THE CURRENT STATE OF HIGH SCHOOL FOOTBALL STRENGTH AND
CONDITIONING ACCORDING TO OHIO HIGH SCHOOL ATHLETIC DIRECTORS

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THE CURRENT STATE OF HIGH SCHOOL FOOTBALL STRENGTH AND CONDITIONING ACCORDING TO OHIO HIGH SCHOOL ATHLETIC DIRECTORS

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ABSTRACT

The purpose of this current study was to describe and evaluate the status of high school strength and conditioning for high school football teams in the state of Ohio from the perspective of high school athletic directors (ADs). The researchers created and sent 677 online questionnaires to every high school AD in the state of Ohio whose program had a football team. Of the 677 outgoing questionnaires, 157 were returned. Results found that ADs are aware of who is acting as the strength and conditioning coach (SCC) within their program, feel that the position is important, and predict that the position will grow in the future. It was also found that most individuals acting as the SCC did not hold relevant certifications and are thus, deemed unqualified to hold the position of SCC. Of the uncertified individuals, most were head football coaches, assistant coaches, or teachers who implemented the strength and conditioning activities. Based on previous research, this suggests that these individuals may not be qualified to safely implement strength and conditioning to high school level athletes (Couture et al., 2015; Mcgladrey et al., 2014; Pote & Christie, 2016). An increase in qualified SCCs at the high school level shall provide the athletes with a safer, more successful experience (Baechle & Earle, 2008; Gucciardi et al., 2009; Zatsiorsky, 2006).
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CHAPTER I
INTRODUCTION

The first documented strength and conditioning coach (SCC), Alvin Roy, was employed by a professional football team in 1963 due to the success that was created from Roy’s Weight training plan (2009 Legends in the Field, 2009). From there, the number of strength and conditioning coaches expanded after seeing success. Throughout the development of the strength and conditioning profession, the position of a full-time strength and conditioning coach appears to not have become common at the high school level. Professionals in the field have even referred to strength and conditioning at the high school level as “non-existent” when referencing the development of the profession (Mannie, 2007).

At the professional level of sports, most teams have a full-time SCC and a full-time assistant SCC (Ebben & Blackard, 2001). Major League Baseball (MLB) also shows that they have a SCC and claim that the entire organization should be knowledgeable about the program and its development (Ebben et al., 2005). Similarly, the National Basketball Association (NBA) and the National Hockey League (NHL) both yield comparable results, although NBA SCCs seem to have a longer tenure (Simenz et al., 2005).

When specifically examining the college level, recent studies have held consistent with previously discussed research regarding the college level SCC having a strength and conditioning certification (Martinez, 2004). Specifically, to the Division 1 (D1) college
level, it was also found that to become a head SCC, it was essential to be a graduate assistant at the college level as well as to work as an assistant for 1 ½ to 3 years (Martinez, 2004). Interestingly, the same study showed that no D1 collegiate SCCs had prior experience as a high school SCC.

In terms of the position, it is uncommon for a SCC in professional sports to have another role in addition to their strength and conditioning duties. In college, D1-A, 3.5% of coaches had additional roles while those in D1-AA had other roles 41.7% of the time (Pullo, 1992). At the Division 2 (D2) level, only 9 of 63 coaches surveyed were specifically the school’s SCC as most coaches also served as an assistant football coach (Massey et al., 2009). The additional roles to SCCs at the lower levels of sport can be attributed to the perception that there is a higher specialization of professional league and D1-A SCCs. This is based on their higher levels of college education as well as various certifications. Thus, they are given more job specific tasks (Magnusen, 2010).

At each level of the profession, job satisfaction seems to be high. However, some issues at the college level include, “a perceived lack of respect from other members of the athletic department” (Massey et al., 2004), and “issues of low pay, high stress, and a desire to move to a more prestigious job” (Massey et al., 2009). The job at the college level usually looked to the athletic director (AD) as a supervisor (Martinez, 2004). Lastly, research has shown that college SCCs have an average age in the 30s (Martinez, 2004; Pullo, 1992). As strength and conditioning continues to develop throughout the professional and college ranks, the profession is expected to grow throughout high school athletics as well (Reynolds et al., 2011).
In recent years, there have been a few studies that examine the profile of those who have the title of a high school SCC. However, one study entitled *Profile of High School Strength and Conditioning Coaches* specifically examines this subject. The researchers sent 128 surveys to SCCs at the high school level across the country. Thirty-nine SCCs responded, representing 24 states. Thirty-eight of the 39 coaches were certified, and 83% of these coaches were certified by the National Strength and Conditioning Association (NSCA). Additionally, 21 of 38 of the coaches in this study had a master’s degree. When asked if the position required a teaching license, 26 of the 39 said that the teaching license was required for the position. Additionally, 13 of the coaches said that they had an assistant working underneath of them (Duehring & Ebben, 2010).

On average, the SCCs in this survey were on a 12-month contract that averaged a payment of $57,866 for those who were on a teacher’s contract and $55,214 for those who were not on a teacher’s contract. Relatedly, 27 coaches reported having full benefits. High school SCCs who were not a part of a contract averaged $25.50 an hour. Thirty-six of these coaches claimed to be employees of the school only, the other 3 coaches were contracted through another organization and 23 of 39 coaches claimed to be full-time. Considering the previous research, this study concludes that the sample of high school SCCs had a higher salary than the average collegiate SCC, even when considering inflation. However, this current study did not exclude the fact that many other high school level coaches held teaching or administrative roles in the school, which would add to their salary (Duehring & Ebben, 2010). Furthermore, collegiate SCC salaries have increased by a large margin since the early 2000s. A recent article appearing lists
collegiate football SCCs salaries ranging from $45,000 to over $625,000 a year (USA Today, 2016).

When comparing high school to professional and collegiate organizations, one of the biggest differences was sharing responsibilities. High school SCCs were most frequently also teachers or football coaches. Also, a similar study examining high school strength and conditioning pointed out the fact that high school SCCs are unique because they typically work with many sports, unlike higher level SCCs who typically work with one team (Duehring et al., 2009).

When it came to the advantages of the job, all levels of SCCs enjoyed the opportunity to develop athletes. As far as disadvantages are concerned, the high school SCCs most often noted “The lack of commitment from the athletes, lack of time with athletes, facility limitations, and difficulty with coaches” (Duehring & Ebben, 2010). These disadvantages are typically exclusive to the high school level because the athlete’s commitment at higher levels is usually enforced by scholarships or contracts and the organizations can afford nicer facilities. Some disadvantages remained constant across various levels, most notably was the conflicts with coaches and administrators. Coaches involved in this survey claimed that the hours and job stability was an advantage compared to the professional and college level. This study also found that the consensus among the high school SCCs in the survey was that the position would be growing in the years to come.

Although these two studies provide a thorough profile of high school SCCs, both studies used NSCA memberships in their search criteria for coaches. This means that
only surveys were sent to coaches that had a membership with the NSCA, which led to there being a very high rate of coaches having a resistance training certification through the association. Two separate studies conducted by Boise State University found similar information, but they did not use NSCA memberships in their search criteria. Instead, they wanted to know who was implementing strength training to varsity athletes in Idaho and if this coach was modifying the training to make it gender specific. Physiologically, males and females mature differently, therefore there is room for individualization among genders in terms of resistance training. The studies found that 84.3% of coaches provided strength & conditioning for their athletes with 37% of these coaches requiring participation. Of these programs, 40.7% of the workouts were led by teachers and 25.9% were led by head coaches (Reynolds et al., 2012). This is an improvement from data taken in 1992 that states 69% of 126 school workouts were led by head football coaches, and only 7% by a SCC (Finamore, 1992). Only 1 of 32 survey respondents was a full-time SCC and the most common certifications were bigger, faster, stronger (BFS) and the Certified Strength and Conditioning Specialist (CSCS) with 3 occurrences each. The study concluded that “Team coaches, not necessarily certified or credentialed professionals, are designing and implementing high school strength training programs” (Reynolds et al., 2012).

