’t call the violation. He responded by saying, “So the guy he’s defending right now rolls to the basket, and while I’m watching him, I’m blocked out and can’t really see the travel from lead” (Focus Group 1, Participant 10). After listening to the lead official’s perspective, one of the other officials added:

So, I have been told when refereeing over the summer with a lot older refs and they would get angry if I called something in their area or in front of them so I kind of learned to stick with my zone. I called outside of my area one time and the older ref said that ‘hey I like your call but it’s in MY zone. Try to stick to your zone. It’s my area and I’ll take the heat if I miss a call.’ So ever since then I just stayed in my zone because at the end of the day, I feel like it won’t hurt me because if a player or coach complains to me, I’ll just
say it wasn’t in my zone or I didn’t have a good look at it. In the referee world, I played my role on this. (Participant 21, Focus Group 1)

While hearing this perspective was helpful in understanding why he didn’t call the travel that occurred outside of his PCA, this veteran official’s advice has negatively altered this intramural official’s perspective on how to officiate. This old-school philosophy is not what the current generation of sports official are being taught in today’s trainings. While veteran officials can be valuable mentors to younger, aspiring officials, they must stay up to date on the current trends of officiating. While PCAs appear to have strict boundaries (Figure 6), plays occur on the borders of these areas and are considered dual coverage areas. When fouls or violations occur on these borders, it is not uncommon for two officials to blow their whistles at the same time.

“Double Whistles”. While having two or even three whistles on the same play may appear confident and reassuring, it is also problematic if the calls are conflicting, or multiple players are involved. Double or triple whistles can affect crew dynamics and cause confusion as to which official of the calling officials should report their foul to the scorer’s table. A worst-case scenario would be one official signaling a blocking foul on the defense, while another official is signaling a player-control foul against the offense. In an NFHS basketball game, this play is nicknamed a blarge and both fouls must be reported to the score table. This type of play can excite coaches, players, and spectators and potentially result in the calling officials’ losing future game assignments if the assignor is notified or a team protests the outcome of a game.

Two separate multiple-whistle scenarios occurred in the observations and both plays were shown on video to the officiating crew. In the first scenario, a foul occurred, and all three officials called an obvious foul and all three officials went to the score table to report the foul. While all three officials discussed and agreed on the call and that the lead official should have
been the official to report it to the scorer’s table, this was a great teaching moment on dead ball officiating. When one official calls and reports a foul, the other two officials must watch the ten players on the court as well as both benches. This moment in time is when provocative or insulting language or gestures may be made by players, or even worse, a physical altercation can take place. Having all three officials reporting to the scorer’s table and no one watching the players could have resulted in a predicament if foul play were to occur. Secondly, the lead official added that he should have been the calling official because “[he was] right there, closest to the play and in my primary. I have all the information if someone complains about the call itself” (Participant 4, Focus Group 4).

A similar play occurred in another game involving two officials. Similarly, the two calling officials both come to the table and report the same foul on the play. Oddly enough, both of these officials appear to make eye contact with each other on tape and continue their reporting, which garnered an audible laugh from the crew. It was almost as if both officials knew that this dual report was wrong but neither was confident enough to defer to or politely wave the other partner off in this sequence. This video generated a conversation about why the official from the PCA where the foul occurred in should be the one reporting this foul to the table. Moving on from double whistles, the next focus will be out-of-bounds plays.

**Out of Bounds Assists.** Out-of-bounds calls can be some of the most difficult decisions for officials in the sport of basketball and often require a partner official to assist by either overturning or re-affirming the initial call on the court. These calls can be extremely difficult to get correct because it is typically never the intention of a player to allow for the ball to go out of bounds and these violations happen in a split-second. Often times passes are thrown from outside an official’s PCA, or there are multiple player vying for position to secure possession on a pass
or a rebound. Professional-level and higher-level NCAA basketball in the United States use instant replay for clarification on the plays while lower levels such as high school or intramural sports rely on the officials to do their best to get the call right. Often times this requires all three of the officials to get together and try to re-create the pieces of the play to come to the best possible solution. In the opening segment of each focus group, I began the conversation asking the officials if there were any particular plays that stood out to them or rules questions they needed clarification on prior to video review. One official mentioned out-of-bounds plays on the first night of the season by specifically describing, “certain scenarios when it’s like a loose ball and everyone is trying to grab the ball, then it goes out of bounds, then you gotta try to communicate with the other referees whose ball it is” (Participant 2, Focus Group 1). While this type of scenario may sound straightforward, there are always a handful of close out-of-bounds plays throughout every game. The lead and center officials are responsible for a single out-of-bounds line, each while the trail official is technically responsible for three lines (division line, end line, and their sideline). The frequency of this issue allowed me to have several examples to discuss with the intramural officiating crews.

In the first play of interest, the lead official positioned along the endline almost tripped over a spectator sitting on the floor when he was moving to get into a better position. At this exact split-second the ball went out of bounds and the lead official awarded the ball to the incorrect team. After a bit of confusion, his partner came towards him, they had a brief discussion and changed the call. When asked about this play, the lead official stated, “I don’t know why but after I focused my attention on the guy that I almost tripped over. I lost complete thought on this play so I was glad that [P6] came in to tell me what he saw” (Participant 4, Focus Group 2). As a follow-up, P6 then explained why he felt the need to overturn the call, “From
where I was at, it seemed like a pretty easy call and the players looked at me to help [P4] out” (Participant 6, Focus Group 2). This official’s mental focus to have the necessary information on a play outside of his PCA and be aware of player’s reactions gained the crew credibility and a greater sense of trust from the players. Sometimes it is easier for an official to ignore these plays outside of their PCA but it takes courage to do what is right for the game. As a final comment on this play, the official who overturned the call said, “It’s better to get together and fix the call. Whichever referee thinks they have the correct answer really needs to go with their gut and be confident on the call” (Participant 6, Focus Group 2). This mindset is necessary for all officials to be firm and self-confident on the court.

Another interesting out of bounds play occurred in this same game at the other end of the court. The ball went out of bounds on the endline, and both the lead and trail officials were confused as to who last touched the ball. The third official who was farthest away from the play physically pointed in one direction while the trail and lead official got together to discuss. When asked what each official saw on the play, the lead official stated, “I saw, like, three different feet, and I was trying to figure out who it went out of bounds on. That’s why I looked over at [P4] first and then looked over at [P31]” (Participant 6, Focus Group 2). As previously mentioned, out-of-bounds plays can be extremely difficult and a second or even third perspective from a partner official is often necessary to get the call right. The center official explained his viewpoint of the play by stating:

It seemed like you guys were both confused. I figured that I saw a knee hit the ball and I thought I guess I’ll just make the call and I pointed. BUT I probably should have just went over to the both of you guys. I was [the] center judge on this specific play and that’s
why I thought I had the perfect view because from behind it looked like it was purple hitting the ball out. (Participant 31, Focus Group 2)

Sometimes the official who is farthest away from the out-of-bounds line has the best viewpoint as to which team touched the ball last. This official should physically walk over and huddle up with their partners to discuss the ruling as opposed to just pointing a certain direction from across the court. An official signaling one direction without any conversation with their two partners can cause unnecessary player reactions, which an officiating crew attempts to avoid when possible. For any official, accurately ruling out-of-bounds on close plays in real time is an extremely difficult task. The next theme will focus on official’s decision-making after watching select plays on video.

**Reflections on Decision-Making**

With Sub-Question 2, I sought to examine *how do intramural sports officials respond when given the opportunity to reflect on their performance?* While video review is a great way to confirm whether a call on the court was correct or incorrect, it also provides an excellent opportunity for officials to reflect on these calls. Officials were able to speak about what they were visually focused on during the play, whether they were confident in their call in the moment, and other general thoughts about the play or game.

During the focus group interviews, the videos were shown in this order: correct, incorrect, gray, and correct. However, the participants were unaware of this organization when watching the video clips. These prepared questions, paired with specific video clips, opened up the discussion for each intramural sports official to self-reflect on what they saw on film. We started with correct calls to potentially help officials feel more comfortable and confident reflecting on a play that they called correctly versus a tougher incorrect or gray call.
Correct Call

Correct calls are not always simple and straightforward. Even though an official may make a correct call on the court, players or spectators may disagree or question the call in real time. Video review is an excellent opportunity for positive reinforcement on tough plays that an official called correctly. The first play of note was a “block/charge” play, which has been identified as one of the toughest calls in the sport of basketball. The official must determine whether or not the defender establishes a legal guarding position (LGP) to stop the offensive player from going in a certain direction. If the defender establishes a LGP, and contact occurs, a player-control foul is ruled, more commonly known as a charge. If the defender does not establish a legal guarding position and contact occurs, then it is a blocking foul.

The first play of discussion is a correctly called blocking foul by the lead official. Interestingly enough, the official brought up this play in the opening segment of the focus groups, before any plays were shown to the officiating crew. When asked why he brought this play up specifically, the official responded:

I bring it up because the player was complaining to me about it, and I really want to see it, especially on the video, because I called a foul but take like 2 seconds to process what exactly I want to call, and I went block. (Participant 4, Focus Group 4)

After watching the play on video twice and confirming that the call was clearly correct, I asked the official why he questioned himself on this play. He answered:

I did [question myself] because it took me a second to think, OK, where was the defender at point A, and where did he move to for point B, and is he still moving from A to B? And after watching the tape, he clearly is still moving. That one step with the left foot has him guilty. That’s all it takes. And then he kind of flops at the end to help sell it. So,
watch his left foot. He steps up, then BOOM; right there, he moves it. Block. If he doesn’t move his left foot and stays there to absorb the contact, then I’m probably calling a charge. (Participant 4, Focus Group 4)

There is clear complexity with block/charge plays. Many variables go into this ruling, but this official showed a complete understanding of LGP in his reflection by explaining why the defender was not legal when the contact occurred. Taking an extra two seconds to process this play, the flop at the end of the play and the player complaining made this official second-guess his call in real-time. Instead of continuing to question his decision, video review provided an outlet to confirm what the official may have seen or potentially missed on the court.

Next, I will discuss two similar plays that resulted in no foul call from the officiating crew. When observing games, sometimes the plays that can really stand out are the non-calls as they show the officials are patient in their play-calling and not just blowing their whistle at every instance of contact. Just because there is a player on the floor, or it may look ugly to the untrained eye, this does not always constitute a necessary foul call.

In the first play of interest, the offensive player drove to the basket, initiated contact with a defender, and then fell to the floor. I asked the officiating crew to consider what would be the best decision for the game after seeing the play on video twice. They were able to piece together critical aspects of the play and come to a final agreement through discussion:

Participant 4: So it’s gotta be either a flopping call which we don’t have here in intramurals, or probably a no-call. I don’t think that we can go with a charge there.

Participant 6: So he jumps into mid-air.

Participant 31: Definitely no-call because he like jumped and misses the guy driving, then flops, so I’m like, I got nothing here. It was kind of an embarrassing play on his part.
Participant 4: I love the no-call. I can’t really make a case for anything else here.

Participant 6: I definitely like the no-call. It’s just the way that he jumped into the offensive player to try and draw the contact. Really, I might have went block because I think it was enough contact to alter the offensive player’s pass.

Participant 4: Yeah, I think you can go a block or anything else other than charge on this play.

Participant 6: Yes, because he runs into the offensive player here, and once he’s in midair like that, it probably needs a call.

Participant 31: I’m just so glad that I didn’t call this a charge. (Focus Group 4)

The entire officiating crew laughed after the final comment on the play after their reflections. The back-and-forth dialogue helped confirm that all three saw the same thing as the offensive player attempted to fool the referees by flopping, and no whistle was needed on this play. The officiating crew also spoke about the possible calls that could have been made, specifically block, charge, or no-call. Reflecting on why one specific call would be the best option helps officials’ decision-making on future plays. Sometimes the best decision by officials is not to blow their whistle and to instead let the play continue uninterrupted.

