

CERTIFIED ATHLETIC TRAINERS' KNOWLEDGE OF THE NATA POSITION
STATEMENT OF PREVENTING SUDDEN DEATH IN SPORTS ASSOCIATED
WITH SUDDEN CARDIAC ARREST

by

Robin L. Hunt

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Thesis Committee:
Dr. Joey Gray, Chair
Dr. Steve Estes

I would like to dedicate this thesis to Dr. Brian Ragan. He showed passion and dedication throughout the entire process in the completion of this thesis. He never gave up on me, even when I wanted to give up on myself. Thoughts and prayers to him and his family.

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ABSTRACT

Sudden cardiac death (SCD) in athletes has become an increased concern for sports medicine and health care professionals covering athletic events. Death due to sudden cardiac arrest (SCA) has effected all levels of athletes from middle school to professional. Three out of one-thousand athletes have a cardiac condition that puts them at risk for SCD (Geier, 2016). Unfortunately, only 5% of patients survive after going into cardiac arrest (Geier, 2016). The need for certified athletic trainers (AT) and health care professionals being able to recognize signs and symptoms, and having emergency action plans (EAP) set in place, will only increase the athletes' odds of survival. Certified athletic trainers must be aware of the position statement presented by the National Athletic Trainers' Association (NATA) in regards to preventing sudden cardiac death, specifically sudden cardiac death. This study has developed a test to determine an ATs knowledge of sudden cardiac death in athletes. It will benefit the athletes playing the game they love, as well as test the knowledge of the ATs.

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CHAPTER I

INTRODUCTION

Sudden death in sport is an increasing concern for the sports medicine professional, coach, and athlete. Athletes are becoming bigger, faster and stronger. An athlete that is actively participating in physical activity to enhance their cardiovascular system and overall physical health, dies due to a malfunctioning of the heart (Schmied & Borjesson, 2014). The reported number of deaths annually is not exactly known. There is no data base where reporting of each death is mandatory. For the collected data, there are 110 deaths each year in young athletes, approximately 1 death every 3 days in the United States (Casa et al., 2012).

Athletes who collapse on the field and go into SCA usually have some sort of underlying cardiac disorder. It is not usually known until it is too late (Corrado, Basso, Rizzoli, Schiavon & Thiene, 2003). Regular exercise has numerous positive effects on a person's health. As a person exercises, the heart develops thickening of the walls of the structure and develops the athletic heart (Maron & Pelliccia, 2006). There is strong evidence for an association between exercise and a decrease in all-cause mortality (Nocon et al., 2008). Regular aerobic physical activity may reduce the risk of acute myocardial infarction and sudden cardiac death (SCD) (Hull, 1994). Heart abnormalities can include both structural and non structural. Structural heart abnormalities usually go undiagnosed until it is too late. Examples of structural heart abnormalities include hypertrophic cardiomyopathy, and coronary artery abnormalities. Nonstructural heart abnormalities can include commotion cordis, which is a direct blow to the heart (Maron, Shirani, Poliac, et al., 1996).

Preparation of an emergency situation is absolutely critical. An athlete that has gone into SCA needs immediate attention for highest risk of survival. Access to an automated external defibrillator (AED) and deliver a shock has highest survival rates if under one minutes (Larsen, Eisenberg, Cummins & Hallstrom, 1993). The single greatest determinant of survival after SCA is the time from collapse to defibrillation, with survival rates declining 7% to 10% per minute with every minute that defibrillation is delayed (Drezner, Rao, Heistand, Bloomingdale & Harmon, 2009). In addition to having an automated external defibrillator (AED) on site, the formation and implementation of an emergency action plan (EAP) is essential to ensure the best care will be provided.

The National Athletic Trainers Association (NATA) develops position statements as guidelines. The NATA provides these guidelines as the most current research for important conditions or topics. The position statement of Preventing Sudden Death in Sports presents recommendations for the prevention, screening, recognition and treatment of the most common conditions resulting in sudden death in organized sports (NATA, 2016). Athletic trainers (AT) must pass a certification examination as well as go through an accredited athletic training education program in order to become certified and practice. Once they meet these requirements, there is no way to assess the knowledge of the currently practicing athletic trainers. The purpose of this study is to develop a knowledge test to assess the knowledge of certified athletic trainers of the NATA Position Statement of Preventing Sudden Death in Sport, specifically sudden cardiac arrest.

Purpose Statement

The purpose of this study is to develop a test to assess the certified athletic trainers current knowledge of sudden cardiac arrest in athletes..

Hypothesis

A psychometrically sound test will be created to assess the certified athletic trainers current knowledge of sudden cardiac arrest in athletes.

Limitations

There are limitations in this study. In the process of developing the test, there are many steps that must be taken. This research project is the initial steps of pilot testing. Another limitation is missing data or no response to some items. If there are any missing items, the participatns test will not be scored. Judges were used instead of content experts.

However, this is not a major concern based on the way the Board of Certification (BOC) develops items for the certification examination for athletic trainers.

Definition of Terms

Automated external defibrillator (AED): An automated external defibrillator is a portable device that checks the heart rhythm and (if needed), it can send an electric shock to the heart to try to restore a normal rhythm (AHA, 2015)/

Comotio cordis: a syndrome that results from a blunt impact to the chest that leads to cardiac arrest (Kim, 2010).

Coronary artery abnormality: occurs when the coronary arteries originate from an abnormal location or have a twisting angle that slows the blood flow (Maron, 2003).

Hypertrophic cardiomyopathy: primary disease of the myocardium (the muscle of the heart) in which a portion of the myocardium is hypertrophied (thickened) without any obvious cause (Sherrid, 2006).

Long Q-T Syndrome: a disturbance of the heart's electrical system causing an abnormality of the heartbeat, or rhythm of the heart (Corrado et al., 2003).

Myocardial ischemia: when blood flow to the heart muscle is decreased by a partial or complete blockage of the heart's arteries (coronary arteries). The decrease in blood flow reduces the heart's oxygen supply. This condition can damage the heart muscle, reducing its ability to pump efficiently (Droste & Roskhamm, 1983).

Non-structural heart disease: a condition that presents a structurally normal heart, but there is an electrical heart abnormality (Corrado et al., 2003).

Prodromal symptoms: warning signs that precede cardiac death (Corrado et al., 2003).

Structural heart disease: an abnormality in the hearts valves or vessels which are either present at birth or develop with age (Hildick-Smith & Shapiro, 2001).

Sudden cardiac death: nonviolent, unexpected death due to cardiac causes within one hour of the onset of symptoms (Maron et al., 2005).

Study Implications

This study will develop a knowledge test that will show what practicing certified athletic trainers know about sudden cardiac arrest. The largest benefit will be the athletes and those events the ATs cover. Athletic trainers will realize how much they know or do not know about SCA and will work on staying competent on current SCA research. This study will make ATs more knowledge about SCA, and can possibly save a life of an athlete in sudden cardiac arrest.

CHAPTER II

LITERATURE REVIEW

Sudden Cardiac Death

Sudden death in athletics has become an increasing concern for the sports medicine professional, coach, and athlete. Sudden cardiac death (SCD) is the leading cause of mortality for young athletes who are exercising (Casa et al., 2012). The reality regarding sudden death in sport is that it may be preventable through proper medical screening, providing proper on-site medical care, and education.

The American College of Cardiology defines sudden cardiac death as non-traumatic and unexpected sudden death that may occur from a cardiac arrest, within six hours of a previously normal state of health (Maron et al., 2005). An abrupt cessation of normal blood flow caused by failure of the heart to contract effectively during systole and is usually the result of a ventricular arrhythmia such as ventricular fibrillation (Harmon, Asif, Klossner & Drezner, 2011). SCD often occurs suddenly and without any warning. Usually, it is triggered by an electrical malfunction in the heart, and with the pumping action now disrupted, the heart cannot pump blood to the brain, lungs and other vital organs (Harmon et al., 2011). Moments later a person can lose consciousness and have no pulse.

Incidence. Incidence rate from ages twelve to thirty years old shows 1-3.6 per 100,000 athletes per year (Piper & Stainsby, 2013). High school athletes represent the largest group of those affected by sudden cardiac death, (Piper & Stainsby, 2013). Exercise acts as a trigger for SCD in those with cardiovascular disease. Sudden cardiac death is more likely to occur during exercise than when at rest due to the heart

functioning at a higher level (Gupta, Baman & Day, 2009). The risk for SCD in young athletes (<30 years old) is 2.5 times higher than non-athletes (Pigozzi & Rizzo, 2008) The incidence of SCD in any population depends on multiple factors, such as sex, age, ethnic group and nationality. The rate of SCD is five times higher in male than female high school and college athletes (van Camp et al., 1995).

Etiology

Cardiac conditions that may increase the risk for sudden death fall into two general categories: structural heart disease and non-structural heart disease.

Structural Heart Abnormalities. Structural heart disease happens when the heart is structurally or anatomically abnormal. Examples of structural heart abnormalities are hypertrophic cardiomyopathy (HCM), and coronary artery abnormalities (CAA). In the United States the following represent the cardiac anomalies resulting in SCD; hypertrophic cardiomyopathy 25%, commotio cordis 20%, coronary artery anomalies 14%, and a variety of other structural cardiac anomalies account for the remaining causes of death in athletes (Maron, 2003). Other structural cardiac anomalies include myocarditis, arrhythmogenic right ventricular dysplasia, Marfan syndrome, valvular heart disease, dilated cardiomyopathy and atherosclerotic coronary disease (Maron, 2003). Sudden cardiac death in athletes older than the age of 35 is usually a result of complications of coronary heart disease specifically by atherosclerosis (Ferreira et al., 2010).

