Effects of an Athletic Trainer's Presence on an Athletic Director's Knowledge of the Tennessee Youth Concussion Law

by

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ABSTRACT

Concussions are a common occurrence in all types of athletics, including youth sports. Concussions can have serious adverse effects for adolescents who are still cognitively developing. Because of this growing concern, Tennessee has passed a law that sets guidelines for concussion management in youth athletics. These guidelines forced athletic programs to form policies regarding concussions in order to adhere to the new law. Currently there are 374 high schools in the TSSAA. The Athletic Directors for each high school were sent a survey to examine their knowledge of the new law, what type of access to an Athletic Trainer they have, and current concussion management policies they have in place. The proposed research question that was examined asks what effect does the presence of an Athletic Trainer have on an Athletic Director's knowledge of the Tennessee Youth Concussion Law? To answer this question a cross tabulation analysis was completed comparing Athletic Director's knowledge of the law with the presence of an Athletic Trainer. A Chi-Square analysis was conducted but showed no significant results. The hypothesis, Athletic Directors who have an Athletic Trainer at their school are more likely to have knowledge about the Tennessee Concussion Law than Athletic Directors who do not have an Athletic Trainer at their school could not be supported by statistical evidence.

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CHAPTER I

INTRODUCTION

A concussion is defined as “any transient neurological dysfunction resulting from a biomechanical force. Loss of consciousness is a clinical hallmark of concussion but is not required to make the diagnosis” (Giza & Hovda, 2001, p. 228). Concussions are most often seen in athletics, especially in high-risk contact sports such as football, ice hockey, and soccer. People of all ages can sustain a concussion and extreme caution needs to be taken when a concussion is suspected, particularly with adolescents. Special care needs to be taken due to the cognitive development that takes place during adolescence. Common symptoms of a concussion include headaches, dizziness, nausea, vomiting, tinnitus, vision problem, balance and postural problems, confusion, amnesia, and cranial nerve abnormalities (Guskiewicz et al., 2004). When an athlete presents with symptoms of a concussion, they should be evaluated by a healthcare professional, such as an Athletic Trainer (AT), and referred to a primary care physician or a neurological doctor. An athlete should not return to activity until he or she has been cleared by the appropriate doctor and is free of symptoms with activity.

Concussions have recently gained a great deal of attention from media networks due in large part to events that have taken place within the National Football League (CBSnews, 2011). There have also been many news reports of adolescents athletes having serious complications resulting from

concussion that include long term brain damage and in some cases death (Gray, 2001). This outbreak of attention over the last few years has sparked almost all of the states in the country to pass specific legislation regarding concussion management.

Recently, Tennessee became the 44th state to sign a concussion bill into law. The law is very similar to the policy the Tennessee Secondary School Athletic Association has had in place, but the new law will include private school teams, youth leagues, and all other athletic associations that are not members of the Tennessee Secondary School Athletic Association. The law will require coaches and administrators to be competent in concussion symptom recognition. The coaches and administrators will be required to complete a safety course in the recognition of concussions. Also included in the new law, parents will be required to annually sign an information sheet that details symptoms of a concussion, appropriate management, and short-term and long-term effects of concussions. The new concussion law mandates that after an athlete has received a concussion, he or she must be removed from activity and shall not return until the athlete has seen the appropriate health care provider.

With the new concussion legislation, coaches and Athletic Directors around the state will need to create concussion policies that follow the new laws. High schools that do not have an Athletic Trainer will have to be particularly cautious because the coaches will be the first responders and therefore responsible for recognizing the signs and symptoms of a

concussion in an athlete. It will be of interest to see what measures Athletic Directors and coaches are taking to create team policies that follow the new law.

Purpose of the Study

The purpose of the study was to analyze relationship between Athletic Director's knowledge of the law and whether or not the school has an Athletic Trainer. The research question was: What effect does the presence of an Athletic Trainer have on an Athletic Director's knowledge of the Tennessee Youth Concussion Law?

The research question was evaluated with the following hypothesis and an analysis was conducted on the responses of the Athletic Director Survey.

Hypothesis

Athletic Directors who have an Athletic Trainer at their school are more likely to have knowledge about the Tennessee Concussion Law than Athletic Directors who do not have an Athletic Trainer at their school.

Limitations

The major limitation to the study was whether or not the school has access to an Athletic Trainer. For example, if a high school has a full time Athletic Trainer, the athletic director would not have to change school policies to be certain that the high school is following the law. However, an athletic

director who does not have access to a fulltime Athletic Trainer placed much more responsibility on his or her coaching staff in order to follow the law. Coaches who do not work with an Athletic Trainer are now responsible for recognizing the signs and symptoms of a concussion. This would cause an athletic director to be certain that his or her coaches were certified in concussion recognition and would cause the athletic director to change the policies at his or her school. Whether or not a school has an Athletic Trainer may have an effect on the way that an athletic director answers the survey.