The second example of a correctly ruled no-call occurred on a drive to the basket. There was a steal on one end of the court and incidental contact by the defender. When asked to process this play, the crew stated:

Participant 31: There is a little bit of a bump but [the defender] is kind of straight up too. [The defender] does cut him off, but his hands are straight up but he takes an unnecessary route to make that contact there. But I just didn’t see this as an aggressive enough bump to warrant a foul call. After watching it, yeah – I’m fine with a no-call here.
Participant 6: Hands up, no heavy contact that takes him down or really changes the angle, so I think it was a good no-call as well.

Participant 4: I’d say if his hands were in a different position, then it’d probably be a foul. There is just a lot of momentum on turnovers, too, and he’s not really affecting the guy on offense now.

Participant 6: I agree. If he would have been swinging his arms down, then it’d be a much different story.

Participant 31: Yeah, so it’s just a subtle little bump that doesn’t really affect him much. Again, similar to the last no-call play of interest, the crew pieced together smaller bits of information and processed exactly what contact occurred and how it affected the ballhandler. While there was a consensus that some contact occurred on the play, it wasn’t enough to warrant a foul call. Being able to discern whether contact is incidental or illegal can be the difference between a good official and a great official, so seeing plays similar to this and coming to the agreement that the contact does not warrant a foul should help the development of these officials.

Lastly, there were three separate plays where the officiating crew called a foul, and they openly described why they called the foul. In the first example, there was a drive to the basket, and the lead official called a blocking foul. After seeing the play on tape, he was asked if he thought his call was correct and if he could talk us through why he perceived that a foul call was needed. He responded:

[My call was] correct. I don’t think the defensive player really gave the offensive player much room to really comfortably land. He kind of bumps him with his chest, and even though his hands were straight up, which he is making a case for, his lower body totally
impedes his ability to get to the basket, at least from what I saw (Participant 4, Focus Group 4).

Both partner officials nodded in agreement as this confirmed his reasoning for the foul call and summarized precisely what the defender did wrong to warrant the foul. The official focused on the defender’s entire body and the entirety of the play. This is a challenging play for inexperienced officials as it is easy to focus solely on the defender’s hands being straight up and not officiate their lower body. The official should watch the shooter land safely after shooting the ball and call a foul if necessary, but many inexperienced officials will follow the flight of the ball and not process all of the information on this play.

The next play was the first foul call of a fraternity league game during the second week of the season. Earlier in the game management section, I spent time dissecting conversations around “setting the tone” early in the game and the importance of calling fouls to control the game. When asked about the play, the calling official correctly called the foul but receives some pushback from the offending player. I asked the official what he saw in this play, and he responded by saying:

Participant 6: Oh, that’s a foul. He ran right into him and initiated the contact.

Researcher: But the defender had his hands straight up.

Participant 6: It’s the way that he is driving in.

Participant 4: He took an aggressive angle and cuts him off. He goes away from the paint and purposely bumps into him here.

Participant 6: So he’s saying the same case that you are saying. He’s saying I have my hands straight up; how is this a foul? (Focus Group 4)
I played devil’s advocate and took the side of the fouling player’s perspective, that he had his hands straight up in an attempt to prompt additional conversation. This forced the two officials to justify why this met the criteria for a foul to be called and, ultimately, how they would respond to the player or coach in this situation. While it is an accomplishment to call the foul correctly, it is another skill to verbally explain what you called in the heat of the moment. Taking extra time to reflect on why an official called a foul can assist them in communication on the court in their next game.

The last play was a relatively obvious foul call, but I want to focus on how the officiating crew described the foul. There was a double whistle on this play from both lead and center, and when asked what they saw, they responded:

Participant 4: The player just went straight down, went into his motion, and gets hit, so I said, yeah, that’s a foul.

Participant 6: For me, it was just the way that he was like chopping down.

Participant 4: Yes, the way that he followed through with that chopping motion told me that was a foul (Focus Group 4).

These two officials were able to correctly distinguish that this “chopping” down movement is a foul when contact was made. New officials should aim to establish playing-calling or decision-making guidelines to increase their consistency and accuracy of play-calling on the court. The next section will focus on gray calls for discussion, transitioning away from correct calls. In gray plays, either answer could be defendable, and video review can help officials view the play from multiple perspectives.
Gray Call

While increasing an official’s confidence by validating correct calls is important, gray plays can create a meaningful discussion as to why a call could be made in favor of either team. For example, without manipulating the game, officials often use factors such as time remaining, score, team and personal foul count, reference to similar plays that occurred earlier in the game, and which team has the alternating possession arrow in their favor.

The first play shown in a video review session involved an extremely physical drive to the basket involving multiple defenders. When asked why the officials did not call any fouls on this play, the lead official responded by saying:

So I didn’t call it because he made [the field goal], and his team was winning, but I definitely do think there was a foul three or four times before that. I also just felt like because we let the other fouls go, I don’t want to really penalize them with an ‘and 1’ because they might have wanted the earlier foul. (Participant 31, Focus Group 4)

This response was fascinating for multiple reasons. First and foremost, the scoring team was already ahead, and Participant 31 did not want to call a “touch” foul on this play, which is a logical mentality when processing this play. Secondly, there is a bit of anxiety or hesitation to call a foul after earlier fouls haven’t been called by the officiating crew on the same play. Third, calling a foul here may have resulted in player complaints that the officials were inconsistent, so again, I understood his rationale. Lastly, scoring an and one against a team down by twenty-two points is never an ideal call as it adds insult to injury and could exacerbate the losing team’s demeanor. While initially, I wanted to grade this play as an incorrect call, I felt it fit under gray more closely based on the officials’ response. Watching video clips is extremely helpful because
even though the call may seem black and white, so many other variables can be going through the officials’ thought process. It helps to have this additional perspective when reviewing video.

The second play of interest was a jump shot that occurred on the borderline of the trail and center officials’ PCAs. The offensive player awkwardly attempts a three-point field goal and falls to the ground. Neither official blew their whistle to call a foul, so I asked the trail and center officials for their opinions on this play.

Participant 6: For me, it’s the way that he double-clutched that throws me off.

Participant 31: Yeah, same here.

Researcher: Ok, so who’s call should this be if we do have a whistle here? [Trail or Center?] 

P31: I really don’t know.

P6: He goes to shoot at the exact equilibrium of P4 and myself. So it’s like, from my end, it looks like a double clutch, but P4 can probably see a totally different thing from the lead, so I feel like it could be either one of our calls here.

P4: So it looked like a good contest from the defense to me, the defender’s arm is up, and to me, it never comes down. It’s definitely not a malicious swat down on the ball or arm like we see sometimes. If I saw something more like that, then I probably would have called that, but in my opinion, he kind of just floats with the shooter. They both go in the air at the same time, so if I had to make the call again, I’d probably stay with the no-call.

Researcher: Good analysis. Center official – what are your thoughts? Would you stay with the no-call?

P6: I’m staying with the no-call because the offensive player affects his own shot by double clutching. There’s not much, if any, contact to affect the shot from the defender;
even when he swats down, he misses everything, and there is no contact there either. In conclusion, it was a really good contest, and the shooter made his own decision to shoot it differently because the defender was in a good position. (Focus Group 4)

When analyzing this discussion, Participant 31’s response that he didn’t know whose call this should be was problematic. First, an official must be able to determine whether or not this is their play to call or their partner’s play to call. Because Participant 31 did not know which official’s PCA this call was in, he put the crew in danger because another official will likely have to call outside of their PCA for certain plays. Dual-coverage area plays are tough to officiate, but one of the officials needs to take ownership for the good of the game. Lastly, I really enjoyed the officials’ rationale for why this play was not called a foul in real-time. By starting each session with a correct call and transitioning to a gray play, I hoped to have developed a sense of trust within the officiating crew to have an honest and vulnerable conversation around incorrect calls.

**Incorrect Call**

Officials do everything possible to avoid incorrect calls in their game, but these calls happen and can be a great learning opportunity for officials at all levels. First, many examples of incorrect calls earlier in this chapter due to the intramural officials not understanding the playing rules and regulations. Next, I will examine three instances of incorrect calls and the officials’ reflections on what factors led to getting the call wrong.

The first play of interest was a missed traveling violation. The crew was shown the video once, and asked whether the ballhandler travels before beginning his dribble. After an extended silence, Participant 31 responded “it’s close” (Focus Group 4). In order to generate a more in-depth conversation, I asked the crew which foot is the dribbler’s pivot foot. Participant 31 replied again, saying, “Left [foot]” (Focus Group 4). After identifying the left foot as the pivot foot, we
watched the play again, and all three officials laughed in disbelief. As the officials were focused on the pivot foot, the traveling violation now emerged as overtly obvious. I communicated to the officials that travels are not easy plays to get right, but we need to establish a routine of identifying a dribbler’s pivot foot early. Again, an official chimed in, “I just didn’t see that in real-time or the first time we watched in regular speed on tape. There is so much going on so quickly” (Participant 31, Focus Group 4).

The three officials’ laughter at how obvious the travel appeared to be on the tape once the pivot foot was identified was encouraging. This reaction showed that they knew what a travel looked like but struggled to initially identify it in real-time or when shown the video for the first time. Travel violations can occur on virtually every possession of the game, so officials must be able to identify a travel in their games. Missed travel calls can often lead to points scored or fouls on the defense team, which can, in turn, frustrate players, coaches, and spectators.

Missing a foul may be worse than missing a travel because of the severity of the contact and potential for injury. The next play of the discussion was a missed foul on a rebound. A three-point field goal was attempted, and multiple players were battling for positioning on the rebound. One player was elbowed in the nose, which resulted in blood pouring onto the court. The game needed to be paused for the injury to be treated and the blood on the court to be properly cleaned. This play occurred in the lead official’s PCA, so I asked him what he saw on this play and if he called a foul. He responded, “I wasn’t paying attention to the rebound; I was looking at the three-point shot attempt. I did not call anything. I just saw blood, and I pretty much froze up” (Focus Group 2, Participant 6). We then discussed the importance of refereeing your primary area of coverage so that if plays like this occur, we have all the necessary information to know why he is bleeding. The lead official added:
I would definitely feel like I watch the game sometimes. I zone out and start to think as like I’m a player or a spectator. When I’m refereeing – I watch the game more than I have to get back into that notion that I am here to referee. I have to see what’s going on outside of the basketball realm outside of the spectator/player point of view and do it as a ref watching for illegal motion or illegal contact and things of that sort. It happens, but for me – it’s how do I fix it, and I do think I come to that sense of fixing it when I get out of the zone. It usually just kind of flows back into the game. I realize it in the moment, and then I go back to watching player movements, rebounding, and all that stuff. It’s a natural flow. It’s not really a specific theme. I just catch myself while in the moment and then snap out of it to get back to the referee perspective where I’m not focused on watching the ball necessarily but watching how players move and different levels of contact, so I think it’s more in the moment type reactions or tendencies (Participant 6, Focus Group 2).

I appreciated this in-depth explanation as to why Participant 6 did not call a foul on this play. The issue was not solely that he was watching a three-point field goal attempt, but it was much deeper in the sense that he watches the game as a player or spectator and often follows the ball. While this may not be spoken about as frequently as we might hope, this is an issue with many newer, inexperienced officials. Officials must develop a habit of ‘self-talk’ to aid their concentration on specific plays.