These findings are similar to a study done in Utah that surveyed high school SCCs and found that 87% of these coaches referred to the position of SCC as their secondary position. Relatedly, 64.5% of the 36 respondents did not have a strength and conditioning certification. Although 61.1% had a master’s degree, 63.6% of these master’s degrees were not related to physical education or exercise science. Like most research
demonstrates, the individuals representing the strength and conditioning program at the high school were mostly head football coaches and there are no guidelines in the state of Utah that regulate safety for high school strength and conditioning (Weaver, 2015). These findings are consistent with another study looking at strength and conditioning facilities that found that less than half of the 50 schools surveyed had a certified SCC running their facility (Judge et al., 2013). In summation, there is an inconsistent number of strength and conditioning coaches in different areas at the high school level.

While there have been a few studies in relation to high school strength and conditioning, the literature lacks research describing the profession of high school SCCs, specifically in the state of Ohio. Also, of the few studies on the matter of high school SCCs, no study has identified who is implementing a strength and conditioning program to high school football players when there is no certified SCCs in the program. Lastly, there are no known studies that have examined how high school administrators view the importance of the SCC and the projected future of the position. Due to the few requirements and regulations for this position, there needs to be a better understanding of who is instructing these athletes.

Thus, the purpose of the current study is to describe the status of high school strength and conditioning for high school football teams in the state of Ohio from the perspective of high school ADs. Such a study is necessary for many reasons. First this study will give us a better understanding of who is administering resistance training workouts to high school football players in the state of Ohio. Second, we aim to determine how ADs rate the importance of this role and if the position is projected to grow or gain significance in the future. This information is necessary to increase
awareness of the position of a high school SCC in the state of Ohio. This information could then potentially influence a change in the development of the position, educate parents about who is coaching their children, or provide more insight to individuals who are interested in high school strength and conditioning as a career.

It was expected that Ohio high school ADs are familiar with who is implementing strength and conditioning programs with their football team. It was also expected that these individuals will, for the most part, not meet the requirements of a certified SCC. Although previous research has shown most coaches having the proper strength and conditioning certifications, those studies only contacted coaches through the NSCA. The present study reached out to all ADs for every school, and did not use any strength and conditioning membership criteria in the search. In addition, it was predicted that high school ADs will feel that the position is important but have been limited by budget constraints. Finally, the researchers expect that ADs will project growth for the position moving forward.
Chapter two will discuss the importance of resistance training to emphasis the importance of its role in athletics. The researchers will also discuss the roles and duties of a strength and conditioning coach. Next, qualifications of a certified strength and conditioning coach are discussed. Then, we will review previous studies that examined the proficiency of physical educators and sport coaches at the high school level regarding resistance training. Finally, the researchers conclude by comparing the professions of strength and conditioning coaches and athletic trainers.

The Importance of Resistance Training

Although resistance training most commonly gets associated with a SCC, there are many factors that contribute to the process and outcomes of resistance training. Resistance training can be defined as, “A specialized method of conditioning, which involves the progressive use of a wide range of resistive loads and a variety of training modalities designed to enhance health, fitness, and sports performance” (Faigenbaum et al., 2009). Aside from simply contributing to the size of muscles on the body, resistance training can contribute to many other factors such as: improving one’s heart health, body composition, bone strength, mental health, and motor skills, while reducing injuries in sports (Faigenbaum et al., 2009).
Relatively, it is often said that the primary priority of a SCC is injury reduction (Reynolds, et al., 2012; Zatsiorsky, 2006). To put it simply, a proper strength and conditioning program can reduce injuries in athletes in several ways (Finamore, 1992; NSCA, 2009). Injury reduction can be classified in two distinct categories. First, by reducing injuries that are caused by carelessness or lack of knowledge in the weight room (i.e., not practicing safety) or performing workouts that are not suitable for the sport or training age (Zatsiorsky, 2006). The second way coaches can reduce injuries is by proper implementation of a resistance training program. Injuries can be reduced due to proper exercise technique, sequence, and the physiological affects the body has because of the program. Not only can bad technique injure an athlete when a load is heavy, but continued execution of improper technique over time with poor technique can have the same effects. Our body parts are designed to last us 110 years (Starrett & Cordoza, 2015), however, through poor movement patterns repeated every day, inside of a weight room and out, we shorten the lifespan of our joints over the course of a lifetime. A qualified SCC can instill the proper movement patterns in young athletes to prevent degenerative habits.

Despite the aforementioned risks, strength and conditioning programs are typically safe and unlikely to cause injury when supervised properly (Faigenbaum et al., 2010). However, when proper supervision is not provided for students, the number of injuries in the weight room dramatically increases. Jones and colleagues (2000) found that that 80% of such incidents were results of “playing around” in the weight room.

The book, Science and Practice of Strength Training is renowned for providing prominent level knowledge for SCCs. However, the author takes time to advocate for
younger athletes as well. On this subject, the author says:

“The primary cause of injury in strength training programs are mistakes in exercise techniques or accidental injury. Each of these can be exacerbated in young athletes if proper instruction and supervision are not available. Accidental injury comes from a lack of proper weight room rules (e.g., not wearing shoes) and from equipment failures (e.g., inadequate construction from a bench to hold the weight used), each of which can be addressed by a trained strength and conditioning specialist” (Zatsiorsky, 2006).

A certified professional with strength and conditioning coaching experience is expected to prevent such occurrences and therefore contribute to injury reduction. Furthermore, not only is injury reduction important, but after an athlete has already suffered an injury, the role of the strength and conditioning coach becomes even more important. A previous injury has been shown to dramatically increase the chances of future injuries in an athlete (Hägglund et al., 2006). Thus, it is the job of the SCC to be aware of these previous injuries and provide a training program that addresses any correctable factors that would lead to re injury. However, the role of the SCC regarding injury reduction does not stop there. It is typical to think of the injury reduction benefits from a SCC as acute, or simply during the athlete’s participation in the sport or program. However, the benefits of proper resistance training can last a lifetime. (Hootman et al., 2007).

**Athletic Performance**

The next priority of the strength and conditioning coach is to increase athletic performance. The NSCA states that “training causes increased performance because of
properly administered training volume, intensity, duration and proper recovery which allows adaptation” (Baechle & Earle, 2008). This quote explains that coaches not only have to pick exercises, but they need to be chosen in a methodical order, prescribe practical sets and repetition, and proper rest time for recovery. On a larger scale, high school SCC coaches have the responsibility to build a macrocycle. A macrocycle is a training program that usually lasts a year, but could be potentially looked at as four years for the high school athlete. This macrocycle is designed to develop and peak the athlete’s performance at strategic times. To create the macrocycle, the strength and conditioning coach must first create a mesocycle. Mesocycles are designed to separate and progress training phases of the athlete and must be designed to represent specific training phases to elicit optimal performance results. Mesocycles are composed of microcycles that usually last a week. Within this week, exercises must be placed in the proper order to ensure the most optimal physiological response. As such, the design process of a proper strength and conditioning program is lengthy and requires a lot of time and attention. A coach that does not have the proper resistance training certifications or time to dedicate to creating an appropriate lifting program runs the risk of putting the athlete’s safety and athletic potential at risk (Baechle & Earle, 2008). However, when this is done properly and prescribed for the athlete’s specific sport, the athlete can experience physiological changes within their body in their musculature, ligaments, tendons, and bones that prepare them for increased performance capacity in their given sport.

**Effects of Strength and Conditioning on Youth Athletes**

Aside from the obvious fact that athletes receive physical benefits from a well thought out training program, strength and conditioning can have a significant impact on
the mental strength of the participant. In a study performed with high school age Australian footballers, the researchers concluded that activities in a training program can increase mental toughness in adolescents (Gucciardi et al., 2009). Today, one of the biggest problems for college strength and conditioning coaches is the state of their athletes as they join the program during their freshman year. Typically, these athletes were not being coached by a certified SCC in high school and are therefore generally not prepared for the physical and mental stress of college athletics. An article examining this fact states, “college freshman athletes lack lower extremity strength, overall flexibility, and core strength as well as proper Olympic lifting technique.” The article goes on to say “athletes lacked the mental toughness to endure collegiate sport training in addition to claiming incoming athletes lacked knowledge of correct nutrition and recovery principles. These results suggest a lack of collegiate training/sport preparedness of high school athletes” (Wade et al., 2014). Beginning a collegiate program as an unprepared athlete not only slows the athlete’s progress, but also increases the stress of the college experience and may contribute to the high dropout rate of college athletes between their freshman and sophomore year (Wade et al., 2014).