Another limitation is the small sample size that the data was gathered from. Further studies might also include all school administrators in order to understand what changes needed to be made at the administration level.

Study Implications

With The Tennessee Youth Concussion Law being passed, this study may be beneficial to State and County Boards of Education. This study allows state officials to see what effects an Athletic Directors knowledge has on his or her readiness to follow the law. It may also be useful in making State officials aware of the importance of an Athletic Trainer in the High School setting.

CHAPTER II

LITERATURE REVIEW

Concussion Reporting

Concussion research has been a very popular topic in the past, and understandably so due to the danger involved with a concussion. Hundreds of studies have been conducted to examine the common mechanisms of concussion, correct protocol for the recognition of a concussion, proper return to play guidelines, and even proper equipment that might reduce the risk of a concussion. However, there is far less literature regarding concussion policy within specific athletic organizations. Despite the limited number of studies concerning concussion policy, there are still several journal articles that have been published with specific concussion policies in mind.

Concussions are a very common injury in high school athletic, especially in sports with a large amount of contact. Marar et al. reported, “In the United States, concussions are a common injury among athletes, with an estimated 300,000 sports-related concussions occurring annually” (Marar, et al., 2012, p. 1). They also went on to report some similarities that were seen across different sports, reporting, “The overall rate of concussion was higher in competition than in practice, girls had higher concussion rates than boys in gender-comparable sports, and the majority of student-athletes missed more than 1 week of sports activity as a result of their concussion” (Marar, M., et al., 2012, p. 7). Meehan et al. suggests, “Concussions account for nearly

15% of all sports-related injuries in US high schools. Our data suggests that when a high school athlete attending a school that employs an AT sustains a concussion, there is usually a medical professional on site at the time of injury… most often an AT" (Meehan et al., 2011, p. 5). McGuire et al. published an article reporting similar numbers saying,

> It has been estimated that 300,000 sports-related traumatic brain injuries occur each year across all age groups, but more recent data, including recreational and club sports, suggest that up to 3.8 million occur annually…Injuries with loss of consciousness are estimated to occur at the rate of 9.3 injuries per 100 adolescents per year. Because athletes often are eager to return to play, they often fail to report injuries and symptoms or receive medical care until well after the injury (McGuire, C., et al., 2011, p. 30).

There have been several reports about high school concussion but *Current Sports Medicine Reports* published an article about concussion management in children and the adolescent athlete. Lovell et al. found, "A recently published estimate suggests that 30 million or more children and adolescents currently participate in organized sports across the United States…by the time adolescents reach high school, more than half (53%) report a history of concussion, and in the college population, 36% report a history of multiple concussions" (Lovell et al., 2008, p. 12). The number of concussions that are

reported are alarming, but even more alarming are the number of concussions that go unreported. For this reason, there have been several pieces of literature that give guidelines for concussion management and compare different methods among Athletic Trainers, physicians, and coaches.

Return to Play Guidelines

In 2004, *The Journal of Athletic Training* published the National Athletic Trainers' Association position statement concerning the management of sports-related concussions. It gives specific recommendations as to when to refer an athlete to a physician or specialist, what signs and symptoms to look for, issues about equipment, and caring for an athlete at home. The position statement encourages Athletic Trainers and physicians to work together, with Guskiewicz et al. stating that, "Athletic Trainers and team physicians should agree on a philosophy for managing sport-related concussions before the start of the athletic season" (Guskiewicz et al., 2004, p. 281). This position statement recommends that a policy must be agreed upon between the Athletic Trainer and the team physician. This article was written specifically for Board Certified Athletic Trainers and the teams for which they work, therefore no recommendations are given for concussion policy for an entire athletic organization.

While this position statement gives specifics on return-to-play guidelines, Johnson stated that return- to- play guidelines may not address the issues related to sports-related concussions. Common return- to- play

guidelines include mandatory rest days after an athlete becomes asymptomatic. This article stated, “Evidence suggests, however, that the effects of concussions are not limited to the clinically symptomatic period, which typically lasts less than 2 weeks. Studies show cognitive deficits in child and adolescent athletes can persist for up to 3 years” (Johnson, 2012, p. 182). Similarly, Physicians and Pediatricians follow published guidelines when treating a concussion. Athletic Trainers are not permitted to give medication to athletes, whereas Pediatricians routinely write prescriptions for concussions. Kinnaman et al. conducted a study to examine what types of medication physicians and pediatricians are using to treat concussions. The results showed, “Most pediatricians use medications for managing the symptoms of patients suffering from concussions; many use prescription medicines such as tricyclic antidepressants and stimulants” (Kinnaman et al., 2013, p. 426). Even though *The Journal of School Health* argued that return-to-play guidelines may not be helpful in concussion management, an article written by Yard et al. conducted an investigation on return-to-play guidelines compliance among high school athletes. The article reported, almost half of all high school athletes failed to comply with American Academy of Neurology (AAN) RTP guidelines (Yard & Comstock, 2009). The article went on to report, at least one in six athletes still returned to play prematurely and this proportion is likely much higher (Yard & Comstock, 2009).