The final gray play for discussion is a complicated and ugly play that resulted in an incorrectly-called rebounding foul. Again, the many moving parts of this play increased the difficulty of getting this call correct. The lead official called a foul on Purple #54 when the foul
should have been called against White #15. When asked why he called the foul on Purple #54, the following conversation ensued:

Participant 22: I was unsure because White #15 didn’t have anywhere to land after he jumped up for the rebound, so I called it on Purple #54. I didn’t know if that would have been an “over the back” foul? That’s where I was kind of confused.

(Play was shown again)

Researcher: And who did you call the foul on? Let me ask you again, what do you think #54 did wrong?

Participant 22: Well, I was thinking this was because he had nowhere to actually land. I didn’t know if that was allowed or a foul… As soon as I called it, I said ‘damn, I don’t know here..’ it was like I knew something was wrong. I just wasn’t completely sure”

(Focus Group 1)

In further analysis of this official’s reflection, I was pleased that he focused on his PCA and correctly identified that a foul had occurred. Physical plays around the basket need whistles to keep the game under control. The shortcoming was that he incorrectly decided which player committed the foul and what exactly happened. Rebounding plays are tough to officiate as the players (and officials) do not know where the ball is going on a missed field goal attempt.

Therefore, it is important for officials to watch the players in their PCA for as long as possible so that they can gather all of the necessary information to make the correct call. Next, I will examine the officials’ self-reflection on their performance at the conclusion of each video review. An official must self-reflect on their performance and be honest with themselves if they wish to improve their abilities.
Officials’ Self-Reflection on Performance During Video Review

In Sub-Question #3, I sought to examine *in what ways did intramural basketball officials report that watching themselves on videotape helped improve their officiating performance?* In order to capture their self-reflection, I asked officials to share their perspectives on twelve or more plays during the post-game focus groups. Kolb’s Experiential Learning Theory (1984) posited that individuals learn best by making sense of experiences. Experiential learning is cyclical and takes place in four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). All four stages of the experiential learning cycle occurred and were documented during this study.

The concrete, real-time, physical experience of officiating a basketball game is the first stage in this cycle. Following the game, the video review and semi-structured interview allowed the participants to engage in reflective observation, the second stage of the cycle. The officials reflected on their experiences while watching their performance from a different perspective on video, with the ability to rewind sequences. This reflection allowed officials to acquire perspective and knowledge around officiating. Kolb (1984) stated that it is critical to create opportunities for experience-based learning and to provide time and space to encourage reflection. At the conclusion of each of the post-game focus groups, intramural officials answered scripted, self-reflective questions about their performance on the court. Their responses were categorized into the three sub-themes: mental takeaways, confidence, and physical takeaways.

*Mental Takeaways*

Experiential learning is successful when the learner can use reflections to decode and generalize abstract concepts (Kolb, 1984). Abstract conceptualization, which is the third stage in
the experiential leaning cycle (ELT), proclaims that in order to understand problems or situations, learners use theories, logic, and ideas, instead of feelings (Kolb, 1984). While non-referees may think that certain occurrences during a basketball game look, feel, or sound like a foul, referees know that written rules and regulations govern the sport.

Intramural officials noted that video review provides an external perspective and allows officials to see the entire court as opposed to their PCA, roughly one-third of the court. On the first night of video review, one official described “some of the calls, as you can see with the bird’s eye view, are different than what I see on the court” (Participant 22, Focus Group 1). The added perspective of video review supplemented what an official could see during any given play, as officials typically have a limited view. In this same conversation, another official stated, “the film definitely helps. 100%. Definitely helps with seeing your positioning and finding out that I am too far up in the center position. I’m not even aware or thinking about that in the game” (Participant 10, Focus Group 1). The broad, overall view of the game shown in the video review allowed officials to assess and adjust their on-court positioning, especially when a foul or violation occurs.

In addition, this additional perspective encouraged officials to ask rule-based questions after video review, as they had all the information available to make the correct ruling. Another official noted that after re-watching everything on film:

[My takeaway is], having a strategy of how to get away from ball watching and seeing the game from a player’s perspective and having the mentality of I’m a referee. I shouldn’t be watching the game as a player or this or that. I should be judging whether or not the contact is legal or illegal. (Participant 6, Focus Group 2)
If this official had not participated in video review to gain extra perspective, he may not have made the mental transition from player to referee. Gaining perspective from video review allowed the official to improve his practice as a referee. When sports officials review their game film, they abstractly conceptualize or think what they will do differently in their next game assignment, which is the fourth and final stage of ELT, active experimentation (Kolb, 1984). 

Self-reflection after video review can help boost officials’ confidence as it re-affirms correct calls but it can also be challenging to their confidence when revising incorrect calls. Ultimately, it is up to the individual sports official to take in the constructive criticism and have the desire to want to improve their officiating abilities.

*Self-Confidence*

Self-confidence is a feeling of trust in one’s abilities, qualities, and judgment. A strong sense of self-confidence entails an internal belief that one has respect from others and can do things well. All six intramural officials who participated in the post-game focus groups noted an increase in their confidence or the need to be more confident in future games after the video review sessions. An increase in confidence should result in increased ability to communicate and deliver messages to players and coaches (Cunningham et al., 2014). One participant stated:

> I can always look to be more confident on the court. If you sound and look confident, then people are going to believe you. If I had more confidence, I think more people would respect me and stuff like that. (Participant 31, Focus Group 3)

This participant explained that he feels his lack of self-confidence contributes to the way players and other referees view him. A lack of self-confidence portrays weakness to participants within the game of basketball and may cause poor sportsmanship directed towards officials. Therefore, it is imperative for sports officials to build confidence.
Additionally, multiple officials expressed that they were “way more confident” in their Week 2 officiating after completing the video review in Week 1 (Participants 10 & 21, Focus Group 3, and Participants 4 & 31, Focus Group 4). These participants were able to build self-confidence using Bandura’s (1977a) four sources of self-efficacy from Week 1 to Week 2: mastery experiences, social modeling, social persuasion, and psychological responses. Albert Bandura identified these sources as part of his definition of self-efficacy: an individual’s belief in their own ability to exercise control over functioning and events that affect their lives. One participant expressed, “[I] felt much more confident after the last video review that we did. I think I learned a little bit more through that interaction, and it definitely rolled over to this week” (Participant 10, Focus Group 3). It is clear that completing the self-reflection during video review helps build an official’s self-confidence on the court. However, when individuals have mastery experiences and perform tasks successfully, they develop efficacy more effectively (Bandura, 1977a). Each and every game that an individual referees helps increase their confidence for the next game. Seeing more plays and making decisions on the court builds muscle memory and provides an environment to try new things and work on different hand signals or positioning. Another participant stated that “I feel way more confident in my calls and everything. Just even watching and hearing my partners’ calls too is helping me get better and better and build chemistry between us three” (Participant 31, Focus Group 4). Individuals seeing people like themselves succeed raised their belief that they also possess the capabilities to master comparable activities when given the same opportunity (Bandura, 1977a). Similarly, some individuals feel that watching themselves perform well increases confidence. A third participant noted:
Watching film, just helps me instill more confidence in myself out on the court. Yes, we went over some bad, incorrect calls but there was a lot of good things and calls that we got right that we should feel good about as a crew. I do think it helps to see yourself doing a good job on camera even if others don’t necessarily feel the same way. It just gives me more confidence for future games. (Participant 4, Focus Group 4)

This participant claims that the benefits of watching video include seeing himself succeed and learning from his mistakes, therefore increasing confidence. Individuals often require persuasion in order to believe that they possess the skills and capabilities necessary for success. Receiving verbal encouragement from others helps people overcome self-doubt and instead focus on giving their best effort to the task at hand (Bandura, 1977a). Lastly, I find it important to note that the fraternity league was specifically described by one participant as “definitely the best environment for training and development of your confidence because it forces you to develop that confidence to stand up to the fraternity boys” (Participant 6, Focus Group 2). A partner official also emphasized this comment by saying:

Frat games are hands down the most difficult games because they don’t stop talking and complaining to the referees and they bring a large audience of spectators too. The audience is a key factor when it comes to refereeing because they chirp a lot too even though they are not playing and ask questions that aren’t always easy to answer (Participant 6, Focus Group 4).

This added sense of the difficulty of fraternity league games will accelerate a sports official’s self-confidence. Because the fraternity league is constituted of mostly upperclassmen, and often includes aggressive players, newer officials get a lot of experience managing all aspects including sportsmanship, communication, and physical play during these games. Experience
with these types of games increases confidence because they prepare officials well for future games.

**Physical Takeaways**

In addition to mental takeaways, video review allowed officials the space to watch and reflect on their physical movements on the court. For all but one of the six intramural officials, this was their first time seeing themselves officiate on video. The camera specifically zoomed in on calling officials and recorded their entire cadence to the scorer’s table to report their foul calls. After the video review was complete, one official reflected that he “can do a little bit better, be more enthusiastic about the calls and reporting [the fouls] better” (Participant 22, Focus Group 1). Without seeing himself on tape, it would have been very difficult to come to this self-reflection, especially this early in his officiating career. Many newer officials are only concerned with their play-calling accuracy; however, this official’s experience watching video made him conclude that he should work on his physical signals as well.

A second and simple physical takeaway from one official was simply taking the whistle out of his mouth to report his foul call. He described this experience as:

Well, I need to take my whistle out when I am talking to the score table. And this is the problem, I catch myself doing it all the time, where I blow my whistle but don’t do the hand motion because it’s not a natural thing to me yet. Yes, I have done a full season of basketball refereeing already but it’s still not a natural hand motion for me. But outside of that, when I’m going to the score table, I need to take my whistle out of my mouth when I’m talking because they couldn’t even understand what I was talking about. But the majority of the time, I think that just trying to process everything, getting the player’s number who fouled, putting your hand up, and being able to explain it to the table is a
complicated process. Again, just being able to verbally and physically show definitely helps (Participant 6, Focus Group 2).

Seeing himself on video helped this official come to the realization that he needs to make an adjustment so the scorer’s table can understand his reporting. Observing the scorekeeper’s confused body language and the physical whistle still in his mouth justified the need to remove the whistle before speaking.

While video review often leads to an official being their own worst critic, it also provides positive reinforcement as officials or others can acknowledge things they did well, such as making correct calls. Another official made a strong call, and complimented himself after watching it on tape, “I score it, show the hold, 1 shot. Pretty solid!” (Participant 22, Focus Group 3). This response created a lighter moment as the entire focus group laughed at how passionate Participant 22 was in his reflection. It is necessary to get officials together to have this positive dialogue, share their personalities, and foster camaraderie, and community among officials.

Small, discreet details also come to realization when reviewing video. By watching his signals on video, another official realized that “when I blow my whistle, I don’t have that natural hand motion that I need to have yet but I think that with time will come to me” (Participant 6, Focus Group 2). While blowing the whistle is extremely important so the players know to stop play and the timekeeper knows to stop the clock, the hand signals are also extremely important for the partner officials, players, coaches and spectators. For example, experienced coaches, referees, and players know that a raised hand with a closed fist signals a foul, while a raised hand with an open fist signals a violation. Even though this difference is small and subtle, failure to use proper hand signals can create confusion among the players and partner officials.
New officials may have difficulties adapting to these differences in hand signals. One official stated that “he didn’t realize what his hand signals looked like from an outsider perspective until he watched the tape. Seeing what happened from last week to this week has been a big improvement for me personally” (Participant 4, Focus Group 4). After self-reflecting on their use of hand signals during the first video review, participants looked more closely at these signals in the following week’s video review. This was done intentionally by the researcher to emphasize the importance of using proper mechanics on the court. Overall, the officials’ physical takeaways from watching themselves on video included reflection and improvement regarding their cadence to the scorer’s table when reporting fouls, hand signals, whistle-blowing, and on-court positioning. Beyond these physical takeaways, the mental takeaways of increased self-confidence and knowledge of the playing rules and regulations further show how watching video can improve new officials’ performance in future games.