Nonstructural Heart Abnormalities. Non-structural heart conditions present a structurally normal heart; however, there is an electrical heart abnormality. Examples of nonstructural heart abnormalities different types of arrhythmias such as long QT

syndrome, atrial fibrillation and premature ventricular contractions (Ferreira et al., 2010). Sudden cardiac death in athletes can also be a result of an external factor. A blunt, non-penetrating, and innocent-appearing blow to the chest can disrupt the rhythm of the heart, in an otherwise normal heart, resulting in death. This event is known as commotio cordis (CC), a deadly concussion to the heart (Douglas, 2011).

The Athletic Heart. The athletic heart caused by structural changes of the heart wall, mainly hypertrophic cardiomyopathy, due to cardiovascular adaptations placed upon the heart (Maron et al., 2005). The athletic heart is generally described as a benign increase in cardiac mass, with specific circulatory and cardiac morphological alterations, that represent physiological adaptations to training (Maron & Pelliccia, 2006).

Cardiovascular adaptations to exercise and training differ with the type of conditioning involved; aerobic, such as long distance running, or anaerobic such as strength training or sprints (Maron et al., 2005). Athletes in specific sports use a single system, or a combination of both depending on the demands that are placed on the body. Acute responses to aerobic exercise training include substantial increases in maximum oxygen consumption, cardiac output, stroke volume and systolic blood pressure (Maron, et al., 1996). Acute response to anaerobic training only involves a mild increase in oxygen consumption and cardiac output, but a substantial increase in blood pressure, peripheral vascular resistance and heart rate (Maron et al., 1996). Long term effects of cardiovascular adaptation to aerobic training produces increased maximal oxygen uptake due to increased cardiac output, while anaerobic exercise results in little or no increase in oxygen uptake (Maron et al., 1996).

Signs and Symptoms of Sudden Cardiac Death. Recognition of the signs and symptoms of sudden cardiac arrest is key to prevent death. Prodromal symptoms are warning signs that precede cardiac death and are documented to occur in approximately 36% of sudden cardiac deaths (Gomez et al., 1999). The National Athletic Trainers' Association position statement on preventing sudden cardiac death states that sudden cardiac arrest should be suspected in any athlete who has collapsed and is unresponsive. Many cardiac abnormalities go undiagnosed until it is too late. Signs and symptoms include shortness of breath, chest pains, fatigue during exertion, syncope and heart palpitations. Specific to commotio cordis, the athlete will collapse immediately after direct blow to chest. Knowledge of the signs and symptoms is important for proper emergency response.

Sudden cardiac arrest can be misdiagnosed as a seizure in the form of involuntary myoclonic jerks; seizure like activity is present in approximately 20% of patients with cardiogenic collapse (Pigozzi & Rizzo, 2008). Seizure like activity has also been reported in three out of ten athletes with SCA (Terry et al., 2001). To avoid life-threatening delays in resuscitation, brief seizure like activity should be assumed to be due to SCA and initial management steps for SCA taken immediately until a non-cardiac cause of the collapse is clearly determined. Occasional gasping can occur in the first minutes after SCA and is often misinterpreted as normal breathing (Bergfeldt, 2003). Assessment of signs of circulation and the presence of a pulse by health care professionals can also be inaccurate. Occasionally rescuers fail to recognize the absence of a pulse in 10% of pulseless victims and fail to detect a pulse in 40% of victims with a pulse (American Heart Association, 2000).

Management of Sudden Cardiac Death

Key factors in reducing the number of sudden deaths in athletics are preparation and response to sudden cardiac arrest during practice and competition. A possible connection between high schools required to have an automatic external defibrillator and their level of preparedness to respond to instances of sudden cardiac arrest must be investigated.

Emergency Preparedness. Emergency preparedness involves the chain of survival, establishment of an emergency action plan (EAP), access to an automated external defibrillator (AED) and emergency personnel to begin cardiopulmonary resuscitation (CPR) (Maron, 2003). The American Heart Association describes the chain of survival in four events that are crucial to emphasize the importance of time in regards to survival of the athlete. The chain of survival includes; early recognition of the emergency and activation of the emergency medical services (EMS) by calling 911, early bystander CPR, early delivery of a shock with an AED and early advanced life support followed by post-resuscitation care delivered by health care providers (American Heart Association, 2000).

Rural versus Urban Areas. Immediate CPR can double or even triple the chance of survival, and CPR with defibrillation within three to five minutes of collapse can produce survival rates as high as 49-75% (Casa et al., 2012). Time is a crucial factor in survival. In the setting of a high school athletic field, there will usually be an AED or medical personnel to help. However, in rural settings this may not be the case. There is a lower rate of bystander CPR and longer intervals from collapse to shock in areas with a longer distance travel for emergency medical services (Stapczynski, Svenson & Stone,

1997). Rural EMT defibrillation was only increased in communities of communities greater than 15,000 people. This may indicate that in populations of 515,000 cardiac arrest was less likely to be witnessed, patients were less likely to receive bystander CPR and prompt EMS response was less (Stapczynski, 1997).

Guidelines of NATA & AHA. The National Athletic Trainers' Association (NATA) has developed guidelines for PPE that may threaten the health and safety of athletes participating in sports, and may require further evaluation or potential disqualification (Maron et al., 1996). Guidelines for PPE include medical and family history and a physical examination that includes general health screening, cardiovascular screening, neurologic screening, orthopaedic screening, general medical screening, medication use, nutritional assessment, heat and hydration related illness risk factors and finally mental health considerations (Ferreira et al., 2010).

A comprehensive medical and family history should be obtained. A complete medical history identifies approximately 75% of problems that affect the initial athletic participation and serves as the foundation for the PPE (Goldberg, Saraniti, Witman, Gavin, & Nicholas, 1980). Cardiovascular risk factors are the main concern during PPE. The vast majority of SCD are caused by previously unidentified and asymptomatic underlying cardiovascular conditions (Maron et al., 2005).

The current American Heart Association (AHA) guidelines for participation in competitive sports are limited to only a history and physical examination and are not mandated by law. Table 1 shows the 12 Element AHA Recommendations for Preparticipation Cardiovascular Screening of Competitive Athletes. \

Table 1.

The 12 Element AHA Recommendations for Preparticipation Cardiovascular Screening of Competitive Athletes

Personal History	<ul style="list-style-type: none"> • Exertional chest pain/discomfort • Unexplained syncope/near syncope • Excessive exertional & unexplained dyspnea/fatigue associated with exercise • Prior recognition of heart murmur • Elevated systemic blood pressure
Family History	<ul style="list-style-type: none"> • Premature death (sudden) before 50 y/o old due to heart disease • Disability from heart disease in close relative <50 y/o • Specific knowledge of certain cardiac conditions in family members
Physical Examination	<ul style="list-style-type: none"> • Heart murmur • Femoral pulses to exclude aortic coarctation • Physical stigmata of Marfan Syndrome • Brachial artery blood pressure (sitting)

Preparticipation Examinations. Preparticipation examinations (PPE) are crucial to all athletes because they are used as a routine examination that can attempt to identify conditions that place an athlete at increased risk and affect safe participation in sports. In Italy for example, all athletes who participate in competitive sports are required by law to have a PPE that focuses on identifying asymptomatic cardiac abnormalities and includes a 12-lead electrocardiogram (ECG), (Harmon et al., 2011). Only 3% of trained athletes who died suddenly from cardiovascular disease were identified as having an abnormal PPE, and none were disqualified from competition (Maron & Pelliccia, 2006).

Emergency Action Plan. Every institution that sponsors athletic events must have a written emergency action plan (EAP). The EAP should be specific to each facility or field that could be in use. Essential elements of an EAP include: establishing an efficient communication system, training of first responders in CPR and AED use and

acquiring emergency equipment (Harmon et al., 2011). The plans should include the presence of a person qualified to deliver emergency care, planned access to early defibrillation and planned access, communication and transport to a medical facility (Harmon et al., 2011).

Automated External Defibrillator. Access to early defibrillation is of most importance for the survival of a person in sudden cardiac arrest. Ideally, in less than one minute from athlete time of collapse EMS should be activated, AED should be retrieved and CPR is initiated (Larsen et al., 1993). A second target goal of less than three to five minutes from time of collapse to first shock is strongly recommended (Casa et al., 2012).

Common locations of AED in high schools include in the athletic training room (82%), basketball facility or gymnasium (43%) and football stadium (27%). A range of 25-54% of high schools had at least one AED on school grounds (Drezner et al., 2009). Training coaches in first aid, CPR and AED use is highly recommended so they can provide treatment until a medical professional arrives.

Athletic Trainers' Knowledge and Expectations

Athletic Training Requirements. The National Athletic Trainers' Association (NATA) is the organization that represents certified athletic trainers (ATs). Its mission is to represent, engage and foster the continued growth and development of the athletic training profession and athletic trainers as unique health care providers. NATA describes ATs as highly qualified, multi-skilled health care professionals who collaborate with physicians to provide preventative services, emergency care, clinical diagnosis, therapeutic intervention and rehabilitation of injuries and medical conditions. The American Medical Association (AMA) recognizes ATs as health care professionals that

collaborates with physicians to optimize activity and participation of patients and clients (AMA, 1995).