Coaches Education

Recommendations for concussion management and return-to-play guidelines are important, but under the new Tennessee concussion law coaches will be responsible for recognizing whether or not an athlete is concussed as well as referral to the appropriate medical professionals. There are several studies in response to a program directed by the Centers for Disease Control and Prevention called Heads Up: Concussion in High School Sports, and other informational packets regarding concussion management. An article published by Guilmete et al. examined concussion management and understanding among high school coaches in the New England area. The study utilized a survey about concussion management and compared responses between high school coaches and the general public. The reports of this study showed, “The majority of coaches reported that altered mental status is the most important indicator of concussion… In addition, coaches generally did not describe loss of consciousness as the most important symptom of concussion, which reflects coaches understanding that concussion can (and most often does) occur without a player being knocked out” (Guilmette et al., 2007). Sarmiento et al. published a similar article regarding concussion education for coaching staffs using the Head Up program from the Centers for Disease Control and Prevention. Major improvements in coaches abilities on recognizing concussions have been seen with this article reporting, “Over 60% of coaches viewed concussions as

a more serious injury after reviewing the “Heads Up” materials… Also, most coaches made proactive efforts to educate others, in particular their athletes, parents, and other coaches about this injury” (Sarmiento et al., 2010). Sarmiento et al. also published an article evaluating the Centers for Disease Control and Prevention’s program Heads Up: Concussion in High School Sports. This study evaluated how effective this education tool was to high school coaches. The results showed, “positive changes in high school coaches’ knowledge, attitudes, behavior, and skills related to concussion prevention and management” (Samiento et al., 2010). There is still some confusion amongst coaches when trying to identify a sport-related concussion. Valovich et al. reported some misconceptions amongst youth coaches reporting, “Our findings highlight some misconceptions regarding concussions that are common in the general populations. Of our coaches, 42% thought that loss of consciousness was required for a concussion to occur; 32% did not think that a Grade 1 concussion required removal from competition, and 26% would let a symptomatic athlete return to play” (Valovich et al., 2006).

In conjunction with coaches’ education, players’ education is equally important. Bramley et al. conducted a study to examine the likelihood that soccer players will report to their coach if they are experiencing symptoms of a concussion. The study concluded, “Soccer players who have received concussion education from any source are more likely to notify their coach or Athletic Trainer of a suspected concussion as compared with athletes with no

education, potentially reducing the risk of additional brain injury" (Bramley et al., 2012). While player education is a major step in concussion prevention, some concussions are still going unreported. Mecrea et al. conducted a study on high school football players. The athletes were given a preseason survey and a postseason survey. The results showed, "A total of 229 players reported that they sustained a concussion, as defined by the postseason survey, during the current football season. Of the respondents who reported sustaining a concussion during the football season, only 47.3% reported the event" (McCrea, 2004, p. 15). Concussion education is an important element in concussion prevention, but if less than half of concussions are being reported, more needs to be done at the local level to raise awareness of the dangers that concussions pose.

State legislature should include formal training for coaches and athletes alike. It is unlikely; however, that coaches and players alike will receive any type of formal training unless a governing body mandates it. Several states have already had formal legislation passed with specific guideline regarding youth concussion management. An article written by Trojian discussed the law that had passed in an effort to address the youth concussion issue. The study surveyed varsity football coaches from Connecticut to examine their thoughts and feelings to the new law and found, "They felt the law was helpful to them as coaches; that mandatory education was useful; and that the law enabled them to educate others about concussions" (Trojian, 2012). The article went on to talk about strengths of

the law saying, “Since high school coaches do not always have ATs available at practice, we felt that PA 10-62 would make it easier for coaches since they would not have to make a complicated medical decision, but could instead make the easy decision to remove a player with a concussion until further evaluation” (Trojian, 2012). Along with state legislation, federal legislation has also been passed to try and address the issue of youth concussions. Leuke published an article related to federal legislation that has recently been passed and what is required under the new law. The article states, “Accordingly, coaches, training staff, athletes, officials, and volunteers must be trained in concussion prevention and recognition. Baseline testing is imperative for qualified health care providers to properly assess a player’s status after an apparent concussion and to make return-to-play decisions” (Lueke, 2011, p. 488).

Research regarding concussions is not a novel idea and has been written about for several years now. Some of the research presented here offers some insight as to why there are legislation acts for almost every state now. With more than 50% of concussion going untreated, it is no surprise that the new Tennessee Youth Concussion Law mandates that all coaches be required to have formal concussion training. All of the research presented explains why the Tennessee Youth Concussion Law is necessary in protecting the adolescent athletes that are at risk for concussions.