**Summary**

In this chapter, I triangulated data from survey responses, game observations, and semi-structured focus groups. From the quantitative data that I collected during Phase I of the study, I was able to provide an overview of participants’ knowledge of the playing rules and regulations in the sport of basketball. Upon further analysis, I was able to determine that there was a statistically significant difference ($P < .05$) in the mean assessment scores for all participants between the pre- ($M = 15.41, SD = 3.63$) and post-tests ($M = 17.00, SD = 4.12$) as shown in Table 4.3.

In Phase II of the study, I collected data from participants through an observation protocol and semi-structured, post-game focus group interviews. Using Dedoose and first and second-cycle coding techniques, multiple themes emerged from the qualitative data: knowledge
of playing rules, game management, reflection on decision-making, and overall takeaways from the video review. Through this case study, I provided an outlet for intramural officials to share their officiating experiences.
Chapter V: Discussion

In this explanatory sequential mixed-methods study, I explored how an intramural sports department trained its intramural basketball officials over four weeks. In Phase I, I used a survey to collect data via pre- and post-tests from 34 intramural officials. Then, in Phase II, I facilitated post-game reflections using an observation protocol and focus group interviews with 6 intramural officials. These findings identified multiple areas for improvement in current intramural training practices. Finally, I used the pre- and post-test, observation protocols, and focus group interviews to triangulate data across multiple instruments.

After the start of training, participants reported a wide range of basketball rule and regulation knowledge, with a statistically significant difference in scores from the pre- (M = 15.41, SD = 3.63) to the post-test (M = 17.00, SD = 4.12) at (P = .003). However, the observation protocol and the officials’ qualitative reflections offered a much more in-depth analysis of participants’ officiating abilities. All six officials who participated in the post-game focus group reported a greater sense of “confidence” after seeing themselves on video. In addition, these participants described other ways that video review positively impacted their development as intramural official.

In this chapter, I will: (a) summarize the study results, (b) describe the integration of the theoretical framework, (c) discuss the quantitative, qualitative, and mixed methods results, (d) acknowledge the limitations of this research, (e) detail the implications within higher education, and (f) recommend a path for improved intramural sports officials training and development for campus recreation professionals.
Summary of the Study

The purpose of this study was to examine the training and development of intramural basketball officials in a university setting. I implemented an explanatory sequential design method (quan → QUAL) to gather pre- and post-test scores in Phase I and followed this with a more in-depth analysis to explain these results in Phase II. Through these two phases, I sought answers to four sub-questions. In Phase I, I used survey methodology (e.g., pre- and post-tests) to answer the following sub-question: In what ways do current intramural sport officiating training practices at a 4-year higher education institution contribute to an officials’ understanding of the playing rules and regulations?

All 34 intramural officials took a pre-test prior to the first night of intramural basketball training. The results of this test provided an understanding of their intramural sports officials’ rule knowledge before they received any formal training from the intramural sports department. After one week of training, all 34 intramural sports officials took a post-test to measure their rule knowledge again.

In Phase II, I incorporated a case study approach (e.g., video reviews and reflections) to answer the following three additional questions:

1. In what ways do intramural basketball officials report that watching themselves on videotape helped improve their officiating performance?

2. How do intramural sports officials respond when given the opportunity to reflect on their officiating performance during a particular intramural basketball game?

3. In what ways can training and video review aid in the post-game reflections of intramural basketball officials?
Phase II involved 6 intramural sports officials randomly selected, given their availability to officiate. They officiated an intramural basketball game, and I observed from the indoor track above. I filmed the intramural basketball game and then replayed the videotape for the intramural officials to analyze in the conference room post-game. The reflections from the focus group interviews provided additional qualitative data, which was coded using a constant comparative method. In the next section, I will summarize the methods and results for this study's quantitative and qualitative phases and provide answers to the four research questions.

In Phase I of this study, I used a survey design to collect data using a pre- and post-test which measured individual rule knowledge of the sport of five-on-five basketball for all consenting intramural officials (N = 34). The pre-test survey data collected included the following information from each participant: name, consent to participate in the survey, gender identity, year(s) experience as an intramural basketball official, basketball officiating certifications held outside of the intramural sports program, attendance at the Spring 2022 5-on-5 basketball training, and highest level of experience playing basketball. All 34 officials took a pre-test prior to the first night of intramural basketball training. Then, after one week of training, all 34 intramural sports officials took a post-test to measure their rule knowledge again. As I detailed in Chapter IV, using a significance threshold of $P < .05$, I was able to determine that there was a statistically significant difference ($P = .003$) in the mean assessment scores for all participants between the pre- ($M = 15.41, SD = 3.63$) and post-tests ($M = 17.00, SD = 4.12$) as shown in Table 4.3. At the conclusion of Phase I, six intramural basketball officials who participated in the case study were randomly selected after confirming their availability to officiate on selected observation dates and times. Of the six participants, all identified as males.
For Phase II, I analyzed these six intramural officials' post-game focus group interview transcripts. These reflections were analyzed through first and second-cycle coding using a constant comparative method. The following themes emerged from this coding technique: knowledge of playing rules, game management, reflection on decision-making, and overall takeaways from the video review. First, it was evident in the video review that intramural officials demonstrated an inconsistent understanding of the following rules: (a) alternating possession, (b) backcourt violations, (c) five-second closely guarded violations, (d) illegal screens, (e) kickball violations, (f) timing rules, and (g) unsportsmanlike conduct official warnings and technical fouls. The second theme identified was game management, which is described as an official’s ability to “run the game”. The primary role of a sports official is to manage gameplay by deciding whether any rules or regulations have been broken and ensuring players’ conduct is fair and safe (Kittel et al., 2021). Unfortunately, reflections showed how intramural officials, at times, lost control of the game through the following sub-themes: (a) not setting the tone, (b) inconsistency, and (c) primary coverage areas.

Officials’ reflected on decision-making as they analyzed correct, incorrect, and grey calls on the court. The officials were able to take something away from each play during the video review, whether it was positive reinforcement through call validation, meaningful discussions around gray or “50-50” calls, or learning opportunities on incorrect calls. After the video review sessions, all six intramural officials who participated in the post-game focus groups noted either an increase in their confidence or the need to be more confident in future games. An official’s increased confidence level could result in an increased ability to communicate and deliver messages to players and coaches (Cunningham et al., 2014). In the next section, I will discuss how my theoretical framework formed the basis for this study and how the intersection of Kolb’s
136 experiential learning theory and Bandura’s (1977b) social learning theory through a community of practice connected to the results.

Application of Theoretical Framework to Findings

In Chapter II, I proposed how that Experiential Learning Theory (ELT) and Social Learning Theory (SLT) informed this study of intramural officials’ training and development through their participation in a community of practice. ELT was apparent in the process of intramural officials’ learning the playing rules, physical experience of officiating games, and video review through continuous cycles of reflections and experimentation. SLT was also evident during the video review as intramural officials saw themselves on film and focused on their partners’ and their own handle signals and positioning. Participants reported that they were more self-aware of how they appeared on film after the first week of observations and used this as motivation to be more enthusiastic during the second week of officiating. In the following sections, I connect these theories to the data I collected in my study and describe how each theory relates to my findings (see Figure 1).
Experiential Learning Theory and Social Learning Theory

Note. The figure above explains the study’s theoretical framework. Experiential learning theory and social learning theory merge in the aspects of abstract conceptualization and motivation. Both theories occur within a community of practice.

**Experiential Learning Theory**

Kolb’s (1984) main principle of ELT was described as “learning is the process whereby knowledge is created through the transformation of experience” (p. 38). Experiential learning theory has four stages: concrete learning, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). Concrete learning and reflective observation occurred in the preseason trainings, while abstract conceptualization and active experimentation occurred in the observation protocol games. The officials’ reflections in their focus group interviews
documented this experiential process. Video review allowed officials to reflect on their experience on the court and to discuss how seeing the play on video may have changed their thinking and ultimately shifted their performance or mindset for their next game.

Almost all literature on sports officiating cites Kolb’s (1984) ELT because physical participation in sports officiating is also an educational process. In order for sports officials to grow and develop, they must actively work games and learn from their mistakes. The intramural officials in this study had the opportunity to see themselves make these mistakes on video and learn from that experience.

**Social Learning Theory**

Similar to ELT, Social Learning Theory (SLT) deems that people learn from each other through observational learning, which results in imitation and modeling (Bandura, 1977b). Bandura (1977b) emphasized the four factors that underlie the modeling process of social learning: attention, retention, reproduction, and motivation.

Video review allowed officials the space to view and reflect on their physical movements on the court. For all but one of the six intramural officials, this was their first time seeing themselves officiate on video. While videotaping the observation protocol games, I deliberately zoomed in on the calling officials and recorded their entire cadence to the scorer’s table to report their foul calls. In the first week of the observation protocol, I intentionally concentrated on questions and comments around the use of proper hand signals and mechanics on the court; this intentionality led to participants looking more closely at their signals in the second week of video review. One official stated that “he didn’t realize what his hand signals looked like from an outsider perspective until he watched the tape. Seeing what happened from last week to this week has been a big improvement for me personally” (Participant 4, Focus Group 4). Even
though officials could only watch themselves on video twice, they reported increased confidence levels in their cadence to the scorer’s table when reporting fouls and with their hand signals, their whistle-blowing, and their on-court positioning.

**Communities of Practice**

Communities of practice are groupings of individuals “who share a passion for something and learn how to do it better as they interact regularly” (Lave & Wenger, 1991). Participation in a community of practice provides additional opportunities for officials to continue to learn and develop. Community of practice members share resources such as experiences, tools for success, and problem solving skills (Grover, 2014). Specifically, intramural officials discussed what they learned from their officiating experience on the court by sharing information from their perspective from watching it on video. The intramural officials were able to learn from the narratives and experiences of others by seeking advice and asking questions in the focus group interview. Although unintended, a sense of community was built between myself and the officials from the time spent together in these focus groups. Officials became more comfortable sharing their perspectives with the larger group. This camaraderie continued outside of the focus group, with the officials sharing controversial calls in NBA games with me via text message. These out-of-classroom or off-court experiences would not have been possible or a part of their learning process if a sense of community was not built in the focus group interviews.

**Summary and Discussion of Results**

The purpose of the study was to examine intramural sports officials’ training, development, and performance within a collegiate intramural sports department. Based upon my
own experience as a campus recreation professional and sports official, I was aware that it is not realistic for intramural officials to learn every rule and regulation within one week or to have a high-level call accuracy in their first two weeks of refereeing. Thus, the goal of the training was to prepare the officials with as much knowledge of basketball officiating as possible in a short amount of time. Three key takeaways resulted from this study regarding: (a) effectiveness of current pre-season training practices, (b) lack of prior knowledge of basketball rules and regulations among new intramural officials, and (c) self-confidence after video review.

**Effectiveness of Current Pre-Season Training Practices**

Within Phase I of the study, 34 participants completed the pre-test prior to the beginning of the first night of intramural basketball officials’ training. Then, they completed the post-test one week later at the conclusion of the training. The pre-test results provided an understanding of their intramural sports officials’ rule knowledge before they received any formal training from the intramural sports department. After one week of training, all 34 intramural sports officials took a post-test to measure their rule knowledge again.