If resistance training is not administered to high school age athletes by a certified SCC, then concern may arise regarding the appropriate techniques to administer to athletes based on their age. Athletes who train around the age of puberty do not respond to training in the same way that adults do. During the time of puberty, athletes may experience growth at faster rates which leaves the bones in a compromised position and create muscle imbalances that can ultimately lead to injury. During this time, it is critical to understand the difference between chronological age and biological age. Chronological
age is an athlete’s age based off years, months, and days while biological age is the age of the athlete based on the physiological changes that have occurred to their body during puberty and does not have to do with their physical age. At the age of 14, when athletes may be entering their first year of high school, they can fall into three categories: prepuberty (late mature), midpuberty (average mature), and postpuberty (early mature). Therefore, two athletes may both be fourteen years old, however, if one athlete has gone through puberty and the other hasn’t, the athlete that has gone through puberty will have a different level of adaptation to the training program.

It would be beneficial for high school strength and conditioning coaches to understand the long-term athlete development (LTAD) by recognizing the dissimilar stages of maturation and age categories that can present themselves during this highly variable time for high school athletes (Balyi et al., 2013). Certified professionals have studied the differences in athletes in this age group and understand how to manipulate training variables to fit their needs (Baechle & Earle, 2008). Not only do younger age groups demand specific training to maximize safety and results, but this age group also provides an opportunity. Just before entering high school at the ages of 12-13, motor systems become more developed while motor functioning increases which means that proper movement patterns can be ingrained. In the age range of 13-15 years, the ability to move is very similar to that of an adult and movement ability is close to maximum potential. At age 18, heart volume is near full maturation, and by ages 12-14 years, the athlete’s central nervous system is developed to the point that speed training may be implemented. It is important to keep in mind that the high school aged athlete will also be exposed to a window of speed development that occurs between the ages of 15-17 years.
of age (Bondarchuk & Yessis, 2015).

In females, the largest margin of strength increases between the ages of nine and fourteen. The same window of strength occurs at a younger age for males, just before entering high school between the ages of 11-13 years of age. However, it seems that in adolescents, when discussing “the greatest amount of maximum strength decreases… with age… sharp differences are seen in the 14-15-year-old ages but the greatest difference is reached at 17 years of age.” This means that it is a crucial time to develop a foundation of strength that will aid athletic development. Relatedly, this age group was shown to demonstrate that the highest levels of anaerobic capacity development and the highest rate of development in anaerobic traits occur due to the changes in hormonal secretion around the time of puberty (Viru et al., 1999). Finally, it has been shown that endurance capabilities are improved the most during the age range of 16 - 17 years old (Bondarchuk & Yessis, 2015).

Given this information, the high school age provides a crucial period for athletes to develop their physical capabilities. This process could be expedited with the aid of a certified SCC. Furthermore, adolescence represents a more appropriate time than college to engrain the proper movement patterns needed to safely perform complicated movements. Thus, one of the most effective ways to increase safety of the athletes is to teach the correct lifting techniques (Zatsiorsky, 2006). Athletes between the ages of 13-17 should be focusing on fundamental skills and then developing them into more complex skills. From the ages of 18-25, it is an optimal time for athletes to work on more specific skills and work to achieve the highest performance possible (Wrisberg, 2007). This conflicts with the most common paradigm employed today where, typically, athletes
reach college and have not learned the proper fundamental weight room skills from high school. Therefore, “college or professional programs are not appropriate for high school beginners. They need teaching, not programs. The program begins and ends with technical proficiency” (Boyle, 2001). If coaches do not properly coach high school athletes as they resistance train, then the athletes may develop poor movement patterns and unhealthy habits. It is more difficult to break a bad habit than it is to learn a good habit when it comes to movement patterns. The earlier that correct lifting technique is learned, the more effective the athlete will be at not only performing those movements over the course of their athletic career, but will also be better adjusted to develop more advanced technique (Kurz, 2001) and increase their probability of safety.

**Importance of Coaching**

Once it is established that a SCC understands the importance of their role, it is important that the coach deliver content in an effective way. Effective coaching is key to a positive experience for athletes, especially of the younger age (Barfield et al., 2003). In fact, according to the National Association for Sport and Physical Education (NASPE), 70% of children quit sports by the age of 13 and poor coaching is one of the leading causes. Aside from poor coaching, one of the contributing factors to this statistic is the fact that “youth sport coaches tend to have less training so they use techniques they learned as a player.” Instead these coaches should “spend more time on tactical skill instruction which supports early skill development” (NASPE, 2013). Unfortunately, at the high school level, coaches may be thought of as simply coaches of a sport or activity when in fact they are much more. We should view coaches as a person with a philosophy, an administrator/manager, a teacher, a sport physiologist (e.g., principles of
training/fitness for sport, developing your training program, nutrition for athletes, drugs and sport performance), and/or a sport psychologist (NCACE, 2014). One way to do this is to “educate coaches through accredited programs” (NASPE, 2013). Thus, the question is raised of who is coaching athletes in a weight room if the school does not employ a SCC.

**High School Weight Room Facility Usage**

There have been limited studies that have considered this, however one study provides some information while examining high school weight training facilities. In 2013, Judge and colleagues found that 95.4% of 108 high schools in a mid-western state had a specific space designed for strength and conditioning (Judge et al., 2013). However, this same study determined that only 19.4% of these facilities were led by a certified SCC and that there were large improvements in the quality and effectiveness of these same facilities as opposed to those without the leadership of a certified SCC. Therefore, not only can a high school strength and conditioning facility be designed to be more effective and possess better quality equipment, it was also shown to be a safer place for athletes to train.

According to a similar study done in 2007, 46.1% of middle schools and 87.6% of high schools have a facility dedicated to resistance training for athletes (Lee et al., 2007). Relatively, resistance training is taught to students in physical education classes at 63% of middle schools and 93% of high schools (NASPE, 2009). There is reason to believe that these percentages are growing in the past 10 years because “high school sport participation continues to grow for both genders, so has the interest in improving athletic performance through strength and conditioning programs” (Reynolds et al., 2012).
same study also found that 84% of high school coaches provide opportunities for their athletes to resistance train for their sport and that high school strength and conditioning programs were primarily designed by physical education teachers or head coaches (Reynolds et al., 2012). Given all the factors that play into being a SCC, it seems like a large task for a teacher or head coach for another sport to adequately fill this role in addition to their other responsibilities. Similarly, the NSCA claims that “year-round strength & conditioning activities are now the rule rather than the exception in collegiate athletic programs” (NSCA, 2009). Similarly, the NSCA also claims that high school strength and conditioning is growing to match the demands of collegiate sport.

Although there are many reasons that point to the high school age being a more beneficial age to be coached by a certified SCC, it seems the best SCCs aspire to work at higher levels. As was previously noted, it is uncommon today for a SCC at the elite level to have previous experience as a high school SCC. However, in 1992, a survey of strength and conditioning found that a SCC averaged 5 years of experience at the high school level before becoming a D1-A SCC (Pullo, 1992). It appears that coaches no longer follow this path even though “training programs for high school athletes have changed over the last 20 years. High school physical education classes have transformed into sport-specific conditioning classes with intensities matching college or professional athlete programming” (Wade et al, 2014). Having SCCs begin their professional career at the high school level would not only give them experience leading a strength and conditioning program, but it may also give high school athletes the opportunity to learn from someone in the field of strength and conditioning, as opposed to someone from the school filling a role.
Duties of a Strength and Conditioning Coach

There are many important qualities and duties that a SCC is responsible for due to the nature of the position. Being that strength and conditioning is not recognized as an interscholastic sport on its own, coaches do not need to meet the same requirements as typical sport coaches. According to the NSCA regarding SCCs, “the profession involves the combined competencies of sport/exercise science, administration, management, teaching and coaching.” This role is further broken down into two subcategories, scientific foundations (e.g., exercise sciences and nutrition) and practical/applied (e.g., program design, exercise technique, organization & administration, testing & evaluation) (NSCA, 2009). Although there are many similarities between SCCs and head sport coaches, head sport coaches have a list of requirements and qualifications they must fulfill to be given the official title of a coach with a high school team. There is no doubt that a paid SCC that is recognized by the administration must meet certain requirements as well. But, it is not a secret that there are high schools whose athletic teams continue to resistance train in designated weight training facilities and do not have a qualified SCC, or a coach on staff recognized as a certified SCC.