Chapter III will discuss the methodology used to assess the research question what effect does the presence of an Athletic Trainer have on an

Athletic Director's knowledge of the Tennessee Youth Concussion Law. The hypothesis evaluated for this study was: Athletic Directors who have an Athletic Trainer at their school are more likely to have knowledge about the Tennessee Concussion Law than Athletic Directors who do not have an Athletic Trainer at their school.

CHAPTER III

METHODOLOGY

Introduction

The purpose of the study was to examine the relationship between Athletic Directors knowledge of the new concussion law and the presence of an athletic trainer. In order to test the hypothesis, Athletic Directors who have an Athletic Trainer at their school are more likely to have knowledge about the Tennessee Concussion Law than Athletic Directors who do not have an Athletic Trainer at their school, data from the Athletic Director Survey was analyzed.

Data Source- Athletic Director Survey

The primary instrument for collecting data was a survey that was created specifically for this study. The survey was designed to assess the Athletic Director's knowledge of the law, what type of access the school had to an Athletic Trainer, and current policies for concussion management (Appendix A).

Participants

The participants for this study were Athletic Directors of high schools in the state of Tennessee that are in the Tennessee Secondary School Athletic Association (TSSAA). Currently there are 374 high schools in the TSSAA, therefore 374 was the hopeful the sample size use for this study. Due to

some Athletic Directors contact information being private, 186 schools were sent a survey. Access to these Athletic Directors was gained through the Tennessee Secondary School Athletic Association website as well as the high school website that each Athletic Director works at. Every athletic director received a survey through a website called Survey Monkey. Each athletic director was emailed a letter explaining the purpose of this study and what the information is trying to be gathered (Appendix B). Attached was a link to Survey Monkey where the athletic director can submit the survey.

To protect the human subjects during this study, Institutional Review Board approval was required for the completion of the study (Appendix C). Also for protection of the participants, responses were made public while the athletic director and his/her respective school remained anonymous. Keeping the names of the Athletic Directors private is necessary due to the fact that their responses to the survey could, in some way, have an effect on their job and working environment. Participants who chose to answer the survey agreed to be in the study. The cover letter explained that informed consent is gained by completion of the survey.

Design

This study is set up as a cross-sectional study. The participants were asked for information only one time in which they had a window of time where they chose to answer the survey. As cross-sectional designs cannot determine cause and effect relationships, only the relationship between

Athletic Directors knowledge and the presence of Athletic Trainer were determined.

Instruments

The instruments used in this study were the survey that the Athletic Directors complete and the website surveymonkey.com. This is a website that allows surveys to be distributed and returned completely electronically. This website made analyzing the responses much easier than if a survey was printed and mailed out to the individual schools. Survey Monkey is also much more cost effective as opposed to sending the surveys through the mail with stamped envelopes enclosed.

Data Entry

The survey was sent out through an email from Surveymonkey. When a survey was completed, it was returned to the Surveymonkey website and stored as data. Once the collection window had closed, the responses were exported from Surveymonkey into an SPSS format. In SPSS, the data analysis was conducted.

Data Analysis

In SPSS, the data analysis was conducted. Final conclusions were drawn after the data analysis was completed. All surveys were returned by email to the Surveymonkey website. From the website, the responses were transferred into an SPSS format for the data analysis. By using the survey

data, the relationship between Athletic Directors knowledge and the presence of an Athletic Trainer were examined by running a cross tabulation analysis. The analysis was completed using responses from question 2, question 4, and question 6 from the Athletic Director Survey (Appendix A). These questions were designed to test the Athletic Director's knowledge of the new law and also find out if the school has access to an Athletic Trainer. An index was created with the correct answers in order for a cross tabulation analysis to be conducted. The index for the correct answers was titled "ANSWERS". This variable was coded as "0," "1," or "2" depending on how an Athletic Director answered. A "0" was coded if the Athletic Director missed two or more of the correct answers. A "1" was coded if the Athletic Director only missed one of the correct answers. A "2" was coded if the Athletic Director chose all of the correct answers. The next variable was titled "ATHLETICTRAINER." The Athletic Director was coded as "0" if there was no access to an Athletic Trainer, and a "1" is there was access to an Athletic Trainer. For the crosstabs, the presence of an Athletic Trainer was the independent variable and the knowledge of the Athletic Director was the dependent variable.

A Chi-Square analysis was run to assess significant data. The significance level was set a $p<.05$.

Chapter IV shows the results of the data that was analyzed. Also included in the chapter are tables with the responses of the survey. The

tables represent the percentage of respondents that choose an answer as well as the total number of respondents that selected an answer.