Athletic trainers must earn a bachelor's degree in athletic training. The degree must be from a Commission on Accreditation of Athletic Training (CAATE) approved university. CAATE helps to maintain equal standards of information and clinical services that is taught in universities athletic training programs. Students then take an examination at the completion of their program by the Board of Certification (BOC). This certification examination applies to all athletic training students throughout the United States. It does not differ from state to state. After they pass the exam, they become a certified athletic trainer. In order for athletic trainers to be able to practice, they must adhere to their states requirements. Most states require a licensure to practice, others only require a certification, registration or nothing at all. For example, in Tennessee, the Department of Health requires all certified athletic trainers to be licensed in order to practice.

Continuing Education Units. In order to continue practice as a certified athletic trainer, continuing education unit (CEUs) must be kept up to date every 2 years. This means that ATs must obtain and document to the BOC that 50 CEUs are turned in online. CEUs are based on five categories; evidence based practice, category A (BOC approved provider programs), category B (professional and scholarly activities), category C (post certification college/university coursework), and category D (non-BOC approved programs). (BOC) Sudden cardiac death is a topic of additional education for athletic trainers.

NATA Position Statement. The NATA publishes position statements as a service to promote the awareness of importance topics. The position statement of

Preventing Sudden Death in Sports presents recommendations for the prevention and screening, recognition and treatment of the most common conditions resulting in sudden death in organized sports. (NATA) ATs are required to be competent with cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED). Also ATs must recognize athletes in sudden cardiac arrest, as well as emergency preparedness for such an event. Any athlete, coach, referee or fan can go into sudden cardiac arrest, and all ATs must be ready to act in the right manner. All ATs must be up to date on certification with CPR in order to practice. The NATA position statements are available online for all athletic trainers to be updated on the current knowledge and best practices available of current recommendations on specific topics.

Need Statement. There is no test to determine ATs current knowledge of sudden cardiac arrest. It is important that ATs stay current in the latest research of managing sudden cardiac arrest.

Psychometrically Sound Test Development

This section is to show a brief description on how item analysis is used in the creation of the SCD-KT within the study.

Item Analysis. Item analysis is used to determine if items be included on final version were useful to the test. Item analysis is given to a sample group before it is distributed for the real examination period. Item analysis is divided into three parts; item difficulty, item discrimination and item determination.

Item difficulty. Item difficulty shows the difficulty of the item, whether is be too easy or too challenging. There is an equation to calculate the answer. Item difficulty is found by dividing the number of correct answers given by the total number of people in

the group. When creating a test, the creator does not want a question that is too easy or too difficult.

Item discrimination. Item discrimination examines how well the item separates high performers from low performers. This allows the creator to determine if the questions were created well.

Item determination. Item determination is a combination of item difficulty and item discrimination. All items on the test must satisfy both of item difficulty and item discrimination otherwise modifications or removal must be made.

A well developed test for a study includes an intensive review with modifications by both the creator and the panel of judges. A blueprint should be created and component should be selected based on the judges opinion of main topics. To determine questions for each component, judges must weigh each section. The developed items are given to the judges for verification to ensure the items belong in each component.

Specific Aims

There are two specific aims for this study.

1. To establish a psychometrically sound knowledge test on sudden cardiac death.
Item analysis will be performed on the instrument.
2. Assess knowledge scores of certified athletic trainers. Scoring the test assesses the knowledge. The percentage correct will determine the score.

CHAPTER III

METHODS

The purpose of this study is to determine and analyze certified athletic trainer's knowledge of the NATA Position Statement of Preventing Sudden Death in Sports, specifically sudden cardiac death. In this chapter, the following section will be reviewed; design, participants, instruments, procedures and data analysis.

Design

The study was an interative test construction.

Participants

Approximately 180 certified athletic trainers who are working clinically, were asked to volunteer for this study. Each participant was certified by the Board of Certification and licensed by the state in which each participant works. Based on industry standards only 60 participants were needed to volunteer for the study. The reason that 180 ATs were asked to volunteer to participate was to ensure that at least 60 data entries were completed.

Instruments

The instrument used in this study is the Sudden Cardiac Death Knowledge Test (SCD-KT). The SCD-KT will include a demographic section as well as a multiple choice and true and false section to test the knowledge of ATs of the NATA Position Statement: Preventing Sudden Death in Sports. The test will include items regarding etiology of sudden cardiac death, signs and symptoms, management, emergency preparedness, preparticipation examinations, emergency action plan and automated external defibrillator. The test will need 30-40 items.

Procedures

Contemporary Judges. A panel of contemporary judges were established. Judges included five clinically practicing ATs with Masters Degrees as well as 8-20 years of clinical experience, as well as a practicing emergency room nurse of twenty years. The use of contemporary judges allowed validity of current practice knowledge and skills. Each judge is not an expert in the field, but has a knowledge base required to be a certified AT. Judges were sent an email with an explanation of the research study and asking for their participation as a contemporary judge.

Blueprint. A blueprint of the SCD-KT began with determining categories of importance. A list of six categories were sent to judges for approval. Categories included prevention, education, recognition, treatment and emergency preparedness. These categories were based off of key domains addressed in the position statement. Judges were emailed the list of categories. Feedback was received and modifications were made if necessary. Judges were then asked to rank the categories in order of importance on a scale of 1-7, as well as give feedback if any other categories needed to be included. Once all feedback was received from the judges, categories were excluded from the study if over 50% of the judges did not think it was vital information to be included.

Weight of Categories. A finalized list of five categories was sent back to the panel of judges to weigh them. Weight was out of 100% and each category weighed based on importance to topic. The weight of each category allowed the researcher to develop the items. For example, an judge could put 25%, 15%, 25%, etc., for each category for a total of 100%. Table 2 shows how the judges weighed each category.

Table 2.

Weight of Categories by Panel of Judges.

Domains	Judge 1	Judge 2	Judge 3	Judge 4	Judge 5	Judge 6
Prevention	20	15	20	15	15	15
Education	30	30	25	20	15	25
Recognition	20	30	20	25	30	25
Treatment	15	10	20	15	20	20
Emergency Preparedness	15	15	15	25	20	15
Total	100%	100%	100%	100%	100%	100%

Based on the weight of each category, a 60 item test was created. Items were developed by weight of each category. Two judges were asked to review the items in each category and approve. If items were approved by two judges, the item was kept. If two judges disagreed on an item, a third judge was asked. There was a 60% retention rate for the items, which created a 36 item test.

In order to test for readability, four random people were asked to review the test. They were asked to just read through the test, without answering any questions, to determine if it was easy to read and understand. The SCD-KT has been approved by the Middle Tennessee State University (IRB).

Recruitment. Participants were recruited through the use of social network, personal connections and snowballing. All participants will be presented with an informed consent agreement at the beginning of the SCD-KT. Consent was directly obtained before the participants was able to participation in the test by electronically signing their name.

All participants will be emailed the SCD-KT Test and will be completed anonymously. They will have two weeks to complete the test and return it. Once all tests

were returned, the data was collected and analyzed. Test was created using surveymonkey.com.

Data cleaning will be done to ensure the most accurate information has been collected. The participants must complete at least 60% of the test, otherwise all data will be incomplete and discarded.

Data Analysis

The data that were collected using the SCD-KT Test will be analyzed using descriptive statistics. To analyze the data, Iteman and SPSS will be used to obtain the descriptive statistics. Item analysis is used to determine if items be included on final version were useful to the test. Item analysis is divided into three parts; item difficulty, item discrimination and item determination. The item difficulty (P) shows if the item is too easy or too challenging. Criteria shows that the items must fall within the range of $P=.32 < .92$. Item discrimination (r_{pbis}) examines how well the item separates high performers from low performers. The discrimination should be $r_{pbis} > .19$. Item determination is a combination of item difficulty and item discrimination. All items on the test must satisfy both of item difficulty and item discrimination otherwise modifications or removal must be made.

CHAPTER IV

RESULTS

The sudden cardiac death-knowledge test (SCD-KT) was developed to create an instrument that is psychometrically sound and used to assess certified athletic trainers (AT) knowledge of sudden cardiac death (SCD). The instrument was based on prevention, education, recognition, treatment, and emergency preparedness. It was sent to approximately 180 clinically practicing certified athletic trainers. This chapter discusses demographics of participants and the results of the SCD-KT. The results will be presented in a table and descriptive statistics were calculated.

Demographics of the Participants

The demographic characteristics that were collected from the participants included gender, years of experience, education and region of the United States they currently practiced in. Of the approximately 180 emails send to the ATs, 109 started the SCD-KT and 91 completed it. There was a 50.5% response rate. Figure 1 shows the gender of the participants. Male participants accounted for 38%, while female participants were 62% of total participants. Figure 2 shows the distribution of experience among participants. The majority of years of experience participants had were between 3-5 years (34%), while 0-2 years (22%), 6-8 years (20%), 9-11 years (9%) and finally more than twelve years (15%). Figure 3 shows the education distribution between a bachelor's degree (37%), masters degree (60%) to doctorate degree (3%). Figure 4 shows the region in the United States in which they currently practice in. Regions included northeast

(27%), northwest (2%), midwest (29%), southeast (32%) and southwest (10%).