This leads us to the question. What is a certified strength and conditioning coach? To answer this question. We begin by examining the criteria laid out by the NSCA:

First, the Strength and Conditioning practitioner should… have a degree from a regionally accredited college/ university in one or more of the topics comprising the ‘Scientific Foundations’ domain identified in the Certified Strength & Conditioning Specialist® (CSCS®) Examination Content Description, or in a relevant subject (e.g., exercise/sport pedagogy, psychology, motor learning,
training methodology, kinesiology)… Certified Strength and Conditioning Specialists are professionals who practically apply foundational knowledge to assess, motivate, educate, and train athletes for the primary goal of improving sport performance. They conduct sport-specific testing sessions, design and implement safe and effective strength training and conditioning programs, and provide guidance for athletes in nutrition and injury prevention.

Recognizing their area of expertise is separate and distinct from the medical, dietetic, athletic training, and sport coaching fields, Certified Strength and Conditioning Specialists consult with and refer athletes to these professionals when appropriate” (NSCA, 2009).

Taking into consideration the fact the NSCA provides the strength and conditioning certification, the Certified Strength and Conditioning Specialist (CSCS), it is not surprising that they do not mention other certifications in this description. To accompany the NSCA’s description of a SCC, to be qualified, the SCC should possess a nationally recognized resistance training certification such as: CSCS, Certified Personal Trainer (CPT), USA Weight Lifting (USAW), Starting Strength, etc. Lastly, to be a qualified high school SCC, coaches should be expected to meet the requirements of other high school sport coaches in their state of residence. Despite this, there is reason to believe that many high schools give SCC responsibilities to volunteers who otherwise have no affiliation with the school. Therefore, they can coach sport teams through activities, yet, do not have to meet the same state requirements that other high school sport coaches do to work with interscholastic athletes.
Although it is typical for sport coaches to serve as the school’s SCC, and therefore they may fulfill the duties and requirements of high school coaches, they are not typically certified in strength and conditioning/resistance training. However, to receive a job working with athletes or the general public as a SCC or a trainer outside of the high school setting, it is required to have a certification to ensure adequate knowledge and safety of the participants. Why doesn’t working with high school athletes in a high school weight training facility require the same qualifications?

With an understanding of the role and requirements of a SCC, we may now have a better scope of previous studies and their findings regarding the profession. A model for this paper was constructed based on the history of studies that have deemed the instruction of resistance training techniques to adolescents as inadequate. As demonstrated, research examining current practices of high school strength and conditioning across a state is lacking.

**Non-Qualified Professionals**

A study conducted in 2014 attempted to examine the competencies of those who administer high school resistance training. The study included a test that was implemented by a panel of experts and given to 287 high school physical educators and coaches. The test consisted of questions directly related to safely implementing a resistance training program to youth athletes and required a 70% to pass. The results of the test indicated that only 14.3% passed the test. The lowest scored category on the test was “safety knowledge” and only 8.4% of those surveyed had a certification related to resistance training (Mcgladrey et al., 2014).
In a similar study conducted in 2015, coaches were tested on their knowledge of nutrition. This study is relevant because it is common for athletes to ask their coach about supplements and diet advice in the weight room (Duehring et al., 2009). Here, test scores showed an average score of 68.4% with less than 30% of coaches being able to correctly answer questions labeled “general nutrition” (Couture et al., 2015). Furthermore, it was concluded that the internet was the primary source for nutrition information for respondents as opposed to college education and certifications. Thus, coaches were deemed insufficient in relation to their nutrition knowledge.

Outside of the United States, research is showing similar trends. One study examined the strength and conditioning program of South African cricket players for adolescent and college aged athletes. The study concluded that the coaches had “insufficient qualifications and experience to administer the correct training techniques” and that the adolescent athletes were facing an increased risk of injury (Pote & Christie, 2016).

Thus, the three studies described above demonstrate that the current level of knowledge among educators and coaches at the high school level may be cause for concern. Although, it has been shown that 84% of coaches and physical educators would be interested in attending a resistance training based educational seminar (Mcgladrey et al., 2014), no state requires coaches to be certified in resistance training. As such, there is a clear need for coaches and physical educators to participate in training or a certification processes to better equip them to meet the demands of their positions. Another alternative would be for the administration to hire a certified SCC. Regardless of the coach’s background, continuing education could be utilized because, “professional development
is a career-long process… because the environment and the demands placed on coaches keeps changing… coaches may change jobs or start working with new athlete populations and advances in science may lead to new ways of competition preparation. Coaches need to continually learn new ways of helping athletes and exercisers achieve their physical development goal” (Tod et al., 2012). Unfortunately, full-time SCCs are still not common at the high school level. However, in larger colleges and in professional sports, it is the norm.

A Comparison to Athletic Training

A similar job in high school athletics is athletic training (AT) when you consider that fact that they work directly with the athletes, they have detailed job duties that require specific expertise, and a certification is required for employment. Like the notion that a SCC without the proper certifications could put athletes at an increased risk for injury, athletic trainers without a certification could put athletes in a harmful, or even fatal risk (Casa et al., 2012). When 8509 schools responded to a survey regarding AT services, 70% had AT services where 37% were full-time, 31% were part-time, and 27% were outsourced from a hospital or clinic. In sum, 48% of the 8509 schools had coverage at all sporting practices, and 86% of all athletes had access to an AT (Pryor et al., 2015). In comparison, this shows a higher rate of certified ATs in the high school setting compared certified SCCs.

Another study found that parents had limited knowledge about the job of an athletic trainer unless their child was exposed to injuries (Weitzel et al., 2009). Based on this knowledge it is likely that most parents know little about who is implementing the strength and conditioning program for high school athletes since there is little incidence
of injury corresponding to high school weight rooms and the field of strength and conditioning is still relatively new (Duehring et al., 2009). Thus, the present study hopes to provide more information to the parents of high school athletes. Although sport coaches and parents can help with an athlete’s strength training, “they should be trained by a certified strength and conditioning specialists to ensure that all the proper safeguards are in place when working with young athletes” (Zatsiorsky, 2006).

Because the percentages have not been similar, SCCs and ATs seem to be primarily hired in three separate ways including full-time, part-time, or outsourced. Based on research conducted on ATs, it was found that full-time ATs reported an injury rate higher than part-time ATs. This may demonstrate that part-time ATs had less time and resources to evaluate teams, leading to less reported injuries. Outsourced ATs reported an even lower number of injuries (Kerr et al., 2016). Although it may sound like a positive result, this likely means that the AT was less available to diagnose athletes and report injuries. Injuries that go undiagnosed or reported can lead to more harm for the athletes. Although most schools hire part-time or outsourced ATs due to cost, it is in the athlete’s best interest and safety to employ a full-time AT. Being that ATs and SCCs both work to keep athletes safe, the same should hold true for the position of SCCs. Relative to other levels of competition, it seems that the position of SCC could be headed in this direction. Strength and conditioning has been showing consistent growth during the past few decades and when studies ask about the future for the field of strength and conditioning there is always projected growth as a result (e.g., Duehring & Ebben, 2010; Ebben & Carroll, 2004; Ebben et al., 2005; Pullo, 1992; Simenz et al., 2005).
The factor that seems to separate full-time SCCs and ATs is the fact that it is usually a job requirement to be officially certified to do the job. In a survey, 97% of D1-A SCCs thought high school SCCs should possess relevant certifications, 72% thought they should have a CSCS certification, while others thought that the USAW certification was adequate. Because you cannot receive one of these certifications without an undergraduate education, D1-A SCC coaches believe this will give an individual adequate knowledge to provide a safe program for high school athletes (Wade et al., 2014).

Given this information, this study provides a profile of high school football SCCs across the state of Ohio for high schools. From this information, we illustrate how the position compares to other levels of competition, other states as well as how the position varies from schools of different size, and if high school athletes are receiving sufficient instruction from a qualified coach. Lastly, we aim to contribute to the literature by providing information on the administration’s views on this position and its future within high schools across the state of Ohio.
CHAPTER III
OVERVIEW

The following section will provide the methodology used for this study. Information on study participants, measurement instruments, procedures, data analysis, and the role of the researcher are detailed below.