While officials’ attendance at pre-season training showed an increase of 5.29% in the pre-test to post-test scores, the knowledge growth was not as significant as an administrator might have anticipated and wanted after spending four evenings and approximately nine hours with the officials. Without the proper training, nurturing, and support, many problems can quickly surface that frustrate and discourage novice sports officials despite their strong interests (Gaskins et al., 2002). Many intramural sports organizations have difficulties finding and training sports officials at a high level despite this being a main component of their job duties (Walker et al., 2018). Providing highly trained officials creates a safer environment for all participants, leads to an enjoyable experience for all parties involved, creates a positive perception of the program, and
provides accountability when disputes arise (Gaskins et al., 2002). When officials are not effectively trained, they are not only underprepared to officiate games but are often not retained.

After examining the effectiveness of current training practices, the participants’ mean assessment score of 17.00 (56.67%) on the post-test was noteworthy. While the test does not mirror the P.I.A.A. official’s exam, officials are required to receive a minimum passing score of 70% to officiate P.I.A.A.-sanctioned games at the middle or high school level.

While these intramural officials are strategically scheduled to officiate different levels of competition based on their attendance at the training and on-court performances during training sessions, the low post-test scores led me to conclude that not only are these officials inexperienced, but they are underprepared to officiate.

Since NASO began surveying officials in 1976, one statistic has remained consistent, upwards of 70% of new officials leave the profession permanently during their first three years of officiating (Solomon, 2022). In almost any other work environment, losing seven out of ten new hires would lead to significant policy changes, but this problem has remained unaddressed in sports officiating for nearly 50 years. The critical shortage of sports officials is obvious across the nation, and it is time to shift our focus to this statistic and how we prepare these officials for success during their initial seasons. Warner, Tingle, and Kellet (2013) conducted research surrounding the recruitment, retention, and advancement of sports officials and identified three themes that contributed to sports official retention: training/mentoring, problematic social interactions, and the lack of referee community. Warner et al.’s study reinforces the need for effective training practices which can reduce unsporting or problematic interactions on the court. Personally, I would have quit the profession years ago if it was not for mentorship and encouragement from my father, who also officiated. The need for mentorship and the lack of a
referee community will be addressed further in the suggestions for future educational practice section.

An intramural sports department’s success is often measured by the number of teams and participants involved which helps to justify the need for increased student recreation fees, improved facility spaces, or another professional staff or graduate assistants to oversee the program area. However, if we genuinely wish to groom the next generation of officials, then this success should be shifted toward the student development of intramural officials and create a pipeline towards the state and collegiate levels in all sports.

**New Intramural Officials Lack Prior Knowledge of Basketball Rules and Regulations**

The baseline, mean pre-test scores of new intramural officials were low (14.3 out of 30), showing that they did not bring much prior knowledge of basketball rules to the first night of pre-season training. Although new officials did record a slight increase of 1.43 (8.1%) in the mean score from the pre-test, 14.13 (47.10%) to the post-test, 15.56 (51.87%), this was much lower than returning intramural officials. Returning officials recorded a similar increase of 2.37 (7.9%) in the mean score from the pre-test, 16.56 (55.20%), to the post-test, 18.93 (63.10%).

Exactly half of the intramural staff (n = 16) were newly hired during the Fall 2022 semester, and this was their first-time attending basketball officials’ training. It is imperative that sports officials know their sport’s rules and regulations, as lack of rule knowledge and misapplication of the rules can lead to a multitude of problems on the playing field or court and can cause a sports official to lose credibility. For example, if a basketball referee grants possession of the ball to the wrong team after a foul, it costs the opposing team an opportunity to score. When this rule is misapplied, one team is at an unfair advantage while the other team’s players, coaches,
parents, and fans may become enraged at the referee. This entire scenario can be avoided with proper knowledge and application of the rules.

While intramural officials may understand the written rules and regulations on a pre- and post-test or even be able to provide a verbal explanation of the rule and answer questions about the rules, they were not always able to correctly call or apply the rule in real-time. Plessner & Harr (2006) developed a social cognition approach to refereeing in sports by outlining how an official comes to make a final decision through four factors: (a) written rules, (b) physical context, (c) social context, and (d) unwritten rules. Plessner & Harr identified that the knowledge of the written rules is the utmost important factor in decision-making because, without the knowledge of written rules, an official will not be able to master the other three factors: physical context, social context and unwritten rules (Plessner & Harr, 2006). The low mean assessment score on post-tests of 17/30 (56.67%) contributed to the officials’ inability to apply these rules on the court.

Throughout the scrimmages in training and during the first two weeks of the regular season, intramural officials’ application of the rules was inconsistent. In the four games that I observed, the officials struggled to correctly call fouls and violations that occurred in their PCA and often called outside of their PCA, which caused confusion amongst the officiating crew. Secondly, intramural officials had difficulty managing players, especially in fraternity league games. They should have administered multiple unsportsmanlike warning or technical fouls to re-gain control of the game.

Sports officials have an extremely difficult job due to multiple variables of the game or match that they must consider and process prior to making a decision on a ruling. These variables include the game’s speed, the situation’s complexity, the repercussions of their actions,
the number of people (i.e., players, coaches, trainers, spectators) involved in the match, and the often hostile nature of spectators at the sporting event (Guillen & Feltz, 2011). Because officials constantly make difficult decisions, coaches, players, and spectators often criticize them for mistakes (Guillen & Feltz, 2011). Despite the criticism, the same coaches, players, and spectators depend on sports officials to enforce the laws of the game and keep the game safe, fair, and fun. Officials were able to discuss when unsportsmanlike conduct official warnings and technical fouls should have been called during the video review and focus group interviews.

**Self-Confidence After Video Review**

First, it is worth noting that this was the first time that intramural officials participated in video reviews within the intramural sports program at this institution. After the video review sessions, all six intramural officials who participated in the post-game focus groups mentioned either an increase in confidence or the need to be more confident in future games. Sports official development managers and coaches defined preferred characteristics in officials which included being: respectful, professional, empathic with players, approachable, decisive, confident, and resilient (Cunningham et al., 2014). Increased confidence could result in an increased ability to communicate and deliver messages to players and coaches (Cunningham et al., 2014).

Sports officials’ decision-making is constantly under the utmost scrutiny, but sports officials must continue to remain confident in their own abilities. The most effective way of developing a strong sense of efficacy is through mastery experiences (Bandura, 1977a). Officials watched themselves make correct calls on the court during video review and discussed why the call was made in the focus group interviews. Performing a task successfully strengthens an individual’s sense of self-efficacy (Bandura, 1977a). For example, individuals who watched people like themselves succeed increased their belief that they also possess the capabilities to
master comparable activities when given the same opportunity (Bandura, 1977a). Officials’
testimonials showed that their confidence levels were clearly boosted by re-affirming their
officiating crew’s correct calls but were also challenged when revisiting incorrect calls. In
conclusion, officials left the video reviews with a sense of positivity and optimism, even after
games where players or spectators told them they did a poor job.

Limitations

This study was subject to limitations in the areas of methodology, analysis, and
generalization.

Limitations in Methodology

There were multiple limitations to the methodology used in this study, including sample
size, pre- and post-test content, duration of the study, and Phase II participant selection.

Sample Size. Phase I of this study was limited to one institution’s intramural sports
department, and included 34 participants. The 34 intramural officials that participated in Phase I
represented 75.5% of the full staff of 45 intramural officials that I originally solicited to
participate. This sample size was large enough to show a statistically significant difference (.003)
in the mean assessment scores for all participants between the pre- and post-test, as shown in
Table 4.3. Still, it did not show statistically significant differences when divided into the level of
playing and officiating experience subgroups.

While Phase II of this study generated rich qualitative data, only 6 participants were
selected to participate in this phase. This small sample size limited the degree to which the
findings are generalizable to the larger population of intramural sports officials. A group of six
different participants who officiate at another institution who may participate in the same study
could yield different results.
Participant Selection for Phase II. After completing the post-test, Phase II used a case study approach which included 6 randomly selected intramural sports officials, given their availability to officiate, from the original cohort of 34. All six of these randomly selected officials were men. Therefore, future studies should be more deliberate in including in their IRB at least one female official in each crew to gain a different perspective.

I pre-determined the observation game dates and times to be Monday and Tuesday evenings at 7:00 PM, with the post-game focus group interviews following at 8:00 PM. This was an attempt to cause the least amount of interruption in typical intramural staff scheduling. Intramural officials are typically scheduled to officiate three games per night, and two shifts are available. The first shift officiated the 5:00 PM, 6:00 PM, and 7:00 PM games, while the second shift officiated the 8:00 PM, 9:00 PM, and 10:00 PM games. In future studies, I should first examine the participants’ availability to officiate and then purposefully select dates and times that would encompass a more diverse group of officials.

Pre- and Post-Test Content. Both the pre- and post-test were comprised of 30 multi-choice questions pertaining to the National Federation of State High School Associations (NFHS) basketball rules and regulations. No questions on the pre- or post-test were identical but there were similarities as the tests measured rules knowledge before and after the intramural sports officials’ training. In retrospect, I would have chosen to administer identical, randomized order, pre- and post-tests for an exact analysis of which questions were still difficult after the pre-season officials’ training.

Duration of the Study. The data collection took place over 22 days, which included a six-day break over the Thanksgiving holiday. As stated earlier in the sample size limitation, continuing this study through the Spring 2023 semester would have been advantageous.
Administering additional rules knowledge tests as the season progressed (late January, mid-February, and early March) would have demonstrated whether Experiential Learning Theory (ELT) was apparent in sports officiating. Based on the theme of increased confidence after the video review, it would have been thought-provoking to continue the weekly video review through the remainder of the semester and hear the officials’ reflections.

**Limitations in Analysis**

In terms of analysis, a limitation of this study was the observation protocol games. As mentioned above, I pre-determined the observation game dates and times prior to the intramural basketball regular season schedule publication date. Co-recreational (men and women playing together) games were scheduled for Monday evenings, while Fraternity games were played on Tuesday evenings. Both co-recreational games were more leisurely, and the final scores were extremely lop-sided, resulting in a more relaxed atmosphere. These two games provided less content for the focus group interviews when compared to the fraternity league, which was much more competitive. Both fraternity games were overly physical, had numerous fouls, atypical plays and nuances into their games, with one of the games ending in a tie. A more strategic approach in the future would include waiting for the intramural basketball schedule to be published and selecting observation games within the fraternity or high-competition leagues.

**Limitations in Generalization.** This study only examined one institution, which included 34 participants in Phase I and 6 participants in Phase II. Thus, this study is not generalizable beyond these particular intramural officials at this particular research site. However, the conclusions from this study can inform future research and offer a starting foundation for evidence-based intramural sports officials’ training and development across different sports as the results can be considered in relation to sports officiating as a whole.
Suggestions for Future Educational Research

The critical shortage of sports officials has become an increasingly popular topic in recent years, and while there is significant research surrounding the officiating industry as a whole, there is a gap in the literature on intramural sports officials. After conducting this study, I would recommend that sports officiating researchers focus on this target audience to combat the shortage of sport officials. Specifically, more time and effort can be spent researching the long-term analysis of both rules knowledge and video review, the retention rate of intramural officials, and the reasons why intramural officials do not continue refereeing after graduation.

Long-Term Effects of Rule Knowledge and Video Review

Based on the results of this study, I recommend additional research focused on intramural officials’ rule knowledge as the season progresses. Ideally, this research would be conducted from the pre-season training to the conclusion of the championship game, approximately eight weeks in length. My post-test results showed a slight increase in rules knowledge after the training but did not continue through the regular season. By continuing testing, the researcher would gain a greater understanding of whether Experiential Learning Theory (ELT) is evident when it pertains to rules knowledge. In addition to more research on rules knowledge, it would be valuable to conduct research focused on intramural officials’ self-confidence after approximately eight weeks of video reviews. The increase in self-confidence reported after just one video review session was astonishing and should be studied at a greater length.