CHAPTER IV

RESULTS

A twelve-question survey was sent to 186 Athletic Directors in Tennessee to assess their opinions regarding the new concussion law. Of the 186 surveys that were sent out, 70 completed surveys were returned and 67 were used in the analysis after the date was cleaned. 100% of the returned surveys were completed in full. For all questions, the respondents were allowed to select more than one answer. Because of this, some of the statistics add up to more than the number of respondents. Also as a result, some of the percentages add up to more than 100.00%.

Table 1 shows a crosstabs analysis of presence of an Athletic Trainer and knowledge of the Athletic Director. 78.95% of Athletic Directors who have access to an Athletic Trainer got all of the answers correct. 12.28% of Athletic Directors who have access to an Athletic Trainer missed only one of the correct answers. 8.77% of Athletic Directors who have access to an Athletic Trainer missed 2 or more of the correct answers.

Of the 10 Athletic Directors that did not have access to an Athletic Trainer, 70.00% did not miss any of the correct answers, 20.00% missed only one correct answer, and 10.00% missed 2 or more of the correct answers.

In SPSS, a Chi-Square analysis was conducted resulting in a *p*-value of .882. The significance level was set at $p<.05$.

Table 1

Characteristics (%) of Athletic Directors: Presence of an Athletic Trainer by Number of Answers missed

Characteristic	**Missed 2 or more correct answers**	**Missed 1 correct answer**	**Answered all correctly**	**n**	X^2	***df***	***p***
	(n=6)	(n=9)	(n=52)	67	0.66	3	0.882
No Athletic Trainer Present	10.00%	20.00%	70.00%				
Athletic Trainer Present	8.77%	12.28%	78.95%				

The next portion provides all of the responses from every survey. Each question is presented with a table representing the number of respondents who chose answer as well as the percentages of respondents who chose an answer.

The first question asked, “When an athlete sustains a concussion, who is the first person to evaluate the athlete?” 30.88% of the respondents said that the coach is the first person to evaluate an athlete. The Athletic Trainer was the most common response with 76.47% of respondents answering. (Table 2)

Table 2

Concussion Evaluation Personnel

Answer Choice	n	%
Coach	21	30.88%
Athletic Trainer	54	76.47%
Paramedic	2	2.94%
Parent	0	0%

The next question asked, “What is your current ‘Return to Play’ policy for an athlete that has a concussion?” 97.1% responded with the choice of, “the athlete must be evaluated by a doctor before returning.”(Table 3)

Table 3

Current Return to Play Policy

Answer Choice	n	%
The athlete can go back in if he/she feels better	0	0%
The athlete must sit out for a certain amount of time before returning	2	2.94%
The athlete may not play the rest of that day	2	2.94%
The athlete must be cleared by a doctor before returning	68	100.00%

The next question stated, “Who is responsible for identifying whether or not an athlete has sustained a concussion in your athletic program?”

76.47% stated that the Athletic Trainer was responsible for identifying a concussed athlete. 19.12% responded saying that a coach is responsible. (Table 4)

Table 4

Current Concussion Recognition

Answer Choice	n	%
Athletic Trainer	54	76.47%
Coaching Staff	13	19.12%
Parent	1	1.47%
Other	7	10.29%

The next question asked, “Does your athletic program have access to an Athletic Trainer?” 85.29% of respondents selected the “yes” answer option.14.71% responded with the “no” answer choice. (Table 5)

Table 5

Athletic Trainer Access

Answer Choice	n	%
Yes	60	85.29%
No	10	14.71%

The next question read, “Which describes your high school’s Athletic Trainer?” 2.94% of respondents selected the “staff Athletic Trainer” option. 17.65% of respondents selected the “full-time Athletic Trainer” option. 60.29% of respondents selected the “Contracted Clinical Athletic Trainer”

option. Finally, 17.65% of respondents selected the “Do not have an Athletic Trainer” option. (Table 6)

Table 6

Type of Athletic Trainer

Answer Choice	n	%
Staff Athletic Trainer	2	2.94%
Full-Time Athletic Trainer	12	17.65%
Graduate-Assistant Athletic Trainer	4	4.41%
Contracted Athletic Trainer	42	60.29%
Do Not Have Athletic Trainer	13	17.65%

Question 6 asked, “What changes in concussion management are mentioned in the new law that will take effect January 2014? Select all that apply.” 97.06% of respondents selected “Coaches must have formal concussion training” as a possible answer. 91.18% of respondents selected “parents must sign a form about concussion signs and symptoms” as a possible answer. 72.06% of respondents thought, “Parents must sign a form outlining the risk of concussion in youth sports” as a possible change. 85.29% of respondents selected “Athletic programs must have immediate removal policy for an athlete who may have sustained a concussion” as a possible answer. Lastly, 14.71% of respondents selected “the athlete must be sent to the emergency room immediately if a concussion is expected” as a possible answer. (Table 7)