Participants

Data for this study were collected via a survey sent to high school ADs in the state of Ohio. Here, the researchers aimed to include as many schools as possible with not having a football team being the only excluding criteria. Therefore, an AD from every high school with a football team in the state of Ohio was contacted.

Instruments

This study utilized a questionnaire as a data collection instrument. The researchers intended to use data collected from this questionnaire to contribute to understanding the current state of the position through the eyes of high school administrators. As such, this questionnaire was designed with three research objectives in mind. First, to gain an understanding of who is responsible for the athletes in a high school strength and conditioning program. Second, to determine the qualifications of the individuals who are responsible for the athletes in a high school strength and conditioning program. Third, to develop an understanding of a high school AD’s view on the future and relevance of hiring a full-time, dedicated high school strength and conditioning coach.
The questionnaire that was used can be found in Appendix A and contains a total of 20 questions. These questions were comprised of 5 short answer and 15 multiple choice questions. These 20 questions were included in the questionnaire in an attempt to answer four research questions:

1. Do Ohio high school ADs know who is responsible for supervising athletic teams as they participate in resistance training in their weight room facility? (This research question is addressed by questions 7, 8, 9, 10, 11, 13 & 14 on the questionnaire).

2. Are the individuals who are implementing/supervising the school’s strength & conditioning programs certified by any nationally recognized resistance training agency? (Addressed by questions 12 & 15).

3. How do Ohio high school ADs feel about the relevance of high school strength & conditioning coaches? (Addressed by questions 5, 16, 17, 18 and 19).

4. What do Ohio high school ADs predict for the position of high school strength and conditioning coaches in the future? (Addressed by question 20).

Questions 1, 2, 3, 4 & 6 are labeled as demographic in the questionnaire to acquire information about the background of the AD and the school that they work for. Questions numbered 8, 9, 10, 11, 12 and 13 were not to be answered by ADs who did not have a strength and conditioning coach. Questions 14 and 15 were not to be answered by ADs who did claim to have a strength and conditioning coach. Therefore, ADs who knew of an individual acting as a SCC for their school were asked to answer 18 questions and ADs who did not know of any individuals acting as a strength and conditioning coach were asked to answer 14 total questions.
Procedures

This study was carried out by a survey administered to high school ADs in the state of Ohio. An AD from every high school with a football team was contacted. This included the ADs for high school football teams competing at Division I, II, III, IV, V, VI, and VII level. In sum, 677 emails were sent to ADs. Respondent contact information was collected from the Ohio High School Athletic Association (OHSAA) website. The sample used was comprehensive and representative utilizing all available football playing schools comprising the OHSAA.

This study reached out to ADs at every level of high school sports to determine how high school strength and conditioning varied across school sizes. This study chose to reach out to ADs to determine how the administration views the position at this level. Current research typically examines strength and conditioning from the perspective of strength and conditioning and sport coaches. Gaining an understanding of the AD’s perspective provides insight into how the administration feels about this position at this level. This is important because ADs are usually involved in deciding who is hired in an athletic department. The ADs were contacted through email.

This study began by sending out preliminary emails to 14 ADs. These emails were sent to two ADs at each division that Ohio high school football teams compete. The purpose of these emails was to receive feedback from experts about the reliability and validity of this questionnaire. During this phase, the 14 ADs were given two total weeks to respond, with a reminder email sent one week after the initial survey was sent. After adjusting the questionnaire, the remaining emails were sent with a reminder email sent
one week later. This gave the ADs two weeks to respond to the questionnaire before summer vacation began for the high schools.

After considering the feedback from the experts and adjusting the questionnaire, the official emails were sent. A reminder email was sent to those who had not yet participated seven days later, and again six days after that. The Questionnaire was closed one day after the second email reminder. This gave the ADs a total of two weeks to respond to the questionnaire. Finally, a thank you message was sent to all administrators who participated in the questionnaire.

**Data Analysis**

The present study used descriptive research in the form of a job analysis to gather information regarding administrators and SCCs at the high school level in the state of Ohio. The questionnaire aimed to obtain information such as ADs educational background, SCC certifications, years of employment, salary, roles, and expectations. The answers to the questionnaire were counted and categorized to provide a summary of the responses. Also, the results were examined separately for public and private schools, as well as schools who do employ SCCs versus schools that do not employ SCCs.

**Role of the Researcher**

The researcher collected and analyzed the data as part of a Master Thesis. The researcher developed a questionnaire and received feedback on this questionnaire from experts in the field. It is important to know that the researcher is not an expert in athletic administration. However, the researcher holds a current and valid certification in the National Federation of State High School Associations Fundamentals of Coaching and is a CSCS through the NSCA. He has over three years of strength and conditioning.
experience and two years of high school coaching experience. The researcher served the role of sending and collecting the questionnaires for this study.
CHAPTER IV
RESULTS

In this chapter, the results of the study are reported. This study used a descriptive analysis to analyze responses from a questionnaire that was administered electronically. Survey Monkey was used to create and send the questionnaire and Microsoft Excel was used to review the responses. A total of 157 responses were recorded. Although 157 questionnaires were used for this study, not all the questionnaires were filled out entirely. Not all the questions included in the results section included 100% responses. The number of responses per question is addressed in Tables 1-5.

The questionnaire began with demographic questions. The first, asking ADs what their primary field of study was throughout their years of college. Of all the responses, education (44%), physical education (14%), and educational administration (4%) were the most common responses. Administration only received 1% of the responses while sport administration only totaled 3% of the responses. Only two of the respondents said that their primary field of study was exercise science. These two respondents both claimed to have several people responsible for strength and conditioning at their school, suggested that the position’s importance is a 10 out of 10, and predicted the amount of people dedicated to the position will increase in the future.

Overall, the responses included completed surveys from 139 public schools and 17 private schools. Also, 100% of the respondents indicated to have had a football team.
One-hundred percent of the private schools reported that they had an individual who was responsible for strength and conditioning at their school. Here, 65% of these individuals held the title of SCC and 35% held no additional responsibilities. Based on responses, private school coaches responsible for strength and conditioning also have a higher likelihood of having a certification although two ADs said that their SCC did not have a certification, while six were unsure. Among the remaining nine respondents, there were 18 certifications between them with CSCS being the most common (9).

Also of note, responses indicated that 11% were from DI, 13% from DII, 13% from DIII, 15% from DIV, 15% from DV, and 17% from DVII. The final demographic question asked ADs if their athletic teams utilize a weight training facility. Only one response out of 157 claimed that they did not. Although this respondent could not answer a majority of the survey, this AD still rated the position’s importance a nine out of 10 and responded that there was a need for the athletic department to hire a SCC. See table 1.

When the survey began to address the first research question, ADs revealed how many individuals were responsible for implementing strength and conditioning for the athletes. The most common answer was one by 56 respondents followed by two from 22 different questionnaires. The other most popular choice was five or more that was recorded 23 times. However, of the 23 responses that claimed to have five or more individuals responsible for strength and conditioning, only one school said that they had an individual with the title of SCC and was full-time. An equal number of questionnaires (23) also stated that they had zero individuals responsible for strength and conditioning. At these schools, a total of 20 claimed that their head football coach implemented strength and conditioning. The remaining three responses showed that two were
implemented by an athletic trainer, and one of these ADs left this question blank. Of these 23 individuals, there were two CSCS, one CSCCa, and one USAW certification between them. However, one of these individuals held three of these certifications which means only two out of the twenty-three held a strength and conditioning certification. Furthermore, nine out of the 23 ADs in this category answered that they were unsure if the individual held a certification and four ADs claimed they did not have one. See table 3 for details.