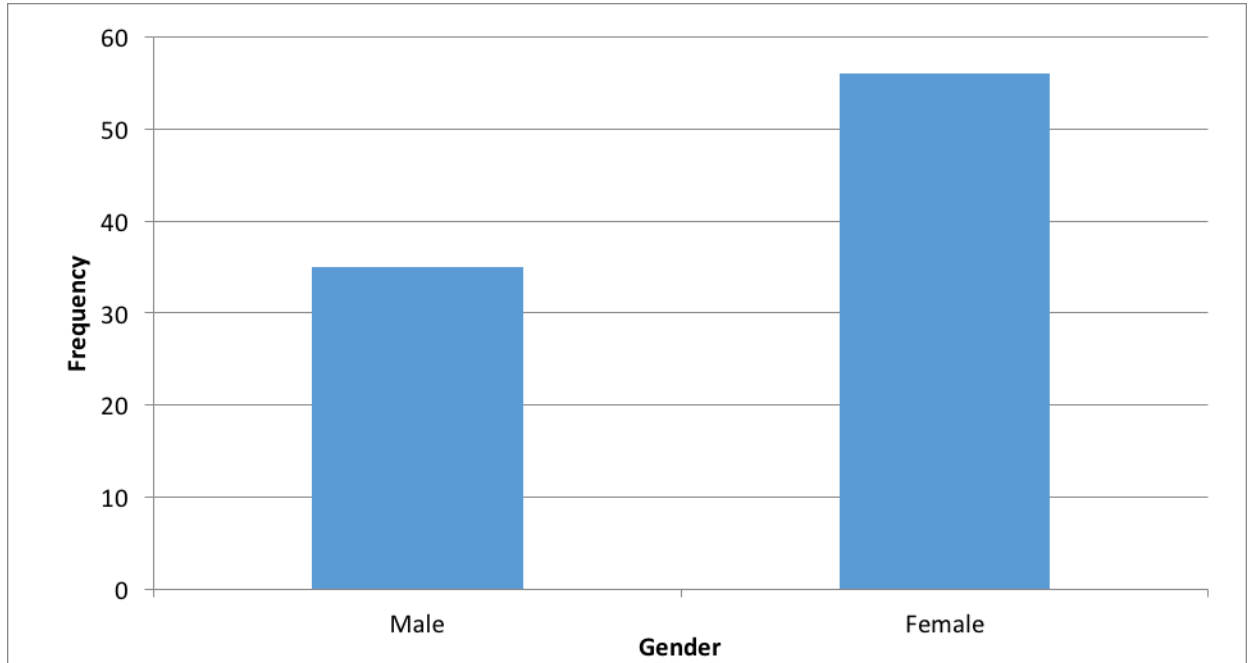


Figure 1. *Gender of Participants.*

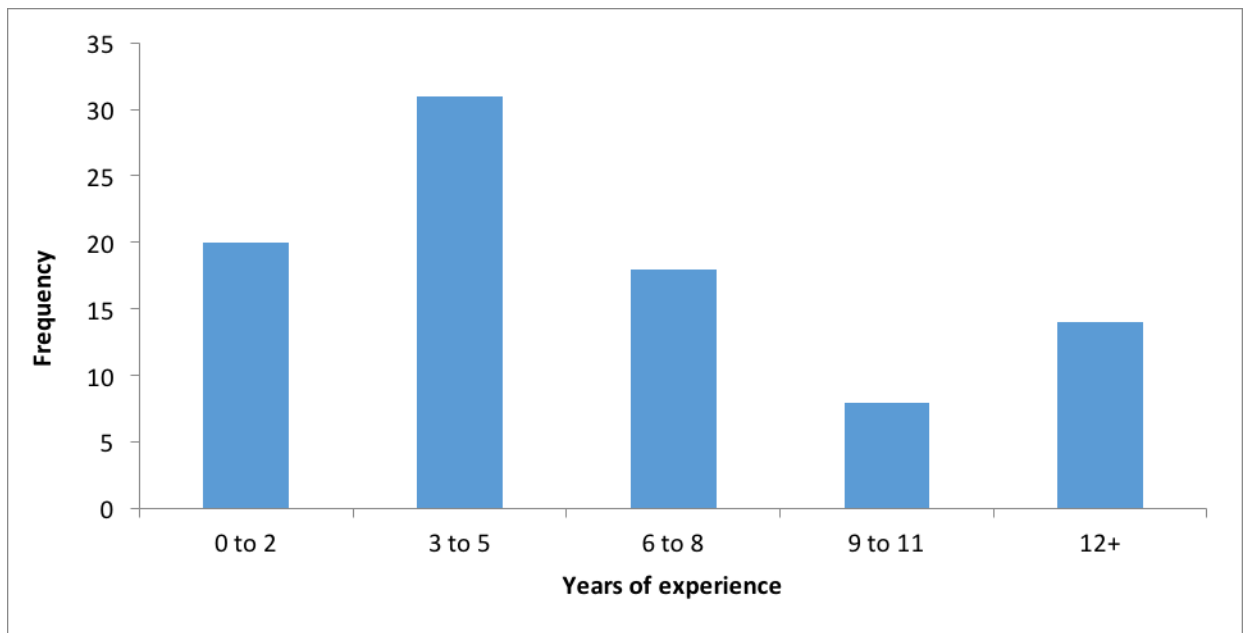


Figure 2. *Years of Experience of Participants.*

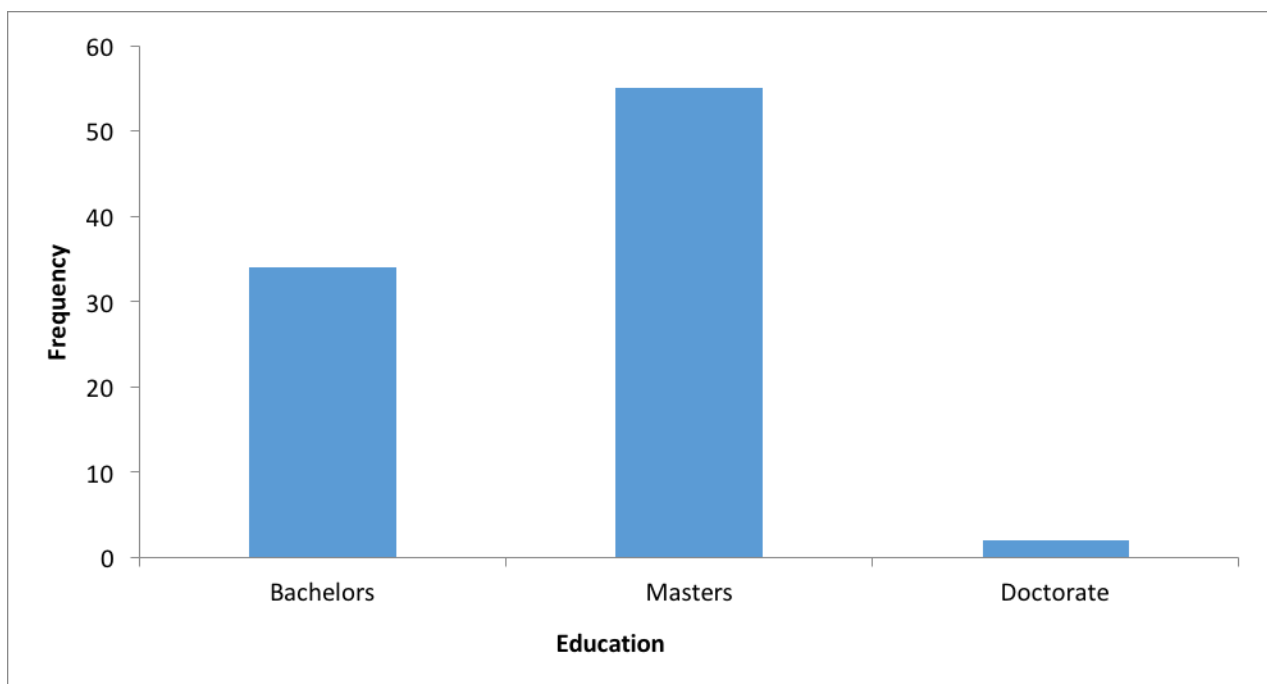


Figure 3. *Education of Participants.*

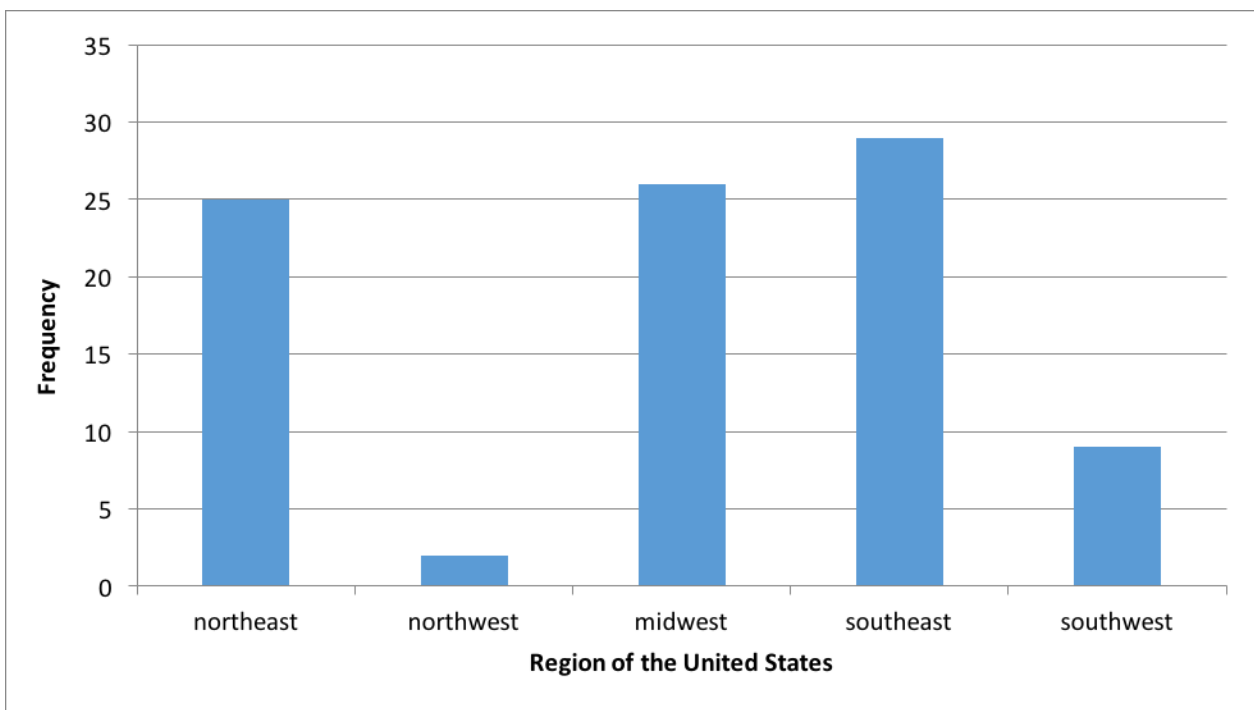


Figure 4. *Region of the United States Participants Practice In.*

Overall Performance

The performance of ATs on the SCD-KT was high. The distribution of scores, which is skewed to the left, is shown in figure 5. The number of correct responses ranged from 23 to 32 out of 33 possible questions, which corresponds to 69.7% and 97%, respectively.

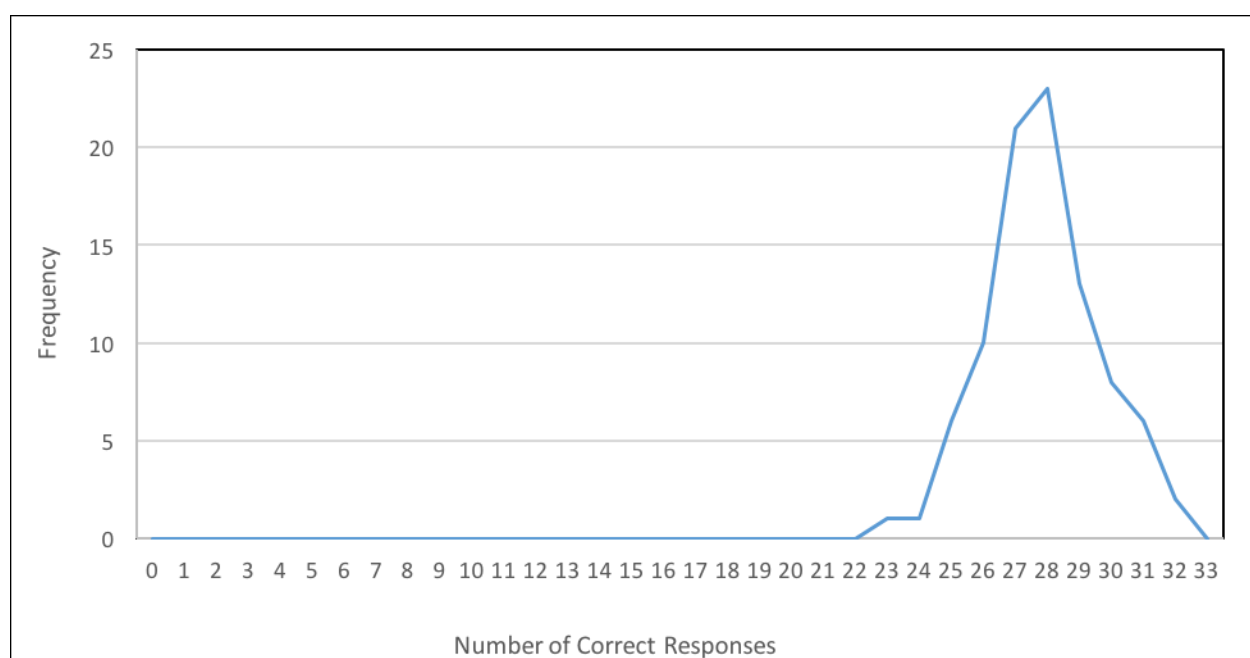


Figure 5. *Overall Performance*

Items

Item determination (keep, revise or drop) for each item was based upon item difficulty (P) and point-biserial correlations (Pr). After removing or modifying poor items, 27 items remained. A total of 6 items were completely dropped from the SCD-KT. Note that the final test has been renumbered. (See appendix E) The prevention section had one item removed from the six items, leaving five total. The education section began

with five items and one was removed, leaving four total. The recognition section dropped one item from the start of nine, leaving eight in total. Treatment section began with nine items and two were dropped, leaving seven items. In emergency preparedness section there were five items and one removed, leaving a total of four items. Table 3 shows the Iteman table that was constructed.

Table 3.

Iteman Table

ITEM	CATEGORY	P	Pr	DETERMINATION
1	**	0.99	-0.01	keep
2	**	0.73	0.2	keep
3	*	0.89	0.29	keep
4	*	0.99	0.05	drop
5	***	0.93	0.13	keep
6	***	0.95	0.23	keep
7	***	0.91	0.33	keep
8	***	0.98	0.11	keep
9	****	0.96	0.19	keep
10	**	0.73	0.19	keep
11	*	0.84	0.15	keep
12	*	0.95	0.04	keep
13	***	0.47	0.47	keep
14	**	0.16	0.07	drop
15	***	0.8	0.3	keep
16	***	0.91	0.19	keep
17	***	0.53	0.28	keep
18	*	0.95	0.36	keep
19	*	0.7	0.33	keep
20	*****	0.52	0.08	keep
21	*****	0.95	0.23	drop
22	*****	0.99	0.05	keep
23	*****	0.97	0.12	keep
24	*****	0.97	-0.01	keep
25	***	0.54	0.19	drop
26	****	0.95	0.12	keep
27	****	0.95	0.12	keep
28	****	0.99	-0.01	keep
29	****	1	0	keep
30	****	1	0	drop
31	****	0.82	0.14	keep
32	****	1	0	drop
33	****	0.88	0.24	keep

Note. (: Prevention, **: Education, ***: Recognition, ****: Treatment, *****: Emergency Preparedness*

CHAPTER V

DISCUSSION

The purpose of this study was to develop a psychometrically sound test for assessing certified athletic trainers' knowledge of sudden cardiac death. A literature review was written and used to determine the foundation of the test. Then using the literature review research, the study was created along with contemporary judges to analyze and and develop the items. The Sudden Cardiac Death-Knowledge Test (SCD-KT) was developed for this study, which was used to assess practicing ATs current knowledge of sudden cardiac death. This research is vital in the safety of all athletes. Sudden cardiac death accounts for approximately one death every three days in the United States, (Casa et al., 2012). In life or death situations, an AT must be able to recognize and properly treat an athlete in sudden cardiac arrest. This chapter discusses the major findings in the study. The limitations and future research will also be discussed.