Table 7

Concussion Law Requirements

Answer Choice	n	%
Coaches must have formal concussion training	68	97.06%
Parents must sign a form about concussion signs and symptoms	64	91.18%
Parents must sign a form outlining the risk of concussion in youth sports	50	72.06%
Athletic programs must have immediate removal policy for an athlete who may have sustained a concussion	60	85.29%
Athlete must be sent to emergency room if concussion is suspected	10	14.71%

The next question asked, “Under the new Tennessee Law, coaches will be required to have formal concussion training in order to recognize symptoms of a concussion. Would you feel comfortable with the responsibility of recognizing a concussion in an athlete?” 72.06% of respondents selected “yes” they would feel comfortable in recognizing a concussion in an athlete. 30.88% answered “no” they would not be comfortable recognizing a concussion in an athlete. (Table 8)

Table 8

Concussion Recognition Responsibility

Answer Choice	n	%
Yes	50	72.06%
No	20	30.88%

The next question asked, “How will you go about educating your coaching staff about concussions?” 36.76% stated that, “coaches will be educated on their own through a program.” 44.12% stated that, “all coaches will go through CDC Heads Up program at the same time.” 23.53% reported that, “Head coaches for each sport will be responsible for having their assistant coaches properly educated.” (Table 9)

Table 9

Education Practices

Answer Choice	n	%
Coaches will be educated on there own through a program	26	36.76%
All coaches will go through CDC Heads UP program at the same time	31	44.12%
Head coaches for each sport will be responsible for having their assistant coaches properly educated	17	23.53%
Other	7	10.29%

The next question asked, “What type of concussion education tool will you use to educate your coaching staff?” 58.21% selected the “CDC Heads Up program.” (Table 10)

Table 10

Concussion Education Tool

Answer Choice	n	%
CDC Heads Up program	41	58.21%
Brain 101 Coaches Concussion Training	5	7.46%
Advance Concussion Training (ACT) Program	5	7.46%
ConcussionWISE Pro	0	0.00%
Other	30	16.42%

The next question asked, “Would you be concerned that coaches would put the interest of the team above the safety of the athlete?” 25.00% of respondents selected “yes” they would be concerned that coaches would put the interest of the team above the safety of the athlete. 76.47% selected “no” they would not be concerned about a coach putting the interest of the team above the safety of the athlete. (Table 11)

Table 11

Athlete Safety

Answer Choice	n	%
Yes	17	25.00%
No	53	76.47%

The next question asked, “Do you agree or disagree with coaches having the responsibility of recognizing a concussion in an athlete?” 64.71% of respondents stated that they “agreed” with coaches having the responsibility. 35.29% stated that they “disagreed” with coaches having the responsibility of coaches recognizing a concussion in an athlete. (Table 12)

Table 12

Coaches Responsibility

Answer Choice	n	%
Agree	45	64.71%
Disagree	25	35.29%

The final question of the survey asked, “Will the new legislation stimulate the hiring of additional athletic training personnel at your school?” 16.18% of respondents selected “yes” they would hire an Athletic Trainer. 85.29% of respondents stated “no” they would not hire an Athletic Trainer because of the new legislation. (Table 13)

Table 13

Athletic Training Personnel

Answer Choice	n	%
Yes	10	16.18%
No	60	85.29%

The results allowed for the research question what effect does the presence of an Athletic Trainer have on an Athletic Director's knowledge of the Tennessee Youth Concussion Law? After the data analysis was completed, final conclusions were drawn. Chapter 5 outlines the conclusions of the study and provides implications for future studies.

CHAPTER V

DISCUSSION

This study provided the opportunity to examine the research question what effect does the presence of an Athletic Trainer have on an Athletic Director's knowledge of the Tennessee Youth Concussion Law. A cross tabulation analysis was conducted using results from questions from the Athletic Director Survey. This chapter will further discuss the results of the analysis, reexamine the hypothesis, and summarize the study with the conclusion.

Hypothesis

The original hypothesis was: Athletic Directors who have an Athletic Trainer at their school are more likely to have knowledge about the Tennessee Concussion Law than Athletic Directors who do not have an Athletic Trainer at their school.

After the Chi-Square analysis showed a *p*-value of .882, the original hypothesis could not be supported. There was no significant relationship between the presence of an Athletic Trainer and the knowledge an Athletic Director has.

Methodology

The biggest issue with this study is the number of survey respondents. There are 374 high schools in Tennessee, but access was only gained to 186 of those high schools. Of the 186 surveys sent out, only 70 were returned

and with 68 being included in the study. That is 37.63% of the total number of surveys sent out. This is not a good representation of the entire state of Tennessee. Another issue with the study was the access to the target population. If all 186 surveys were returned it would have been a much better representation of the state. The main issue is that Athletic Directors are very busy people who have a lot of paperwork come across their desk everyday. The study may have been more successful with a more accessible population.