Retention of Intramural Officials

Based on the extremely discouraging retention rate of intramural officials, with over 70% of new officials quitting after their first three years (Solomon, 2022), it would be helpful to learn more about the retention of officials at the intramural level. While previous studies highlight the
high persistence rates of students employed by campus recreation, there is a gap in research around the persistence rates of intramural officials. It is advantageous to find out whether this retention rate mirrors the 70% who quit within three years at the industry level, and to retrieve qualitative data as to why or why not.

While this was not an explicit focus of my study, institutions need to re-examine the pay rates of intramural officials. The primary role of a sports official is to manage gameplay by deciding whether any rules or regulations have been broken and ensuring players’ conduct is fair and safe (Kittel et al., 2021). Historically, intramural officials are hourly paid, work-study eligible positions that pay approximately minimum wage, while a certified sports official earns a significantly higher rate. Standard game fees for football and basketball officials are between $90-95 per game, while baseball and softball umpires earn around $60-75 (Schofield, 2023). In order to attract skilled and competent professionals, intramural sports departments should re-examine the pay rates of intramural officials even if this means increasing team registration fees or the general recreation fee. Future research should explore this pay discrepancy and the effects that it may have on intramural officials not persisting after their first or second seasons and even the attraction of new skilled people.

**Lack of Officials Continuing to Officiate After Graduation**

According to PIAA statistics as of October 2022, there were only 13,596 registered officials, indicating a 24.28% decrease in total officials from the 17,932 registered officials reported in 2008 (Schofield, 2023). Intramural sports departments employ a sizeable number of officials each academic year. While I do not have statistical data on the number of officials who continue to officiate after graduation, I anticipate this number being relatively low. It would be helpful to collect this statistical data at a regional or national level, and also to collect qualitative
data as to why these officials choose not to pursue an officiating post-graduation. This study is part of a larger call to action to recruit the next generation of sports officials.

**Suggestions for Future Educational Practice**

As I discussed in detail throughout Chapters I and II, collegiate recreational sports departments must recruit and educate the next generation of sports officials to reduce the critical shortage of officials. In this study, intramural officials demonstrated a lack of rules knowledge around the sport of basketball both in the pre- and post-tests as well as the observation protocol. My suggestions for future educational practice will first focus on the intramural sports department and then transition to a larger, institution-wide perspective.

**Revamped Pre-Season Training Curriculum**

The intramural sports department should re-examine and revamp the current pre-season training curriculum during the summer months based on incorrect responses on the pre- and post-tests and qualitative data from the focus group interviews. The mean assessment scores on post-test for all participants were low (17 out of 30), which showed that the pre-season training could be more effective in explaining the rules and regulations.

Secondly, the baseline pre-test scores of new intramural officials were also low (14.3 out of 30), showing that they did not bring much prior knowledge of basketball rules to the first night of pre-season training. Although new officials did record a slight increase of 1.43 (8.1%) in the mean score from the pre-test 14.13 (47.10%), to the post-test 15.56 (51.87%), this was again much lower than returning intramural officials. Returning officials recorded a similar increase of 2.37 (7.9%) in the mean score from the pre-test, 16.56 (55.20%), to the post-test, 18.93 (63.10%). The difference in mean scores leads me to the recommendation that there should be a supplementary pre-training session for these officials to assist them with basic rules knowledge.
and officiating terminology. To take this suggestion even one step further, an introductory preparation session should be held earlier in the academic year to include content on what it means to be an official, and review basic expectations, philosophies, and advice on how to be successful across multiple sport offerings.

**Advanced Training Methods.** The testimonials from the six intramural officials who participated in the video reviews revealed engagement around rules knowledge and increased confidence and should be included in future training and development structures. By continuing observations and video reviews after the first two weeks of the season and through the playoffs, intramural officials could continue to build their self-confidence through asking rules-based questions, reviewing their calls on the court, and improving their cadence to the scorer’s table when reporting fouls, hand signals, whistle-blowing, and on-court positioning.

**Innovative Videos Used in Training.** Many of the videos used with intramural trainings are antiquated and no longer applicable for today’s generation of basketball. Producing new innovative training videos involving key plays from the 2022-2023 NBA or NCAA seasons could create a greater sense of engagement. Controversial calls are often debated between fans after the game but not analyzed in an educational setting with rule-based explanations. Intramural officials could re-watch recent plays which might spark their interest and create meaningful discussions. Another viable option would be to use video from the 2022-2023 intramural season, specifically a fraternity or high-competition championship game. This more recent and relatable video can show the newly hired, inexperienced intramural officials what to expect once the season begins and potentially look for mentorship from the experienced officials shown in the video.
Building Community with Intramural Officials

In the weeks after the conclusion of the focus group interviews, two of the participants initiated a conversation with me regarding controversial calls in the final seconds of NBA games and asked my opinion on these plays. While this was an unintended result of the focus groups, a sense of community was built between myself and these officials. If campus recreation professionals dedicated the extra time commitment to reviewing video with these officials, a greater sense of trust and communication could be established. By the second week of observations, I sensed a greater level of comfortability between the officials and myself. Increased levels of trust, communication and comfortability could improve the culture of the intramural sports department. This sense of community could also increase the retention rate for sports officials because they would have stronger relationships with campus recreation professionals. The next section of this chapter, transitions away from an intramural sports perspective and moves my recommendations toward a larger, institution-wide lens.

Physical Education Elective

Based on these results, I recommend that universities consider offering a sports officiating course as a physical education elective. This course offering would allow students to select a specific sport that they might be interested in officiating (e.g., soccer, basketball, or football), learn what it means to become an official, review the rules in-depth, watch video examples, and pass the Pennsylvania Interscholastic Athletic Association (P.I.A.A.) exam as their final assignment. Once they pass this exam, they will be certified at the state level to officiate interscholastic competitions. According to Walker et al., (2018) sports officiating builds character and increases social interactions on college campuses, in addition to other benefits.
Many of these benefits reflect the mission statements of higher education institutions and contribute to community engagement.

**Pipeline to P.I.A.A. or other State Governing Bodies**

Once these officials become certified at the state level, there needs to be a more modernized process or pipeline for these officials to begin refereeing interscholastic competitions. Strategic partnerships between the P.I.A.A., assignors, and higher education institutions could be developed to ensure that any registered sports official will be assigned games. Additionally, a mentorship program could be created so that former alumni officials from each individual institution visit their former college campuses and help recruit new officials annually. If the P.I.A.A. is able to successfully implement this process, many states would immediately follow suit to address their own shortage of officials.

**Sports Officiating Minor**

To take this initiative even one step further, a sports officiating minor, certificate, or concentration could be created. Many institutions already offer a similar minor in coaching, which is equally as significant as officiating. Gano-Overway and Dieffenbach (2019) collected information about coaching education programs in higher education institutions and found that 74% offered field experiences, 72% had additional practical experiences incorporated into their coursework, and 45% of programs aligned with the National Standards of Sport Coaches (Gano-Overway and Dieffenbach, 2019). A sports officiating minor could mimic this structure and also include more advanced coursework around sports psychology and theory. If enrollment reached a high enough level, specific courses offered around different rulesets such as NCAA men’s or NCAA women’s basketball would help create a pipeline to junior or small colleges in the
surrounding areas. As mentioned earlier, sport officiating has many benefits that reflect the mission statements of higher education institutions and contribute to community engagement.

**Conclusion**

In order to combat the critical, nationwide shortage of sports officials, there needs to be a greater investment in intramural sports programs on college campuses. Over 70% of new officials quit during their first three years of officiating (Solomon, 2022). To decrease this turnover, additional resources must be generated and utilized to create a more innovative and robust training and development program for intramural officials within their first three years of officiating.

This study provided evidence that intramural officials are underprepared to officiate intramural basketball even after pre-season trainings. Intramural officials’ participation in video review during the first two weeks of the season allowed these officials to watch themselves make mistakes and to ask clarifying questions, and it ultimately increased their self-confidence for future games. Higher education administrators may want to consider adopting this video review component across all sport offerings to better train their officials, and also ensure that intramural sports administrators, who are experienced officials, lead these video review sessions to achieve maximum benefit.
References


NIRSA. (2022). *About NIRSA*. [https://nirsa.net/nirsa/about](https://nirsa.net/nirsa/about)


Solomon, J. (2022). Roughing up the refs: Abusive behavior is driving youth sports officials away from the game. https://globalsportmatters.com/business/2022/04/15/abusive-behavior-driving-youth-sports-officials-away/


Appendix

Appendix A: IRB Approval

Oct 26, 2022 12:56:55 PM EDT

To: Dan Comas
Campus Recreation, Literacy

Re: Expedited Review - Initial - IRB-FY2022-388 Examination of Intramural Sport Officials’ Training, Development & Performance

Dear Dan Comas:

Thank you for your submitted application to the WCUPA Institutional Review Board. Since it was deemed expedited, it was required that two reviewers evaluated the submission. We have had the opportunity to review your application and have rendered the decision below for Examination of Intramural Sport Officials’ Training, Development & Performance.

Decision: Approved

Selected Category: 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Sincerely,

WCUPA Institutional Review Board

IORG#: IORG0004242
IRB#: IRB00005030
FWAR#: FWA00014155
Appendix B: Recruitment Script

Participant Contact Form #1 (Copy & pasted into e-mail & GroupMe to all intramural sports officials)

Dear Intramural Sport Officials,

I am conducting my Doctoral research study on the examination of intramural sports’ officials’ training, development, and performance within the department of campus recreation at West Chester University of Pennsylvania. This study will be centered around the sport of five-on-five basketball and take place in November 2022 through early December 2022. Your experience within intramural sports may provide valuable insight into this topic, and I am seeking your consideration and involvement in this study. Below are more details regarding your potential contribution.

On the first night of intramural basketball staff training, each official will be issued a pretest to collect data on their knowledge of the rules and regulations. The test will be approximately thirty questions in length and should take no longer than thirty minutes.

On the final night of intramural basketball staff training, each official will be issued a posttest to collect data on their knowledge of the rules and regulations after completing this training. The test will be approximately thirty questions in length and should take no longer than thirty minutes.

Participation is voluntary. There is no direct cash compensation for participation in this study. However, intramural officials receive an hourly wage regardless of their participation in this study. As part of regular practices, students whether or not they are participating in this study are paid for all training, refereeing, and post-game reflections.

To participate in this study, the participants must be:

- an undergraduate or graduate student employee of the campus recreation department at West Chester University,
- at least 18 years of age,
- attend the five-on-five intramural basketball trainings

The risks of this study are minimal, but test scores, rankings, reflection of observation/field notes, and focus group interactions may stir up emotions.

All participant information will be kept confidential and identifying information removed from the final paper.

Lastly, if you are selected, there will be a second part of this research. Phase II will include a focus group interview administered after completion of an intramural basketball game. Phase II participants will be asked to participate in 2 one-hour focus groups for a total of 2 hours of additional participation.
If you are interested in participating in my study, please click the link here to complete the Qualtrics survey. The survey should take no more than 20 minutes to complete.

If you have any questions, please let me know.

Thank you,

Daniel Comas, MBA
Interim Director of Campus Recreation
(610) 436-2277 Office
dcomas@wcupa.edu
Appendix C: Recruitment Follow-Up Email Letter

Participant Contact Form #2 (Verbal script at intramural sports staff meetings/basketball trainings)

Good Evening Intramural Sport Officials!

For those who do not know me already, I’d like to introduce myself. My name is [Redacted] and I am the Associate Director of Campus Recreation for Facilities and Business Operations here at West Chester University. I have been a full-time staff member here at the University since 2017 and spent four years overseeing the intramural sports program.