Athletic Trainers' Knowledge of Sudden Cardiac Death

Performance Areas. The results of this study suggest that ATs do possess adequate knowledge of sudden cardiac death in athletes. Athletic trainers were least knowledgeable about the education section (75%). Education was also one of sections with the least amount of items, four in total after items were dropped. The section with the highest performance was recognition (88%). The following are the performance scores of each sections, respectively, prevention (83%), education (75%), recognition (88%), treatment (77%) and emergency preparedness (80%). The items in the SCD-KT could have been two different reasons, or a combination of both. The items could have

been too easy in the sections, which will be further discussed later in the chapter, or the ATs could have been very knowledgeable about sudden cardiac death in athletes.

Position statements put forth by the NATA are considered guidelines and the best practices due to the most current research on specific topics. It is the responsibility of ATs to stay current in their education and research in their field.

Continuing Education Units. All athletic trainers must complete continuing education units (CEU) to keep their certification and continue practicing. Most CEUs are obtained through workshops and conferences that ATs can attend. However, there may not be many CEUs based on sudden cardiac death. If there is not a lecture during a conference about SCD, ATs may not specifically pay for one on such a topic. An AT must obtain 50 CEUs, and they must pay for them. If it is not a topic that an AT is specifically interested in, they may not continue to gain the most current knowledge on a topic. ATs must be educated on the most current research in sudden cardiac death to increase the chance of survival.

Poorly Created Items

Easy items. The SCD-KT was considered easy as described by the descriptive statistics. Some items every single participant answered correctly. There were a total of 33 items created at the beginning of the study. Some items were either modified, dropped or stayed as in for the final test. Some of the items dropped were based on item difficulty. Item difficulty shows the difficulty of the item, whether it is too easy or too challenging. For example, item number 32 was “where should the emergency action plan be posted? A. On the wall of the bathroom B. Only in the athletic training room C. At every venue and near appropriate phones D. An emergency action plan is not necessary.” This item

was easy probably because even without an athletic training degree, the answer of C. at every venue and near appropriate phones, could be determined. Every single participant got this item correct, resulting in it getting dropped from the final test. This item could have been made more challenging, due to the fact that a participant could determine the answer without athletic training knowledge or background. Items were also easy due to basic knowledge of athletic trainers as well. Some of these items were dropped and some were kept, if they were considered important to the overall study.