Further Studies

This study should be replicated once the law has been in place for several years. This would allow for a comparison on how the Athletic Director's answers have changed over the years. For example, another study would show if Athletic Directors have changed the education program they are using, whom the first person to evaluate an athlete is, and whether or not they have hired more Athletic Training personnel. Another method that could be helpful would be to survey school administrators as well as the Athletic Directors. School administrators have more authority when it comes to making staff changes. School administrators also have an influence on policies and procedures around the school. A survey with administrators included would give insight as to how they have influenced concussion policies at their high school.

Conclusion

With more concussions being reported every year, new legislation is necessary to ensure the safety of the adolescent athletes. Concussions are being tremendously underreported which cause a need for more trained personnel. High school coaches are the best option to ensure that youth athletes remain safe. With new legislation, the number of concussions may increase but there is a greater chance that the number of concussion- related deaths will decrease.

The purpose of this study was to examine if there was a relationship between the presence of an Athletic Trainer and an Athletic Director's knowledge regarding the Tennessee Youth Concussion Law. This study tried to answer the research question what effect does the presence of an Athletic Trainer have on an Athletic Director's knowledge of the Tennessee Youth Concussion Law? While this study yielded no significant evidence of a relationship, this study was still able to provide information regarding the Tennessee Youth Concussion Law as well as gaining some insight to the knowledge of the Athletic Directors.

References

(2011, January, 31). New NFL Concussion Rules Take Effect. *CBSNEWS*. Retrieved from: http://www.cbsnews.com/8301-500290_162-5875227.html.

Bramley, H., Patrick, K., Lehamn, E., Silvis, M. (2012). High school soccer players with concussion education are more likely to notify their coach of a suspected concussion. *Clinical Pediatrics, 51,* 332-336.

Covassin, T., Elbin R., Sarmiento, K. (2012). Educating coaches about concussion in sports: evaluation of the CDC's "heads up: concussion in youth sports" initiative. *Journal of School Health, 82,* 233-238.

Giza, C., Hovda, D. The nuerometabolic cascade of concussion. *The Journal of Athletic Training, 36,* 228-235.

Guilmette, T., Malia, L., McQuiggan, M. (2007). Concussion understandings and misunderstandings among New England high school football coaches. *Brain Injury, 21,* 1039-1047.

Guskiewicz, K., Bruce, S., Cantu, R., Ferrara, M., Kelly, J., McCrea, M., Putukian, M., Valvovich McLeod, T. (2004). National Athletic Trainers' association position statement: management of sport-related concussion. *Journal of Athletic Training, 39,* 280-297.

Johnson, L. Return to play guidelines cannot solve the football-related concussion problem. *Journal of School Health, 82,* 180-185.

Kinnaman, K., Mannix, R., Comstock, R., Meehan, W. (2013). Management strategies and medication use for treating paediatric patients with concussions. *ACTA PAEDIATRICA, 102,* 424-428.

Lovell, M., Fazio,V. (2008). Concussion management in the child and adolescent athlete. *Head & Neurologic Conditions, 7(1),* 12-15.

Lueke, L. (2011). High school athletes and concussions more than a game at stake. *The Journal of Legal Medicine, 32,* 483-501.

Marar, M., Mcllvain, N., Fields, S., Comstock, R. (2012). Epidemiology of concussions among United States high school athletes in 20 sports. *The American Journal of Sports Medicine, 40, 747-755.*

McCrea, M., Hammeke, T., Olsen, G., Leo, P., Guskiewicz, K. (2004). Unreported concussion in high school football players. *Clinical Journal of Sports Medicine, 14,* 13-17.

McGuire, C., McCambridge, T. (2011). Concussion in the young athlete Diagnosis, management, and prevention. *Contemporary Pediatrics,* 30-46.

Meehan, W., d'Hemecourt, P., Collins, C., Comstock, R. (2011). Assessment and management of sport-related concussions in United States high schools. *The American Journal of Sports Medicine, 39(11),* 2304-2310.

Sarmiento, K., Mitchiko, J., Klein, C., Wong, S. (2010). Evaluation of the centers for disease control and prevention's concussion initiative for high school coaches: "heads up: concussion in high school sports". *Journal of School Health, 80,* 112-118.

Trojian, T., Hoey, P. (2012). Connecticut high school football coaches and concussion in law CT PA 10-62. *Connecticut Medicine, 76,* 495-498.

Valvovich, T., Schwartz, C., Bay, R. (2007). Sport-related concussion misunderstandings among youth coaches. *Clinical Journal of Sports Medicine, 17,* 140-142.

Yard, E., Comstock, R. (2009). Compliance with return to play guidelines following concussion in US high school athletes, 2005-2008. *Brain Injury, 23,* 888-898.