When the remaining ADs were asked what the title of the individual responsible for implementing strength and conditioning was, there was a vast array of responses. Most notably was strength and conditioning coach/coordinator (22%), head coach (15%), assistant coach/coach (12%), and weight room coach/coordinator/monitor (18%). Furthermore, the ADs were asked if the individuals were full-time, part-time, or contracted. A total of 41 responses indicated that 26 were part-time while 18 were full-time. Of these 18 responses, only eight of the individuals were full time SCCs. The other 10 individuals were primarily football coaches. Fifty-three ADs chose to not classify the individual as full-time, part-time, or contracted. Instead, they provided an open response with the most common indicating that strength and conditioning duties were considered “supplemental” to other duties. When asked whether the strength and conditioning professional held any additional roles in the school, 24 responded no. Of these 24 responses, 14 of these individuals held a title that represented them as a SCC. Eighty-seven responses claimed that the individual held multiple roles with two being an administrator. Here, 18 were an assistant coach, 41 were the head football coach, 13 were a physical education teacher, and 13 were a teacher of a subject other than physical
education. Another 29 responses claimed that the individual held several roles within the school.

The number of years that the individual responsible for implementing strength and conditioning had their role was most highly represented by 33 ADs listing two to five years. Fourteen responses claimed less than one year while 19 suggested that the same individual had been responsible for strength and conditioning at the school for more than 10 years.

When the questionnaire asked about the salary specifically regarding strength and conditioning responsibilities, 20% of respondents claimed they did not make any income specific to strength and conditioning while 46% indicated a salary between $0 and $5,000. The next most common response was for a salary between $5,000 and $10,000 at 10%. There were six ADs that responded saying that the salary was between $40,000 and $50,000 while four ADs answered $50,000+. Of these 10 responses, four individuals held the title of a full-time SCC and did not have other responsibilities, while all four of these individuals were certified by at least one of the previously mentioned certifications. These four individuals were also from DI schools, two being public, and two being private. See table 2 for details.

To address the third research question, ADs were asked about the certifications that were held by those implementing strength and conditioning. Here, the most common response was the CSCS with 34, followed by CPT with 16, then USAW with seven, and finally, CSCCa with six. It must also be noted that 12 of the individuals held two or more of these certifications. Twenty ADs claimed that the individual responsible for implementing strength and conditioning at their school did not have any certifications and
56 ADs responded that they were “unsure” if the individual had any certifications. See table 3 for details.

When ADs were asked to rate the importance of teaching strength and conditioning techniques to youth athletes on a scale of one to 10 (one meaning “Not important at all” and 10 meaning “Absolutely Essential”), 119 out 157 responses were a 10. A combined 32 responses were tallied for a rating of eight and nine, which meant only six ADs felt that teaching strength and conditioning techniques was less important than a score of eight out of 10. This question was the first to address research question three which asked about how Ohio ADs feel about the relevance of high school strength and conditioning.

For the most part, ADs felt the need to hire a strength and conditioning coach with 78% of the responses confirmed the need to hire a SCC while 22% said that they did not feel the need to hire a SCC. However, 54% of the ADs answered that they were satisfied with the current state of the strength and conditioning program while 46% claimed they were not satisfied. When ADs were asked to detail the issues that stand in the way of the athletic department hiring a SCC the most common response was budget-related. Seventy-five percent of the responses claimed that they did not have enough money to hire a SCC. The next most common answer had to do with the hiring process being an issue (11%). For the most part, ADs felt that finding a qualified individual who could work with all athletes was a deciding factor attempting to hire a SCC.

There was a wide range of responses when ADs were asked to describe what they felt were the duties of the SCC. The most common response with 28%, had to do with planning the workouts for the program, 19% had to do with supervising the weight room,
and 10% of these responses claimed the SCCs duty was to increase physical ability. The responses that more closely resembled the duties of the SCC discussed earlier were to educate the coaches and athletes (4%), teach technique to athletes (13%), prevent injuries (7%), and enhance overall athletic performance development (12%). Another 8% of the responses were a combination of two or more of the previously mentioned categories.

Lastly, to address the fourth and final research question, ADs were asked about what they predicted about the number of people dedicated to strength and conditioning at the high school level. Eighty out of 157 responses indicated that they though that the number of people dedicated to strength and conditioning at the high school level would increase while only nine believed it would decrease. However, 60 ADs believed the number will stay the same in the future. The remaining eight responses most commonly stated that the answer to this question depended on money, and that they were hopeful it would increase but they could not say for sure. See table 5.
CHAPTER V
DISCUSSION

This chapter examines the ADs responses to the questionnaire in relation to creating a profile of high school strength and conditioning in the state of Ohio. Conclusions are developed based on the findings that are described in Chapter IV based on the research questions and objectives. Furthermore, this chapter contains implications and suggestions for future research.

The purpose of the current study was to describe the status of high school strength and conditioning for high school football teams in the state of Ohio from the perspective of high school ADs. In doing so, this study examined whether high school ADs understand who is administering strength and conditioning programs for their athletes, their qualifications, the ADs perception of the position, and their prediction for the position in the future.

Overall, it seems that ADs understand who is implementing strength and conditioning programs within their school. This is since only one respondent was not able to respond to a question asking who implemented strength and conditioning at their school. However, roughly 1/3 (56) of ADs responded that they were “unsure” if the individual responsible for strength and conditioning held a relevant certification. Although this may illustrate uncertainty, it must also be noted that collectively, ADs for the most part were able to describe whether the coaches had certifications and if they did,
which ones. This resulted in the questionnaires revealing that 44 (28%) individuals across the state of Ohio held recognized certifications in the field of strength and conditioning. The current results differ from the previously mentioned study that used the NSCA as their search criteria (Weaver, 2015). When participants were selected through the NSCA, most respondents were certified, unlike the present study. However, this data is like the previous study done in Utah that revealed that 35.5% of coaches had a strength and conditioning certification (Weaver, 2015). Results from this questionnaire were also consistent when it came to facility usage. This is similar to a previous study that also found that nearly over 95% of high schools utilize a weight training facility (Judge et al., 2013).

The ADs seem to hold the position of SCC in high regard. Ninety-six percent of ADs rank the position’s importance as an eight or higher and 77% of ADs feel the need to hire a strength and conditioning coach. However, despite the fact most ADs felt the need to hire a SCC, 54% of ADs also responded that they were happy with the current state of their strength and conditioning program. Based on the responses to question 18, regarding the issues responsible for not hiring a SCC, it seems that money is the primary issue. This is interesting considering that 47% of ADs who claimed to have an individual responsible for strength and conditioning at their school, were unsure if the individual held the proper certifications. A lack of funding was the leading response by a wide margin with 67%. Therefore, we can assume that if the proper funding was available, then there would be an increase in hiring high school SCCs in the state of Ohio.

When ADs were asked about their perception of the SCCs duties, we received responses that were not consistent with the duties described by the NSCA (NSCA, 2009).
Although the combined responses of 157 questionnaires equate to a similar description to what the NSCA provides, only a few ADs could precisely describe the duties of a strength and conditioning coach. Perhaps if ADs had a better understanding of the position, the likelihood of growth in the field may increase.

Based on the responses from the final question of the survey, we can conclude that most ADs feel that the position of high school SCC will increase as over 50% of ADs stated that they believe the position will grow with only 6% predicting the opposite. Based on the responses from this question and the previous questions, we can assume that ADs may make a push for more funding to be used towards the hiring of an SCC.

**Practical Implications**

The present study provided information for those involved with interscholastic athletics. Specifically, this study provided a profile for who is responsible for high school athletes during strength and conditioning sessions in the state of Ohio. These findings may not only make the athletic department more aware, but they will also provide the public with a better understanding as well as inform individuals in the field of high school strength and conditioning. As such, the current findings may be influential to athletic departments and SCCs when evaluating high school strength and conditioning. This study also shows that most of the individuals responsible for strength and conditioning were not deemed qualified according to the previously mentioned criteria. As was mentioned earlier, unqualified coaches and teachers may not be fit to safely and effectively administer strength and conditioning programs to high school students. Thus, this study may highlight the need for athletic departments to be more selective with the coaches they allow to act as SCCs and may also lead to changes in the hiring process.
Limitations and Future Research

Despite strengths of the current study, there were also limitations. One such limitation was the fact that the survey was sent in May. This is the end of the school year and might have hindered the number of responses that were received. Perhaps if the questionnaire was sent out during football season, ADs may have been more inclined to respond. Another limitation to the study was the fact that the questionnaire only considered high school football SCCs due to the complexity of the questionnaire when including all sports.

Future research may be geared towards asking related questions regarding sports other than football at the high school level. A study such as this could show the differences between sports and how some sports may be benefiting more than others from SCCs. To build off of the current study, future research may also ask the about education level of individuals who implement strength and conditioning at the high school level and if these individuals have completed the high school coaching requirements necessary for high school coaches in a given state.