Acceptable Difficulty & Poor Discrimination. Some items were dropped from the SCD-KT based on an items discrimination. Item discrimination examines how well the item separates high performers from low performers. This allows the creator to determine if the questions were created well. An example of this would be item number 18, “As many as 80% of athletes of sudden cardiac death are asymptomatic until sudden cardiac arrest occurs. A. True B. False.” Item difficulty fell into the range of $Pr=.36$, but did not discriminate very well. This could mean one of two things. Either the ATs knew the material very well and almost everyone got it correct, or it was due to true/false items typically not discriminate very well. This is where the creator of the SCD-KT must make the decision to keep or drop the question, based on the material they believe ATs must know. This item was kept in the final test.

Difficult Items & Poor Discrimination. Items that were found to be too hard and did not discriminate very well were also dropped. An example of this was item 14 which read “The incidence of sudden cardiac death in high school athletes is _____ than the incidence in collegiate athletes. A. Higher B. Lower C. The same D. Sudden cardiac death does not happen in collegiate athletes.” The answer is A. Higher. The proportion

correct was $P=.16$, and the point biserial-correlation was $Pr=.07$. This item was very hard, and had the lowest number of participants who answered it correctly, therefore it was dropped.

Revised Items. Some items had to be revised on wording to make it a better item. An example of this was item 6, “When an athlete collapses, what needs to be assessed? A. pupils are equal and reactive to light B. Airway, breathing, circulation and heart rhythm C. Myotomes and dermatomes D. Airway and breathing.” Although $P=.95$, $Pr=.23$. The question was revised to add in “immediately” at the end of the item. This made the item more direct and clear for the participant. The item will now read “When an athlete collapses, what needs to be assessed immediately?”

Limitations

Sampling was a major limitation in this study. The small sample size and being a convenience sample does not show a reliable knowledge of all certified athletic trainers.

Future Research

This is only the beginning of a much larger and more in depth study for sudden cardiac death. The pilot test of SCD-KT is a psychometrically sound test that could be tested with a larger randomized sample size. Future testing of this study would explore the reliability and validity of the test. Using a larger sample size and one that is not a convenience sample would make this possible.

Contemporary judges were used instead of content experts were used to determine the components for the study. Future research of this study could use specific content experts. This would take out any general knowledge about the topic and be a more

specialized and accurate of sudden cardiac death and its components. Content experts may include cardiologists and researchers in the exact field, for example.

Conclusion

The results of this study showed that certified athletic trainers have a high knowledge of sudden cardiac death. The SCD-KT started with 33 items to be tested. The test was sent out to current clinically practicing athletic trainers from all over the United States. There were 109 replies in total, but only 91 completed responses that were used for data collection. The highest score was a 97% and the lowest was a 69.7%. All items of the SCD-KT were analyzed and left with 27 psychometrically sound items. This is only the preliminary step into a future study of sudden cardiac death, and hope for ATs to stay current in their knowledge.

A Tennessee high school athlete was diagnosed with an otherwise unknown heart condition due to preparticipation examination. Every athlete must have a physical every year before beginning athletics. The athletic trainer was helping with a portion of the examination, conducting blood pressure. The athlete had an abnormally high blood pressure for being at rest and fourteen years old. Questioning the results, his blood pressure was monitored the next few days. The athlete ended up having a structural abnormality of his heart, specifically coarctation of the aorta. Due to the preparticipation examination, his condition was diagnosed before a fatal event could possibly have happened on the field. Due to the AT recognizing the high blood pressure and the requirement of the preparticipation examination, this young athlete's heart could be fixed. Unfortunately, due to complications in surgery, the athlete passed away. However, if his symptoms were not recognized sooner and he had continued playing football, he could

have died of sudden cardiac arrest on the field. The need for knowledgeable athletic trainers and medical professionals to be the first to recognize and treat athletes in cardiac arrest will give athletes a chance of survival.

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APPENDICES

APPENDIX A
Informed Consent

Informed Consent
Middle Tennessee State University

Project Title: Certified Athletic Trainers' Knowledge of the NATA Position Statement of Preventing Sudden Death in Sports; Sudden Cardiac Death

Purpose of Project: Sudden cardiac death is the leading cause of mortality for young athletes who are exercising. The reality regarding sudden death in sport is that it may be preventable through proper medical screening, providing onsite medical care and education. The purpose of this study is to assess the knowledge of certified athletic trainers of the National Athletic Trainers' Association Position Statement of Preventing Sudden Death in Sport; Sudden Cardiac Arrest.

Procedures: You are being asked to participate in research as a certified athletic trainer. The test will only take approximately 20 minutes. This is completely voluntary and you will not be penalized for withdrawing at any time. The test is completely electronic, so by you clicking the link to start the test you are giving your consent to complete the test. The test will be completed and returned electronically.

Risks/Benefits: The risk for this research is minimal. The participant completing the test will not be harmed physically or psychologically. The data will be anonymous and the test will be collected online and the researcher and committee members will be the only person who has access to the test. No direct benefits to the participants. This research will benefit the certified athletic trainers to have a concrete example of how current they are in the topic of sudden cardiac death in athletes. The research will also benefit the AT to inform and educate coaches, parents, athletes and health care providers to prevent sudden cardiac death.

Confidentiality: Confidentiality will be used to protect the certified athletic trainers. When the test is completed the data will be returned to the researcher and stored in a password protected file using surveymonkey.com. The only individuals who will have access to the file and data results is the researcher and the committee members of the research.

Principal Investigator/Contact Information:

Robin Hunt || rh4p@mtmail.mtsu.edu || 603-918-8734

Participating in this project is voluntary, and refusal to participate or withdrawing from participation at any time during the project will involve no penalty or loss of benefits to which you might otherwise be entitled. All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised, for example, your information may be shared with the Middle Tennessee State University Institutional Review Board. In the event of questions or difficulties of any kind during or following participation, you may contact the Principal Investigator as indicated above. For additional information about giving consent or your rights as a

participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

APPENDIX B
Recruitment Script

Dear Certified Athletic Trainer,

You are being asked to participate in a Middle Tennessee State University research project regarding *Certified Athletic Trainers' Knowledge of the NATA Position Statement of Preventing Sudden Death in Sports; Sudden Cardiac Arrest* by completing a brief survey. There are no foreseeable risks or immediate benefits, but your responses will help parents, coaches and health care providers be aware of the reality of sudden cardiac death and that it may be preventable and managed properly. All information collected will remain confidential. Your participation as a subject is completely voluntary and you may withdraw at any time. If you have any questions or concerns, please contact the Robin Hunt at 603-918-8734 or rh4p@mtmail.mtsu.edu.

By clicking the link at the bottom of this page you are providing your consent and agreeing to participate in the survey.

<https://www.surveymonkey.com/r/SCD-KT>

Thank you!

Robin Hunt

APPENDIX C
Sudden Cardiac Death-Knowledge Test

Sudden Cardiac Death-Knowledge Test

National Athletic Trainers' Association Position Statement on Preventing Sudden Death in Sport; Sudden Cardiac Arrest

Please take your time and answer each question.

1. Please indicate your sex
 - a. Male
 - b. Female

2. How many years have you been a certified athletic trainer for?
 - a. 0-2 years
 - b. 3-5 years
 - c. 6-8 years
 - d. 9-11 years
 - e. 12+ years

3. Highest level of education completed
 - a. Bachelor's
 - b. Master's
 - c. Doctorate

4. What region of the United States do you currently practice?
 - a. North east
 - b. South east
 - c. Mid west
 - d. North west
 - e. South west

5. What state do you currently practice in?

6. How many athletes do you currently have under your care?

7. At your current employment, how many certified athletic trainers are employed there?

8. Select all sports that you are responsible for covering during the school year.
(Choose all that apply) (W : women's, M: mens)

___ Football	___ W Basketball	___ W Rugby	___ M Lacrosse
___ W Soccer	___ M Basketball	___ M Rugby	___ Baseball
___ M Soccer	___ Wrestling	___ W Swim & Dive	___ Softball
___ Volleyball	___ Track & Field	___ M Swim & Dive	___ W Tennis
___ Cross Country	___ W Crew	___ Golf	___ M Tennis
___ Field Hockey	___ M Crew	___ W Lacrosse	___ Other _____

9. Athletic trainers and/or other health care providers attending practices and events are authorized to examine any athlete displaying signs of symptoms of sudden cardiac arrest.
- True
 - False
10. What is NOT a condition covered in the position statement?
- Asthma
 - Sudden cardiac arrest
 - Mononucleosis
 - Lightening
11. A realistic goal of _____ from time of collapse to delivery of first shock (from AED) is strongly recommended.
- 3-5 minutes
 - more than 5 minutes
 - less than 10 minutes
 - it does not matter a time
12. The preparticipation physical exam must include:
- only a family history
 - height and body weight assessment
 - complete medical history and family history
 - no preparticipation physical exam is necessary
13. Sudden cardiac arrest should be suspected in who?
- Any athlete who is tired and thirsty
 - Any athlete who has collapsed and is unresponsive
 - Any athlete who has trouble breathing during activity
 - Any athlete who has collapsed but responsive

14. When an athlete collapses, what needs to be assessed?
 - a. Pupils are equal and reactive to light
 - b. Airway, breathing, circulation and heart rhythm
 - c. Myotomes and dermatomes
 - d. Airway and breathing