I come to visit you tonight to ask if you would consider participating in my Doctoral research study on the examination of intramural sports’ officials’ training, development, and performance. The study will take place [Redacted] and will be centered around the sport of five-on-five basketball, taking place in November 2022 through early December 2022. Your experience within intramural sports may provide valuable insight into this topic, and I am seeking your consideration and involvement in this study. Below are more details regarding your potential contribution.

On the first night of intramural basketball staff training, each official will be issued a pretest to collect data on their knowledge of the rules and regulations. The test will be approximately thirty questions in length and should take no longer than thirty minutes.

On the final night of intramural basketball staff training, each official will be issued a posttest to collect data on their knowledge of the rules and regulations after completing this training. The test will be approximately thirty questions in length and should take no longer than thirty minutes.

Participation is voluntary. There is no direct cash compensation for participation in this study. However, intramural officials receive an hourly wage regardless of their participation in this study. As part of regular practices, students whether or not they are participating in this study are paid for all training, refereeing, and post-game reflections.

To participate in this study, the participants must be:

- an undergraduate or graduate student employee of the campus recreation department at [Redacted],
- at least 18 years of age,
- attend the five-on-five intramural basketball trainings The risks of this study are minimal, but test scores, rankings, reflection of observation/field notes, and focus group interactions may stir up emotions.

All participant information will be kept confidential and identifying information removed from the final paper.

Lastly, if you are selected, there will be a second part of this research. Phase II will include a focus group interview administered after completion of an intramural basketball game. Phase II
participants will be asked to participate in 2 one-hour focus groups for a total of 2 hours of additional participation.

If you are interested in participating in my study, please scan the QR code on the television screen to access the Qualtrics survey. The survey should take no more than 20 minutes to complete.

Thank you,

Dan

*I reserve the right to send a follow-up e-mail to all officials 3 days and 5 days after the initial correspondence.*
Appendix D: Informed Consent Form

Project Title: Examination of Intramural Sport Officials’ Training, Development & Performance

Investigator(s): Daniel Comas; Heather Schugar

Project Overview: Participation in this research project is voluntary and is being completed by Daniel Comas as part of his Doctoral Dissertation to examine intramural sports officials’ training, development & performance.

Your participation will take approximately 4.0 hours. Phase I requires participants to complete a Qualtrics survey, complete a pretest on the rules of five-on-five basketball, complete a posttest on the rules of five-on-five basketball. Phase II requires participants to officiate two intramural basketball games and complete two focus group interviews.

The risks of this study are minimal but include loss of confidentiality, and potential discomfort reflecting on the intramural basketball game during the focus group interview.

Participation is voluntary. There is no direct cash compensation for participation in this study. However, intramural officials receive an hourly wage regardless of their participation in this study. As part of regular practices, students whether or not they are participating in this study are paid for all training, refereeing, and post-game reflections.

Please note that only 3-6 intramural officials will be invited to participate in phase II of this study based on their consent and availability to attend the specific observation dates and times. Participants will be randomly selected by drawing names out of a hat. *Phase II participants will be asked to participate in 2 one-hour focus groups for a total of 2 hours of additional participation.*

To you as the participant, and this research will help the sports officiating community as there is a critical shortage of sports officials across the United States. This study allows society to learn more about the potential next generation of sports officials (generation z and millennials).

The research project is being done by Daniel Comas as part of his Doctoral Dissertation to examine the effectiveness of intramural sports officials' training methods. If you would like to take part, West Chester University requires that you agree and sign this consent form.

You may ask Daniel Comas any questions to help you understand this study. If you do not want to be a part of this study, it will not affect any services from West Chester University. If you choose to be a part of this study, you have the right to change your mind and stop being a part of the study at any time.
1. What is the purpose of this study?
   o Examine the effectiveness of intramural sports officials' training methods.
2. If you decide to be a part of this study, you will be asked to do the following:
   Phase I
   o Complete Qualtrics Survey
   o Complete pretest
   o Complete Posttest
   Phase II
   o Officiate two intramural basketball games
   o Complete two focus group interviews
   *This study will take 4.0 hours of your time.*
3. Are there any experimental medical treatments?
   o No
4. Is there any risk to me?
   o Risks of this study are minimal but include loss of confidentiality, and potential discomfort reflecting on the intramural basketball game during the focus group interview.
   o The intramural basketball games will be videotaped, and the loss of confidentiality is minimal and will only occur if there is a breach in the password-protected laptop.
5. Is there any benefit to me?
   o There are no benefits to participating in this study as every intramural sports official will be paid for all training, refereeing and post-game reflections.
6. How will you protect my privacy?
   o Participants will be directed not to use names in the focus group interviews; video recordings would be deleted immediately after the focus group as they are not data in this study.
   o The audio recordings will be stored on a password-protected computer at the Student Recreation Center for three years before being destroyed. All names will be removed from the survey data during the observation.
   o The risk of potential discomfort in discussing responses of their performances refereeing the games. Participants may feel embarrassed by what they did or said.
   o The participants can withdraw from the study at any time.
Your records will be private. Only Daniel Comas, Heather Schugar, and the IRB will have access to your name and responses.

Your name will not be used in any reports.

Records will be stored:

Password Protected File/Computer

Records will be destroyed Three Years After Study Completion

7. Do I get paid to take part in this study?

There is no cash payments provided for study participation, however every intramural sports official will be paid for all training, refereeing and post-game reflections regardless of their participation in this study.

8. Who do I contact in case of research related injury?

For any questions with this study, contact:

Primary Investigator: Daniel Comas at 610-436-2277 or dcomas@wcupa.edu

Faculty Sponsor: Heather Schugar at 610-436-2398 or hschugar@wcupa.edu

9. What will you do with my Identifiable Information?

Identifiers might be removed from the identifiable private information and after removal, the information may be used for future research studies or distributed to another investigator for future research studies without additional informed consent from you or the legally authorized representative.

For any questions about your rights in this research study, contact the ORSP at 610-436-3557.

I, _________________________________ (your name), have read this form and I understand the statements in this form. I know that if I am uncomfortable with this study, I can stop at any time. I know that it is not possible to know all possible risks in a study, and I think that reasonable safety measures have been taken to decrease any risk.

Subject/Participant Signature       Date: ________________

Witness Signature                   Date: ________________
Appendix E: Pre-test & Consent to Participate in Phase II

Q1 What is your name?
________________________________________________________________

Q2 Do you consent to participate in Phase I of this study?
   o Yes, I consent to participate in Phase I of this study. (1)
   o No, I do not consent to participate in Phase I of this study. (2)

Q3 Do you consent to participate in Phase II of this study?
   o Yes, I consent to participate in Phase II of this study. (1)
   o No, I do not consent to participate in Phase II of this study. (2)

Q4 What is your gender identity?
   o Male (1)
   o Female (2)
   o Transgender (3)
   o Non-Binary (4)
   o Prefer not to answer (5)

Q5 What is your experience as an intramural basketball official?
   o 0 - 1 year experience (1st year within the program) (1)
   o 1-2 years within the program (2nd year within the program / officiated IM basketball in Spring 2022) (2)
2+ years experience within the program (Hired prior to Fall of 2021) (3)

Q6 Are you certified to officiate basketball outside of WCU Intramurals? If yes, please distinguish which certifications you currently hold.

- Yes, PIAA (1)
- Yes, IAABO (2)
- Yes, PIAA & IAABO (3)
- No (4)

Q7 Did you attend the 5 on 5 basketball trainings offered in Spring 2022?

- Yes (1)
- No (2)
- Unsure / can't remember (3)

Q8 What is your highest level of experience playing basketball?

- Played competitively in high school (junior varsity - varsity experience) (1)
- Played recreationally through high school (intramurals and/or rec leagues) (2)
- Played competitively in middle school (junior varsity - varsity experience) (3)
- Played recreationally at some point in your life (Physical education class, after school programs, local recreation center, etc.) (4)
- Never played basketball at any point (5)

End of Block: Demographic Questions
Start of Block: Pretest

Q9 What is the ideal measurement of a High School age court?
- 74 feet x 37 feet (1)
- 84 feet x 42 feet (2)
- 84 feet x 50 feet (3)
- 88 feet x 44 feet (4)

Q10 The free throw line is ____ feet from the basket.
- 10 (1)
- 12 (2)
- 15 (3)
- 16 (4)

Q11 The circumference of the game ball for all non-women's games should be:
- 28.5” (1)
- 29.5” (2)
- 31.5” (3)

Q12 Which of the following is NOT a pregame duty of the referee?
- Inspect and approve all equipment, including court, baskets, ball, backboards. (1)
- Designate the official timer and scorer prior to the scheduled start time of the game. (2)
- Determine which team shall receive the ball to begin the game. (3)
- Verify that each team is properly uniformed and legally equipped. (4)
Q13 When a violation occurs, what hand signal should the official use after blowing their whistle?

- Arm straight up in the air (vertical) with a closed fist. (1)
- Arm straight up in the air (vertical) with an open palm. (2)
- Arm mimics a punching signal (horizontal) with a closed fist. (3)

Q14 When can a team “run the end line”? (also known as baseline)

*Choose all answers that are correct*

- After a traveling violation (1)
- After a foul (2)
- After a made free throw by the opposing team (3)
- After a made two-point field goal by the opposing team (4)
- After a made three-point field goal by the opposing team (5)
- After a substitution (6)

Q15 When can substitutes enter the game? Choose all that apply.

- Prior to the final free throw attempt (1)
- After the final free throw attempt (3)
- After a made field goal (4)
- After a violation occurs (6)
- After a foul occurs (7)
Q16 When a player dribbles from their backcourt into their front court, the ball is in the front court when ________.

- The ball breaks the plane of the division line. (1)
- Both feet break the plane of the division line. (2)
- The ball and both feet of the dribbler touch the court entirely in front of the division line. (3)

Q17 A disqualified player is one who is barred from further participation in the game because of having committed his/her _________________. Choose all that apply.

☐ 3rd total foul (combination of personal and technical) (3)
☐ 5th total foul (combination of personal and technical) (4)
☐ 1st technical foul (5)
☐ 2nd technical foul (6)
☐ 1st flagrant foul (8)

Q18 A free throw is the opportunity given to a player to score _____ point by an unhindered try for goal from within the free-throw semicircle and behind the free-throw line.

- One point (1)
- Two points (2)
- Three points (3)
Q19 A ________ is a legal action by a player who, while touching the playing court, without causing contact, delays or prevents an opponent from reaching a desired position.

- Rebound (1)
- Blocked shot (2)
- Screen (3)
- Charge (4)
- Pass (5)

Q20 To establish legal screening position:
Choose all that apply.

- The screener must be stationary (1)
- The screener may face any direction (2)
- The screener may only face the defender (3)
- Time and distance are relevant (4)
- Time and distance are not relevant (5)

Q21 How many seconds does the thrower have to put the ball in play on a throw-in?

- 3 seconds (1)
- 5 seconds (2)
- 8 seconds (3)
- 10 seconds (4)
Q22 For any jump ball, each jumper shall have _____ within that half of the center circle which is farther from his/her basket.

- One foot (1)
- Two feet (2)
- One arm (3)
- Two arms (4)

Q23 Who on the offended team is eligible to shoot free throws on a shooting foul?

- The captain (1)
- Any player on the court (2)
- The offended player (3)
- Any eligible substitute or designated starter (4)

Q24 How many seconds does the free thrower have to try for goal?

- 3 seconds (1)
- 5 seconds (3)
- 8 seconds (4)
- 10 seconds (5)
Q25 A closely guarded count occurs when a player in control of the ball in his/her team's frontcourt is continuously guarded by an opponent who is within _____ feet of the player who is holding or dribbling the ball.

- 3 (1)
- 5 (2)
- 6 (3)
- 8 (4)

Q26 Which of the following are considered technical fouls?