Future research may also examine repeating the current study using other states. Although previous research has examined strength and conditioning in other states, there has not been any previous research that describes the differences between high school strength and conditioning through the responses of ADs. A study that examines multiple states may provide valuable information to athletic departments and prospective high school SCCs.

Another future study could examine what kind of program the individual who acts as the SCC implements to the players. Such a study could ask the AD if they are aware of
what kind of work outs the athletes are participating. A similar study may also ask the SCCs directly. It may be valuable to interscholastic athletics and the field of strength and conditioning to know what kind of strength and conditioning tactics are being administered at the high school level.

Summary

The goal of the present study was to determine if high school ADs were understanding of the individuals responsible for strength and conditioning within their program, and to gain a better understanding of Ohio ADs perception of high school strength and conditioning. It was discovered that for the most part, ADs are aware of who is acting as the SCC within their program, they feel that the position is important, and they predict the position to grow in the future. It was also found that most individuals acting as SCCs did not hold relevant certifications and are thus, deemed un-qualified to hold the position of SCC.

The present study determined that in most cases, if you walked into a high school weight room in the state of Ohio, the individual(s) responsible for strength and conditioning for the football program are most likely the head football coach, an assistant coach, or a teacher. Previous research suggests that these individuals may not be qualified to safely implement strength and conditioning to high school level athletes (Couture et al., 2015; Mcgladrey et al., 2014; Pote & Christie, 2016). An increase in qualified SCCs at the high school level may provide the athletes with a safer, and more successful experience.
REFERENCES


APPENDICES
APPENDIX A

QUESTIONNAIRE

The purpose of this questionnaire is to gather information from high school Athletic Directors in the hopes of building a profile of high school football strength and conditioning in the state of Ohio. This survey will contribute to understanding the current state of the position through the eyes of high school administrations. The results of this questionnaire may increase the awareness of who is supervising and implementing high school strength and conditioning programs and whether the ADs believe this is sufficient for the safety and development of their athletes.

Research Questions

1. Who is responsible for the athletic teams as they participate in resistance training in their weight room facility? (Questions 7, 8, 9, 10, 11, 13 & 14)
2. Are the individuals who are implementing/supervising the strength & conditioning programs certified by any nationally recognized resistance training certifications? (Questions 12 & 15)
3. How do Ohio high school ADs feel about the relevance of high school strength & conditioning coaches? (Questions 5, 16, 17, 18 and 19)
4. What do Ohio high school ADs predict for the position of high school strength and conditioning coaches in the future? (Question 20)
   - Questions 1, 2, 3, 4 & 6 are labeled as demographic.

Research objectives

- Gain an understanding of who is responsible for the athletes in a high school strength & conditioning program.
- Determine the qualifications of the individuals who are responsible for the athletes in a high school strength & conditioning program
- Develop an understanding of a high school athletic director’s view on the future and relevance of a high school strength & conditioning coach
A SURVEY OF HIGH SCHOOL ADS IN REGARDS TO THE CURRENT STATE OF HIGH SCHOOL FOOTBALL STRENGTH AND CONDITIONING

1. What would you consider to be your primary field of study throughout your collegiate experience?

2. Is your school where you work public or private?
   Public       Private

3. Does your high school have a football team?
   Yes           No

4. What division does your football team compete in through OHSAA?
   D1   D2   D3   D4   D5   D6   D7

5. On a scale of 1-10, please rate the importance of teaching proper strength & conditioning techniques to athletes (1 meaning “Not important at all” and 10 meaning “Absolutely Essential”)
   1   2   3   4   5   6   7   8   9   10

6. Do your athletic teams utilize a weight training facility or weight room?
   Yes           No

7. How many individuals does your athletic program have assigned to implementing strength & conditioning for athletes?
   0   1   2   3   4   5 or more
   If 1 or more, please continue to question 8. If 0, please skip to question #14

8. What is the job title of the Individual responsible for strength & conditioning at your school?

   ______________________

9. What is this individual’s status of employment specifically regarding their strength & conditioning responsibilities?
   Full-time     Part-time     Contracted     Other__________________

10. Does the individual responsible for strength & conditioning at your school serve any additional roles to the school?
    Yes           No
    If Yes, what are the additional roles?
    Administrator   PE Teacher   Head Football Coach
    Assistant Coach   Teacher
    Other__________________

11. How many years has the individual responsible for strength & conditioning been responsible for these roles?
12. Does the individual responsible for strength and conditioning at your school currently have any of the following certifications relevant to resistance training?
- CSCS (Certified Strength and Conditioning Specialist)
- CPT (Certified Personal Trainer)
- CSCCA (Collegiate Strength and Conditioning Coaches Association)
- USAW (USA Weightlifting)
- Unsure
- Other

13. What is this individual's estimated salary specifically regarding their strength & conditioning responsibilities?
- $0
- $0-$5,000
- $5,000-$10,000
- $10,000-$20,000
- $20,000-$30,000
- $30,000-$40,000
- $40,000-$50,000
- >$50,000

Please skip to question number 16.

14. Who monitors and/or implements the weight training of sports teams in the weight training facility/weight room?
- Head Sport Coach
- Assistant Sport Coach
- PE Teacher
- Parent
- Other

15. Do any of the individuals who monitor the weight room currently have any of the following certifications relevant to resistance training?
- CSCS (Certified Strength and Conditioning Specialist)
- CPT (Certified Personal Trainer)
- CSCCA (Collegiate Strength and Conditioning Coaches Association)
- USAW (USA Weightlifting)
- Unsure
- Other

16. Do you feel that there is a need for the athletic department to hire a strength and conditioning coach?
- Yes
- No

17. Are you satisfied with the current state of your strength and conditioning program at your high school?
- Yes
- No

18. In your opinion, what issues impact your athletic department in the decision to hire a strength and conditioning coach?

19. What do you perceive to be the duties of a high school strength and conditioning coach?
20. Do you think the number of people dedicated to strength & conditioning will increase, decrease, or stay the same in the future at the high school level?
Hello,

My name is Kenny Szabo. I am a graduate assistant with the University of Akron’s Sport Science and Wellness Education department and I work closely with Akron Football Strength and Conditioning. I am currently writing a thesis in regards to high school administration and football strength & conditioning.

The purpose of this questionnaire is to gather information from high school athletic directors in the hopes of building a profile of high school football strength and conditioning in the state of Ohio. This survey will contribute to understanding the current state of the position through the eyes of high school administrations. The results of this questionnaire may increase the awareness of who is supervising and implementing high school strength and conditioning programs and whether the athletic directors believe this is sufficient for the safety and development of their athletes.

Thank you very much for your time and input.
APPENDIX C

TABLES

Table 1

Demographic Questions

<table>
<thead>
<tr>
<th>Q1: What would you consider to be your primary field of study throughout your collegiate experience? (n=157)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>(2)</td>
</tr>
<tr>
<td>Education administration</td>
</tr>
<tr>
<td>(7)</td>
</tr>
</tbody>
</table>

Q2: Is your school where you work public or private? (n=156)

<table>
<thead>
<tr>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>(139)</td>
<td>(17)</td>
</tr>
</tbody>
</table>

Q 3: Does your high school have a football team? (n=157)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(157)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Q 4: What division does your football team compete in through OHSAA? (n=157)

<table>
<thead>
<tr>
<th>DI</th>
<th>DII</th>
<th>DIII</th>
<th>DIV</th>
<th>DV</th>
<th>DVI</th>
<th>DVII</th>
</tr>
</thead>
<tbody>
<tr>
<td>(17)</td>
<td>(20)</td>
<td>(21)</td>
<td>(24)</td>
<td>(24)</td>
<td>(24)</td>
<td>(27)</td>
</tr>
</tbody>
</table>

Q 6: Do your athletic teams utilize a weight training facility or weight room? (n=156)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(156)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Note. Questions number one, two, three, four, and six are considered demographic. These questions are used to develop an understanding of the ADs backgrounds and to provide information about the schools involved.
Table 2
Research Question 1

Q7: How many individuals does your athletic program have assigned to implementing strength & conditioning for athletes? (n=157)

<table>
<thead>
<tr>
<th>Number Assigned</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(23)</td>
</tr>
<tr>
<td>1</td>
<td>(56)</td>
</tr>
<tr>
<td>2</td>
<td>(22)</td>
</tr>
<tr>
<td>3</td>
<td>(16)</td>
</tr>
<tr>
<td>4</td>
<td>(17)</td>
</tr>
<tr>
<td>5 or more</td>
<td>(23)</td>
</tr>
</tbody>
</table>

Q8: What is the job title for the Individual responsible for strength & conditioning at your school?