APPENDICIES

APPENDIX A- Athletic Director Survey

Athletic Director Concussion Survey

Please circle the most appropriate answer choices for the following questions

1. When an athlete sustains a concussion, who is the first person to evaluate the athlete?
    1. Coach
    2. Athletic Trainer
    3. Paramedics
    4. Parent

2. What is your current 'Return to Play' policy for an athlete that has a concussion?
    1. The athlete can go back in if he/she feels better
    2. The athlete must sit out for a certain amount of time before returning
    3. The athlete may not play the rest of that day
    4. The athlete must be cleared by a doctor before returning

3. Who is responsible for identifying whether or not an athlete has sustained a concussion in your athletic program?
    1. Athletic Trainer
    2. Coaching Staff
    3. Parent
    4. Other – describe

4. Does your athletic program have access to an Athletic Trainer?
    1. Yes
    2. No

5. Which describes your high school's Athletic Trainer?
    1. Staff Athletic Trainer
    2. Full-time Athletic Trainer
    3. Graduate Assistant Athletic Trainer
    4. Contracted Clinical Athletic Trainer
    5. Do not have an Athletic Trainer

6. What changes in concussion management are mentioned in the new law that will take effect January 2014? Select all that apply
    1. Coaches must have formal concussion training

2. Parents must sign a form about concussion signs and symptoms
3. Parents must sign a form outlining the risk of concussion in youth sports
4. Athletic programs must have immediate removal policy for an athlete who may have sustained a concussion
5. Athlete must be sent to emergency room if concussion is suspected.

7. Under the new Tennessee Law, coaches will be required to have formal concussion training in order to recognize symptoms of a concussion. Would you feel comfortable with the responsibility of recognizing a concussion in an athlete?
    1. Yes
    2. No

8. How will you go about educating your coaching staff about concussions?
    1. Coaches will be educated on there own through a program
    2. All coaches will go through CDC Heads UP program at the same time
    3. Head coaches for each sport will be responsible for having their assistant coaches properly educated
    4. Other- describe

9. What type of concussion education tool will you use to educate your coaching staff?
    1. CDC Heads Up program
    2. Brain 101 Coaches Concussion Training
    3. Advance Concussion Training (ACT) Program
    4. ConcussionWISE Pro
    5. Other Concussion Program - describe

10. Would you be concerned that coaches would put the interest of the team above the safety of the athlete?
    1. Yes

2. No

11. Do you agree or disagree with coaches having the responsibility of recognizing a concussion in an athlete?
    1. Agree
    2. Disagree

12. Will the new legislation stimulate the hiring of additional athletic training personnel at your school?
    1. Yes
    2. No

APPENDIX B- Survey Cover Letter

Dear Participant,

My name is Will Mathis and I am a graduate student at Middle Tennessee State University. For my thesis, I am researching the new Tennessee Concussion Law that will take effect on January 1, 2014. As the athletic director of your high school, the new law will affect you and your coaching staff.

Under the new concussion law, you and your coaching staff will be required to have some type of formal concussion training. For my research, I am asking all Athletic Directors in the TSSAA survey questions relating to the new concussion law, and how they plan on educating their coaching staff.

This survey will take 4-5 minutes of your time to complete. Your name and school will not be publicly published in any way. Participation in this study is strictly voluntary and you may choose not to participate at any time. If you do choose to complete the survey, you are giving consent for your answers to be included as data for this study. Again, your name and school will not be publicly published in any way.

Thank you very much for your participation.

William L. Mathis ATC/LAT
770-519-9590

Thesis Chair:
Dr. Helen Binkley

APPENDIX C- Institutional Review Board Approval Letter

October 14, 2013

Will Mathis, Dr. Helen Binkley
Health and Human Performance
wlm3b@mtmail.mtsu.edu, helen.binkley@mtsu.edu

Protocol Title: “To what extent will coaches in the TSSAA be educated under the New Tennessee Concussion Legislation”

Protocol Number: 14-095
Dear Investigator(s),
I have approved your study at the exempt level. The exemption is pursuant to 45 CFR 46.101(b) (2).

This is because the research being conducted involves the use of educational tests, survey procedures, interview procedures or observation of public behavior. You will need to submit an end-of-project report to the Compliance Office upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on October 14, 2016.
Any change to the protocol must be submitted to the IRB before implementing this change.

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs complete the required training. If you add researchers to an approved project, please forward an updated list of researchers to the Office of Compliance before they begin to work on the project. Once your research is completed, please send us a copy of the final report questionnaire to the Office of Compliance. This form can be located at www.mtsu.edu/irb on the forms page.

Also, all research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.
Sincerely,
Kellie Hilker
Compliance Officer
615-494-8918
Compliance@mtsu.edu