- Administrative technical foul (1)
- Team technical foul (2)
- Substitute technical foul (3)
- Player technical foul (4)
- Bench technical foul (5)
- All of the above (6)

Q27 One-and-one bonus free throws are shot on the team's _____ foul of the half.

- 5th (1)
- 7th (2)
- 8th (3)
- 10th (4)
- 13th (5)
Q28 If an offensive player commits a player control foul (example: charge), how many free throws will the defender shoot?

- 0 (1)
- 1 (2)
- 1&1 (3)
- 2 (4)
- 3 (5)

Q29 During free throw attempts, a MAXIMUM of _____ players are allowed to be lined up along the lane line for rebounding. (Not counting the shooter)

- 3 (1)
- 4 (2)
- 5 (3)
- 6 (4)

Q30 __________ occurs when a player touches the ball during a try or tap for field goal while the ball is in its downward flight and is not touching the basket cylinder.

- Basket interference (2)
- Goaltending (3)
- Illegal use of the hands (4)
Q31 What is the penalty for defensive basket interference?
- No basket (1)
- Personal foul (2)
- Value of the field goal attempt (1, 2, or 3 points) awarded to the shooter (3)

Q32 Which basket will a team attack in the first half?
- Basket farthest from their team bench. (1)
- Basket closest to their team bench. (2)
- Does not matter. (3)

Q33 Which basket will a team attack in overtime?
- Basket farthest from their team bench. (1)
- Basket closest to their team bench. (2)
- Does not matter. (3)

Q34 ________ contact is contact with an opponent which is permitted, and which does NOT constitute a foul.
- Illegal (1)
- Incidental (2)
- Extra (3)
- Unnecessary (4)
Q35 When does the clock stop on a made field goal?

- Under 2 minutes (1)
- Under 1 minute (2)
- Under 30 seconds (3)
- Under 10 seconds (4)
- Clock never stops on a made field goal (5)

Q36 The referee who is positioned along the baseline is in the __________ position.

- Trail (1)
- Center (2)
- Lead (3)

Q37 Which boundary line(s) are the trail official responsible for when the ball is in the frontcourt?

Choose all that apply.

- Offensive Team's Endline (1)
- Sideline closest to them (2)
- Sideline farthest away from them (3)
- Division line & Defensive Team's Endline (4)
Q38 Which referee should never mark a 3-point try (unless they are aware another referee is caught out of position)?

- Trail (1)
- Center (2)
- Lead (3)

_End of Block: Pretest_
Appendix F: Post-test

Q1 What is your name?
________________________________________________________________

Q2 What is your gender identity?
 o Male (1)
 o Female (2)
 o Transgender (3)
 o Non-binary (4)
 o Prefer not to answer (5)

Q3 What is your experience as an intramural basketball official?
 o 0 - 1 year experience (1st year within the program) (1)
 o 1-2 years within the program (2nd year within the program / officiated IM basketball in Spring 2021) (2)
 o 2+ years’ experience within the program (Hired prior to Fall of 2021) (3)

Q4 Are you certified to officiate basketball outside of Intramurals? If yes, please distinguish which certifications you currently hold.
 o Yes, PIAA (1)
 o Yes, IAABO (2)
 o Yes, PIAA & IAABO (3)
 o No (4)

Q5 Did you attend the 5 on 5 basketball trainings offered in Spring 2022?
 o Yes (1)
 o No (2)
 o Unsure / can't remember (3)
Q6 What is your highest level of experience playing basketball?
 o Played competitively in high school (junior varsity - varsity experience) (1)
 o Played recreationally through high school (intramurals and/or rec leagues) (2)
 o Played competitively in middle school (junior varsity - varsity experience) (3)
 o Played recreationally at some point in your life (Physical education class, after school programs, local recreation center, etc.) (4)
 o Never played basketball at any point (5)

End of Block: Default Question Block

Start of Block: Pretest

Q7 The three-point line is ____ feet from the basket.
 o 17 feet 9 inches (1)
 o 19 feet 9 inches (2)
 o 21 feet 9 inches (3)
 o 23 feet 9 inches (4)

Q8 The circumference of the game ball for all women's games should be:
 o 26.5” (1)
 o 28.5” (2)
 o 30” (4)
 o 31.5” (5)

Q9 What is the ideal measurement of a High School age court?
 o 74 feet x 37 feet (1)
 o 84 feet x 42 feet (2)
 o 84 feet x 50 feet (3)
 o 88 feet x 44 feet (4)
Q10 Which of the following is NOT a duty of the referee during the game?

- Determine whether a goal shall count if the officials disagree. (1)
- Decide matters upon which the scorer and timer disagree and correct obvious timing errors. (2)
- Check and approve the score at the end of each half. (3)
- Fill out an injury report for an injured player. (4)

Q11 When a foul occurs, what hand signal should the official use after blowing their whistle?

- Arm straight up in the air (vertical) with a closed fist. (1)
- Arm straight up in the air (vertical) with an open palm. (2)
- Arm mimics a punching signal (horizontal) with a closed fist. (3)

Q12 Who is in charge of granting a time-out to a team?

- Referee (1)
- Official Timer (2)
- Official Scorer (3)

Q13 A player who has been replaced via substitution may not re-enter the game until ________.

- the clock has been properly started. (1)
- Either team scores a point. (2)
- Either team commits a foul. (4)
- Either team commits a violation. (5)

Q14 A player shall not be, nor may his/her team be, in continuous control of the ball which is in his/her backcourt for ______ seconds.

- 3 (1)
- 5 (2)
- 8 (3)
- 10 (4)
Q15 A _______ foul is a player foul which involves illegal contact with an opponent while the ball is live, which hinders an opponent from performing normal defensive or offensive movements.

- Personal (1)
- Technical (2)
- Intentional (3)
- Technical (4)
- Flagrant (5)

Q16 To obtain initial legal guarding position, the defender must:
Choose all that apply.

- The guard shall have both feet touching the playing court. (1)
- The front of the guard’s torso shall be facing the opponent. (2)
- Be at least 4 feet away from offensive player. (3)
- Be at least 6 feet away from the defensive player. (4)

Q17 _______ is the illegal personal contact with an opponent which interferes with his/her freedom of movement.

- Holding (1)
- Goaltending (2)
- Traveling (3)
- Charging (4)

Q18 When does the throw-in count end?

- When the ball touches a player on the court. (1)
- When the ball is released by the thrower. (2)
- When the ball touches the floor in-bounds. (3)
Q19 The ball is out of bounds when it touches or is touched by:
Choose all that apply.

- The imaginary plane above the out of bounds line. (1)
- A player who is out of bounds. (2)
- The ceiling, overhead equipment or supports. (3)
- The supports of back of the backboard. (4)
- Any other person, the floor, or any object (ex. table, chair) that is outside a boundary. (5)

Q20 Who on the offended team is eligible to shoot free throws on a technical foul?
Choose all that apply.

- The offended player (1)
- The captain (2)
- Any player on the floor (3)
- Any eligible substitute (4)
- A designated starter (5)

Q21 When the ball is in a player's frontcourt, he/she shall not remain in his/her free throw lane between the endline and the free throw line for more than ______ seconds.

- 3 seconds (1)
- 5 seconds (2)
- 7 seconds (3)
- 8 seconds (4)

Q22 A 5-second closely guarded count shall be terminated when the offensive player in control of the ball gets ______ past the defensive player.

- Both feet (1)
- Head and shoulders (2)
- The ball (3)
- One foot (4)
Q23 What is the penalty for a technical foul?
- 1 free throw and resume at the point of interruption. (1)
- 2 free throws and resume at the point of interruption. (2)
- 1 free throw plus the ball for a division line throw-in. (3)
- 2 free throws plus the ball for a division line throw-in. (4)

Q24 Double bonus free throws (2 shots) are shot on the team's _____ foul of the half.
- 5th (1)
- 7th (2)
- 10th (3)
- 13th (4)

Q25 Team fouls reset at ____________.
Choose all that apply.
- At the ten-minute mark of both halves. (1)
- Halftime (2)
- End of game (if tied and headed to overtime) (3)

Q26 Which of the following are fouls in High School (NFHS) basketball?
Choose all that apply.
- Personal (1)
- Technical (2)
- Flagrant 1 (3)
- Flagrant 2 (4)
- Intentional (5)
- Flagrant (6)
Q27 If an offensive player commits a team control foul (example: illegal screen), how many free throws will the defender shoot?

- 0 (1)
- 1 (2)
- 1&1 (3)
- 2 (4)
- 3 (5)

Q28 During free throw attempts, a MINIMUM of ______ players are allowed to be lined up along the lane line for rebounding. (Not counting the shooter)

- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)

Q29 ______ occurs when a player touches the ball or any part of the basket (including the net) while the ball is on or within either basket or while any part of the ball is within the imaginary cylinder.

- Goaltending (1)
- Basket interference (2)
- Illegal use of the hands (3)

Q30 What is the penalty for goaltending?

- No penalty (1)
- Technical Foul (2)
- No basket, offensive team retains possession (3)
- Value of the field goal attempt (1, 2, or 3 points) awarded to the shooter (4)
Q31 Which basket will a team attack in the second half?
- Basket farthest from their team bench (1)
- Basket closest to their team bench (2)
- Doesn't matter (3)

Q32 Which team will receive the arrow for the first alternating possession?
- The team who first establishes team control after the initial jump ball. (1)
- The team who does NOT first establish team control after the initial jump ball. (2)
- The team who is first to tip the opening jump ball. (3)
- The team who is NOT first to tip the opening jump ball. (4)

Q33 The referee who is positioned between the 28 foot mark and closest to division line (half court) is in the __________ position.
- Lead (1)
- Center (2)
- Trail (3)

Q34 The referee who is positioned closest to the free throw line extended is in the __________ position.
- Lead (1)
- Center (2)
- Trail (3)

Q35 Which boundary line(s) are the trail official responsible for? Choose all that apply.
- Division line (1)
- End line (2)
- Sideline closest to them (3)
- Sideline farthest away from them (4)
Q36 Which official(s) should signal a successful 3 point field goal attempt?

- ONLY Trail (1)
- ONLY Center (2)
- BOTH Trail and Center (3)
- BOTH Lead and Trail (4)
- BOTH Lead and Center (5)
- ALL three referees (6)

End of Block: Pretest
Appendix G: Focus Group Interview Structure

Focus Group Interview Structure

Opening/introduction

1. How was their experience in refereeing that game?
2. Are there any particular plays or calls that stood out to you?
3. Do you have any questions about the rules or regulations before we begin video review?

Video Review

As each clip is shown, each referee will be asked to watch themselves and the calling referee on the play.

- What did they see?
- What do they like about themselves and the calling referee?
- What do they dislike about themselves and/or the calling referee?

Goal is to let referees analyze themselves and come to decisions regarding positioning, play calling accuracy, etc.

For the researcher’s purpose, the videos for review are organized into correct, incorrect, or gray but the participants will not know which category they fall into.

1. Start with a positive (in)correct call that each referee made.
   a. Open for discussion as each referee has an opportunity to self-reflect on what they see on film.

2. Move onto two incorrect (no) calls that each referee made.
   a. Open for discussion as each referee has an opportunity to self-reflect on what they see on film.

3. Move onto two “gray” calls that each referee made.
a. Open for discussion as each referee has an opportunity to self-reflect on what they see on film.

4. Finish with a positive (in)correct call that each referee made.
   
a. Open for discussion as each referee has an opportunity to self-reflect on what they see on film.

Closing

How does each referee feel about their performance now that they have been given the opportunity to reflect on their performance (positioning, decision making, signals, mechanics, reporting, etc.) after seeing it on videotape?