15. Myoclonic jerking that often presents after collapse from sudden cardiac arrest should not be mistaken for
 - a. Seizures
 - b. Diabetes
 - c. Hypothermia
 - d. An athlete will never have monogenic jerking after collapse from sudden cardiac arrest

16. Occasional or agonal gasping should not be mistaken for normal breathing after an athlete collapses from sudden cardiac arrest.
 - a. True
 - b. False

17. While an automated external defibrillator is being retrieved, what should be provided to an athlete who is in sudden cardiac arrest?
 - a. A drink
 - b. Cardiopulmonary resuscitation
 - c. Cervical spine stabilization
 - d. A vacuum splint

18. The American Heart Association guidelines recommend that the health care professional should follow a sequence of _____?
 - a. Compressions, airway, breathing
 - b. Airway, breathing, compressions
 - c. Compressions, breathing, airway
 - d. Breathing, compressions, airway

19. Sudden cardiac death is the leading cause of death in young athletes.
 - a. True
 - b. False

20. The underlying cause of sudden cardiac death is usually _____?
 - a. Poor nutrition
 - b. Poor physical fitness
 - c. Structural cardiac abnormalities
 - d. Gender and age

21. What conditions are responsible for approximately 25% and 14% of sudden cardiac death, respectively, in the United States?
 - a. Hypertrophic cardiomyopathy and coronary artery anomalies
 - b. Hypertrophic cardiomyopathy and commotio cordis
 - c. Coronary artery anomalies and commotio cordis
 - d. Ventricular arrhythmia and myocarditis

22. The incidence of sudden cardiac death in high school athletes is _____ than the incidence in collegiate athletes.
 - a. Higher
 - b. Lower
 - c. The same
 - d. Sudden cardiac death does not happen in collegiate athletes

23. Sudden cardiac death occurs higher in what ethnicity?
 - a. Caucasian
 - b. Black
 - c. Asian
 - d. Indian

24. Which gender does sudden cardiac death have a higher occurrence in?
 - a. Male
 - b. Female

25. What sport has the highest occurrence of reported sudden cardiac deaths?
 - a. Soccer
 - b. Field hockey
 - c. Basketball
 - d. Football

26. As many as 80% of athletes with sudden cardiac death are asymptomatic until sudden cardiac arrest occurs.
 - a. True
 - b. False

27. History and physical examination alone are the only way to identify athletes with at-risk conditions.
 - a. True
 - b. False

28. Once sudden cardiac arrest occurs, what is the key to survival?
 - a. Preparation
 - b. Having a cell phone
 - c. Sudden cardiac arrest never occurs
 - d. Treatment

29. All necessary equipment should be placed in a central location that is hard to see and not accessible.
- True
 - False
30. The emergency action plan should be practiced and fully understood by who?
- Only the athletes
 - Only the athletic trainer
 - Athletic trainer and coaches
 - Athletic director
31. The emergency action plan should be coordinated with who other than those on the school campus?
- Only those on campus need to know the emergency action plan
 - The emergency action plan is not necessary
 - Local EMS
 - The neighbors
32. Where should the emergency action plan be posted?
- In the wall of the bathroom
 - Only in the athletic training room
 - At every venue and near appropriate telephones
 - An emergency action plan is not necessary
33. What is not a differential diagnosis of nontraumatic exercise-related syncope?
- Sudden cardiac arrest
 - Exertional sickling
 - Hyponatremia
 - Asthma
34. In any athlete who has collapsed in the absence of trauma, suspicion for sudden cardiac arrest should be ____ until normal airway, breathing and circulation are confirmed.
- Low
 - High
35. If normal breathing and pulse are absent, what should be started immediately?
- EMS activated
 - CPR only
 - CPR started and EMS activated
 - Nothing

36. What is vital to the athletes survival?
- Early detection
 - Prompt CPR and rapid activation of EMS
 - Rapid activation of EMS
 - Early detection, prompt CPR, rapid activation of EMS and early defibrillation
37. For any athlete that has collapsed and is unresponsive, when should an AED be applied?
- Never
 - As soon as possible
 - In 5 minutes
 - Not until EMS arrives
38. What is the greatest factor affecting survival after sudden cardiac arrest?
- From time of arrest to defibrillation
 - Nobody survives
 - From time of arrest to calling EMS
 - The number of coaches
39. Athletes lying on a wet surface or in a puddle need to be moved before an AED is used.
- True
 - False
40. Athletes laying on a metal conducting surface such as a bleacher does not have to be moved.
- True
 - False
41. If an athlete is in sudden cardiac arrest is outside during a thunder and lightening storm, the athlete needs to be moved.
- Only if safety of the rescuers are in danger
 - Do not move them
 - Move them to a bleacher
 - Nobody is in danger during a thunder and lightening storm

APPENDIX D
University Institutional Review Board Approval

IRB
INSTITUTIONAL REVIEW BOARD
 Office of Research Compliance,
 010A Sam Ingram Building,
 2269 Middle Tennessee Blvd
 Murfreesboro, TN 37129



IRBN007 – EXEMPTION DETERMINATION NOTICE

Thursday, June 09, 2016

Investigator(s): Clayton Faircloth, Robin Hunt, Kirstie Jones, James Farnsworth, Dr. Joey Gray, and Dr. Brian Ragan
 Investigator(s) Email(s): cf3q@mtmail.mtsu.edu; rh4p@mtmail.mtsu.edu; kj3j@mtmail.mtsu.edu; jlf6g@mtmail.mtsu.edu; joey.gray@mtsu.edu; brian.ragan@mtsu.edu
 Department: Health and Human Performance
 Study Title: Evaluation of the Measurement Properties of Athletic Training Knowledge Tests
 Protocol ID: 16-1289

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the EXEMPT review mechanism under 45 CFR 46.101(b)(2) within the research category (2) *Educational Tests*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	EXEMPT from further IRB review***	
Date of expiration	NOT APPLICABLE	
Sample Size	180 Participants	
Participant Pool	Athletic Trainers	
Mandatory Requirements	Must collect informed consent	
Additional Restrictions	ATs recruited from the NATA member database	
Comments	N/A	
Amendments	Date N/A	Post-Approval Amendments N/A

***This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form
- Changes to funding source must be notified via email (irb_submissions@mtsu.edu)

- The exemption does not expire as long as the protocol is in good standing
- Project completion must be reported via email (irb_submissions@mtsu.edu)
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to compliance@mtsu.edu

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents
- Increasing/decreasing the participant size

The investigator(s) indicated in this notification should read and abide by all applicable post-approval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website.](#) Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All of the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities.
More information on exempt procedures can be found [here](#).

APPENDIX E
Final Sudden Cardiac Death-Knowledge Test

National Athletic Trainers' Association Position Statement on Preventing Sudden Death
in Sport; Sudden Cardiac Arrest

Please take your time and answer each question.

1. Please indicate your sex
 - a. Male
 - b. Female

2. How many years have you been a certified athletic trainer for?
 - a. 0-2 years
 - b. 3-5 years
 - c. 6-8 years
 - d. 9-11 years
 - e. 12+ years

3. Highest level of education completed
 - a. Bachelor's
 - b. Master's
 - c. Doctorate

4. What region of the United States do you currently practice?
 - a. North east
 - b. South east
 - c. Mid west
 - d. North west
 - e. South west

5. What state do you currently practice in?

6. How many athletes do you currently have under your care?

7. At your current employment, how many certified athletic trainers are employed there?

8. Select all sports that you are responsible for covering during the school year.
(Choose all that apply) (W : women's, M: mens)

___ Football	___ W Basketball	___ W Rugby	___ M Lacrosse
___ W Soccer	___ M Basketball	___ M Rugby	___ Baseball
___ M Soccer	___ Wrestling	___ W Swim & Dive	___ Softball
___ Volleyball	___ Track & Field	___ M Swim & Dive	___ W Tennis
___ Cross Country	___ W Crew	___ Golf	___ M Tennis
___ Field Hockey	___ M Crew	___ W Lacrosse	___ Other _____

9. Athletic trainers and/or other health care providers attending practices and events are authorized to examine any athlete displaying signs of symptoms of sudden cardiac arrest.
- True
 - False
10. What is NOT a condition covered in the position statement?
- Asthma
 - Sudden cardiac arrest
 - Mononucleosis
 - Lightening
11. A realistic goal of _____ from time of collapse to delivery of first shock (from AED) is strongly recommended.
- 3-5 minutes
 - more than 5 minutes
 - less than 10 minutes
 - it does not matter a time
12. Sudden cardiac arrest should be suspected in who?
- Any athlete who is tired and thirsty
 - Any athlete who has collapsed and is unresponsive
 - Any athlete who has trouble breathing during activity
 - Any athlete who has collapsed but responsive
13. When an athlete collapses, what needs to be assessed?
- Pupils are equal and reactive to light
 - Airway, breathing, circulation and heart rhythm
 - Myotomes and dermatomes
 - Airway and breathing
14. Myoclonic jerking that often presents after collapse from sudden cardiac arrest should not be mistaken for
- Seizures