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Coach</td>
<td>(23)</td>
</tr>
<tr>
<td>Strength and conditioning coach</td>
<td>(31)</td>
</tr>
<tr>
<td>Coach/assistant coach</td>
<td>(19)</td>
</tr>
<tr>
<td>Weight room coach/ coordinator</td>
<td>(28)</td>
</tr>
<tr>
<td>Other</td>
<td>(56)</td>
</tr>
</tbody>
</table>

Q9: What is this individual’s status of employment, specifically regarding their strength & conditioning responsibilities? (n=138)

<table>
<thead>
<tr>
<th>Status</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracted</td>
<td>(41)</td>
</tr>
<tr>
<td>Full-time</td>
<td>(18)</td>
</tr>
<tr>
<td>Part-time</td>
<td>(26)</td>
</tr>
<tr>
<td>Other</td>
<td>(53)</td>
</tr>
</tbody>
</table>

Q10: Does the individual responsible for strength & conditioning at your school serve any additional roles to the school? If Yes, what are the additional roles? (n=140)

<table>
<thead>
<tr>
<th>Yes, role</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, administrator</td>
<td>(2)</td>
</tr>
<tr>
<td>Yes, assistant coach</td>
<td>(18)</td>
</tr>
<tr>
<td>Yes, head coach</td>
<td>(41)</td>
</tr>
<tr>
<td>Yes, physical education teacher</td>
<td>(13)</td>
</tr>
<tr>
<td>Yes, Teacher</td>
<td>(13)</td>
</tr>
<tr>
<td>Other</td>
<td>(29)</td>
</tr>
</tbody>
</table>

Q11: How many years has the individual responsible for strength & conditioning been responsible for these roles? (n=137)

<table>
<thead>
<tr>
<th>Years</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>(14)</td>
</tr>
<tr>
<td>1 to 2</td>
<td>(27)</td>
</tr>
<tr>
<td>2 to 5</td>
<td>(52)</td>
</tr>
<tr>
<td>5 to 10</td>
<td>(21)</td>
</tr>
<tr>
<td>10 or more</td>
<td>(23)</td>
</tr>
</tbody>
</table>

Q13: What is this individuals estimated salary specifically regarding their strength & conditioning responsibilities? (n=139)

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 to $5,000</td>
<td>(71)</td>
</tr>
<tr>
<td>$5,000 to $10,000</td>
<td>(15)</td>
</tr>
<tr>
<td>$10,000 to $20,000</td>
<td>(9)</td>
</tr>
<tr>
<td>$20,000 to $30,000</td>
<td>(1)</td>
</tr>
<tr>
<td>$30,000 to $40,000</td>
<td>(2)</td>
</tr>
<tr>
<td>$40,000 to $50,000</td>
<td>(6)</td>
</tr>
<tr>
<td>$50,000 or more</td>
<td>(4)</td>
</tr>
</tbody>
</table>

*Note.* The questions above were used to answer the question of who is responsible for the athletic teams as they participate in resistance training in their weight room facility?
Table 3

Research Question 2

Q 12 (for 134 ADs who claim to have 1 or more individuals responsible for strength and conditioning): Does the individual responsible for strength and conditioning at your school currently have any of the following certifications relevant to resistance training? (n=119)

<table>
<thead>
<tr>
<th>Certification</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCS</td>
<td>34</td>
</tr>
<tr>
<td>CPT</td>
<td>16</td>
</tr>
<tr>
<td>CSCCa</td>
<td>6</td>
</tr>
<tr>
<td>USAW</td>
<td>7</td>
</tr>
<tr>
<td>Unsure</td>
<td>56</td>
</tr>
<tr>
<td>None</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>

Q 15 (for the 23 ADs who claim to have 0 individuals responsible for strength and conditioning): Does the individual responsible for strength and conditioning at your school currently have any of the following certifications relevant to resistance training? (n=16)

<table>
<thead>
<tr>
<th>Certification</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCS</td>
<td>2</td>
</tr>
<tr>
<td>CPT</td>
<td>0</td>
</tr>
<tr>
<td>CSCCa</td>
<td>1</td>
</tr>
<tr>
<td>USAW</td>
<td>1</td>
</tr>
<tr>
<td>Unsure</td>
<td>9</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note.* Questions 12 and 15 give an allow us to determine if the individuals who are implementing/supervising the strength & conditioning programs are certified by any nationally recognized resistance training certifications?
Table 4

Research Question 3

Q 5: On a scale of 1-10, please rate the importance of teaching proper strength & conditioning techniques to athletes (1 meaning “Not important at all” and 10 meaning “Absolutely Essential”) (n=157)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(3)</td>
</tr>
<tr>
<td>2</td>
<td>(0)</td>
</tr>
<tr>
<td>3</td>
<td>(2)</td>
</tr>
<tr>
<td>4</td>
<td>(0)</td>
</tr>
<tr>
<td>5</td>
<td>(0)</td>
</tr>
<tr>
<td>6</td>
<td>(1)</td>
</tr>
<tr>
<td>7</td>
<td>(0)</td>
</tr>
<tr>
<td>8</td>
<td>(11)</td>
</tr>
<tr>
<td>9</td>
<td>(21)</td>
</tr>
<tr>
<td>10</td>
<td>(119)</td>
</tr>
</tbody>
</table>

Q 16: Do you feel that there is a need for the athletic department to hire a strength and conditioning coach? (n=156)

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>(121)</td>
</tr>
<tr>
<td>No</td>
<td>(35)</td>
</tr>
</tbody>
</table>

Q 17: Are you satisfied with the current state of your strength and conditioning program at your high school? (n=156)

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>(85)</td>
</tr>
<tr>
<td>No</td>
<td>(71)</td>
</tr>
</tbody>
</table>

Q 18: In your opinion, what issues impact your athletic department in the decision to hire a strength and conditioning coach? (n=140)

<table>
<thead>
<tr>
<th>Issue</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>(105)</td>
</tr>
<tr>
<td>Facilities</td>
<td>(1)</td>
</tr>
<tr>
<td>Hiring Process</td>
<td>(11)</td>
</tr>
<tr>
<td>N/A</td>
<td>(17)</td>
</tr>
<tr>
<td>None</td>
<td>(3)</td>
</tr>
<tr>
<td>Schedule</td>
<td>(1)</td>
</tr>
<tr>
<td>School size</td>
<td>(1)</td>
</tr>
<tr>
<td>Lack of support</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Q 19: What do you perceive to be the duties of a high school strength and conditioning coach? (n=136)

<table>
<thead>
<tr>
<th>Duty</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>(16)</td>
</tr>
<tr>
<td>Education</td>
<td>(6)</td>
</tr>
<tr>
<td>Injury Reduction</td>
<td>(9)</td>
</tr>
<tr>
<td>Physical Improvement</td>
<td>(14)</td>
</tr>
<tr>
<td>Supervise</td>
<td>(26)</td>
</tr>
<tr>
<td>Technique</td>
<td>(17)</td>
</tr>
<tr>
<td>Multiple</td>
<td>(11)</td>
</tr>
<tr>
<td>Plan</td>
<td>(38)</td>
</tr>
</tbody>
</table>

Note. This information reveals how Ohio high school ADs feel about the relevance of high school strength & conditioning coaches.
Q20: Do you think the number of people dedicated to strength & conditioning will increase, decrease, or stay the same in the future at the high school level? (n=157)

<table>
<thead>
<tr>
<th></th>
<th>Increase</th>
<th>Decrease</th>
<th>Stay the Same</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(80)</td>
<td>(9)</td>
<td>(60)</td>
<td>(8)</td>
</tr>
</tbody>
</table>

*Note.* Ohio high school ADs predictions for the position of high school strength and conditioning coaches in the future.