- b. Diabetes
 - c. Hypothermia
 - d. An athlete will never have monoclinic jerking after collapse from sudden cardiac arrest
15. Occasional or agonal gasping should not be mistaken for normal breathing after an athlete collapses from sudden cardiac arrest.
- a. True
 - b. False
16. While an automated external defibrillator is being retrieved, what should be provided to an athlete who is in sudden cardiac arrest?
- a. A drink
 - b. Cardiopulmonary resuscitation
 - c. Cervical spine stabilization
 - d. A vacuum splint
17. The American Heart Association guidelines recommend that the health care professional should follow a sequence of _____?
- a. Compressions, airway, breathing
 - b. Airway, breathing, compressions
 - c. Compressions, breathing, airway
 - d. Breathing, compressions, airway
18. Sudden cardiac death is the leading cause of death in young athletes.
- a. True
 - b. False
19. The underlying cause of sudden cardiac death is usually _____?
- a. Poor nutrition
 - b. Poor physical fitness
 - c. Structural cardiac abnormalities
 - d. Gender and age
20. What conditions are responsible for approximately 25% and 14% of sudden cardiac death, respectively, in the United States?
- a. Hypertrophic cardiomyopathy and coronary artery anomalies
 - b. Hypertrophic cardiomyopathy and commotio cordis
 - c. Coronary artery anomalies and commotio cordis
 - d. Ventricular arrhythmia and myocarditis
21. Sudden cardiac death occurs higher in what ethnicity?
- a. Caucasian
 - b. Black

- c. Asian
 - d. Indian
22. Which gender does sudden cardiac death have a higher occurrence in?
- a. Male
 - b. Female
23. What sport has the highest occurrence of reported sudden cardiac deaths?
- a. Soccer
 - b. Field hockey
 - c. Basketball
 - d. Football
24. As many as 80% of athletes with sudden cardiac death are asymptomatic until sudden cardiac arrest occurs.
- a. True
 - b. False
25. History and physical examination alone are the only way to identify athletes with at-risk conditions.
- a. True
 - b. False
26. The underlying cause of sudden cardiac death is usually _____?
- a. Poor nutrition
 - b. Poor physical fitness
 - c. Structural cardiac abnormalities
 - d. Gender and age
27. The emergency action plan should be practiced and fully understood by who?
- a. Only the athletes
 - b. Only the athletic trainer
 - c. Athletic trainer and coaches
 - d. Athletic director
28. The emergency action plan should be coordinated with who other than those on the school campus?
- a. Only those on campus need to know the emergency action plan
 - b. The emergency action plan is not necessary
 - c. Local EMS
 - d. The neighbors
29. Where should the emergency action plan be posted?
- a. In the wall of the bathroom
 - b. Only in the athletic training room

- c. At every venue and near appropriate telephones
 - d. An emergency action plan is not necessary
30. In any athlete who has collapsed in the absence of trauma, suspicion for sudden cardiac arrest should be ____ until normal airway, breathing and circulation are confirmed.
- a. Low
 - b. High
31. If normal breathing and pulse are absent, what should be started immediately?
- a. EMS activated
 - b. CPR only
 - c. CPR started and EMS activated
 - d. Nothing
32. What is vital to the athletes survival?
- a. Early detection
 - b. Prompt CPR and rapid activation of EMS
 - c. Rapid activation of EMS
 - d. Early detection, prompt CPR, rapid activation of EMS and early defibrillation
33. For any athlete that has collapsed and is unresponsive, when should an AED be applied?
- a. Never
 - b. As soon as possible
 - c. In 5 minutes
 - d. Not until EMS arrives
34. Athletes lying on a wet surface or in a puddle need to be moved before an AED is used.
- a. True
 - b. False
35. If an athlete is in sudden cardiac arrest is outside during a thunder and lightening storm, the athlete needs to be moved.
- a. Only if safety of the rescuers are in danger
 - b. Do not move them
 - c. Move them to a bleacher
 - d. Nobody is in danger during a thunder and lightening storm

APPENDIX F
Clinical Judges' Resumes

JAMES T. DALEY
 23 Elm Street, Apt. #4, Manchester, MA 01944
 (401-378-8433)
 jdaley184@gmail.com

EDUCATION

Master of Science in Health Science & Sport Studies
 California University of Pennsylvania California, PA
 Concentration: Athletic Training & Performance Enhancement
 Degree Conferred May 2009

Bachelor of Science in Exercise & Sport Sciences
 Colby-Sawyer College New London, NH
 Concentration: Athletic Training
 Degree Conferred May 2008

PROFESSIONAL EXPERIENCE

ENDICOTT COLLEGE

Associate Head Athletic Training
 Beverly, MA, August 2014-Present

Duties include, but are not limited to:

- Clinical coordinator of care day-to-day for Football, Men's Basketball, Softball, Men's & Women's Tennis
- Overseeing operations and management of athletic training clinics & staff
- Clinical Preceptor: supervision of undergraduate Athletic Training Education Program students
- Insurance Coordinator
- Development of framework for department performance model through collaboration with Strength & Conditioning staff
- Coordination of Lecture Series for local athletic trainers and athletic training students
- Athletic Institutional drug testing Coordinator

Adjunct Lecturer-School of Sport Science & Fitness Studies

Beverly, MA, August 2012-Present

Courses taught:

- Strength & Conditioning-Physical Education 234
- Directed Study- Athletic Training 200

Assistant Athletic Trainer

Beverly, MA, August 2012-August 2014

Duties include, but are not limited to:

- Clinically responsible day to day for Women's Field Hockey (2012), Men's Football (2013-2014), Women's Basketball (2012-2014), Softball (2012-2014)

- Clinical preceptor: supervision of undergraduate Athletic Training Education Program Students
- Licensed Aquatic Facility Technician-Responsible for hydrotherapy Facility

NEW ENGLAND PATRIOTS

Athletic Training Intern

Gillette Stadium, Foxborough, MA, July 2012-August 2012

Duties included, but were not limited to:

- Athlete and practice preparation
- Responsible for facility management and traveling packing
- Athlete weight-ins and weigh-outs
- Provided travel for athlete physician appointments

CALIFORNIA UNIVERSITY OF PENNSYLVANIA

Assistant Athletic Trainer

California, PA, August 2011-July 2012

Duties included, but were not limited to:

- Clinically responsible for football
- Approved clinical instructor: supervision of undergraduate Athletic Training Education program students
- Licensed Aquatic Facility Technician-responsible for hydrotherapy facility

Instructor of Health Science

California, PA, August 2011-July 2012

Courses taught:

- Functional Kinesiology
- Sports Nutrition
- Anatomy & Physiology (including Lab)
- Clinical Education II

THE UNIVERSITY OF NORTH CAROLINA AT PEMBROKE

Assistant Athletic Trainer

Pembroke, NC, August 2009-July 2011

Duties included, but were not limited to:

- Clinically responsible for mens soccer, mens basketball and mens and womens spring soccer
- Approved clinical instructor: supervision of undergraduate athletic training education program students
- Licensed aquatic facility technician- responsible for hydrotherapy facility
- Athletics representative to Institutional Pandemic Control Board
- Contributed on Policies and Procedures (H1N1, Controlled Substance, etc.)

Lecturer of Health, Physical Education and Recreation

Pembroke, NH, August 2009-July 2011

Courses taught:

- Anatomy & Physiology
- Introduction to Athletic training
- Board of Certification Prepratory

CALIFORNIA UNIVERSITY OF PENNSYLVANIA

Graduate Assistant Athletic Trainer

California, PA, August 2008-May 2009

Duties included, but were not limited to:

- Clinically responsible for football
- Accompanying and presenting athletes for physician appointments
- Responsible for field and clinic set up prior to practice and competition
- Overnight travel initial care provider
- Clinical Instructor: supervision of undergraduate Athletic Training Education Program students
- Administrative duties and office related tasks

Teaching Assistant- Introduction to Athletic Training

California, PA, 2009

Duties included, but were not limited to:

- Teaching presentations/extended lecture
- Promotion of ATEP via advanced technology (streaming website, podcasts)
- Assisting with writing of an Internal FDPC grant proposal
-

PROFESSIONAL CERTIFICATIONS, MEMBERSHIPS & PRESENTATIONS

Board of Certification, INC

Certification # 2000000257 December 2008-present

National Strength and Conditioning Association

Certified Strength and Conditioning Specialist #7248038630 March 2016-present

National Association of Speed and Explosion

Certified Specialist in Speed and Explosion for Sports Competition

Certification #0609123 May 2009-present

National Academy of Sports Medicine

Performance Enhancement Specialist

Certification #1352611 March 2009-present

American Heart Association

Basic Life Support (BLS) Instructor #08150351543 August 2015-present

Commonwealth of Massachusetts

State Board of Medicine-Athletic Trainer

License #RT004493 January 2009-present

National Athletic Trainers' Association

Certified Regular Member #24608 2006-present

National Strength and Conditioning Association

Professional Member #842676 June 2015-present

Collegiate Athletic Trainers Society

Professional Member #4014 December 2015-present

National Athletic Trainers' Association Research & Education Foundation
 2012 NATA Annual Meeting & Clinical Symposium-Philadelphia, PA
 Free Communications Program Presentation June 2010

California University of Pennsylvania
 Academic Excellence Day, California, PA
 Focus on Faculty-Faculty Service and Service Learning Presentation April
 2010

PROFESSIONAL SERVICE

ENDICOTT COLLEGE

Health & Safety Committee Member
 Department of Athletics Representative August 2014-present

CALIFORNIA UNIVERSITY OF PENNSYLVANIA GRADUATE ATHLETIC TRAINING EDUCATION

Clinical Mentoring
 California, PA, August 2011-July 2012
 Duties included but were not limited to:

- Advising graduate assistant athletic trainers with procedural logistics/protocol
- Daily, open communication to discuss experiences and overall injury report
- Assisting with complex injuries, issues, and clinical working hours

NATIONAL ATHLETIC TRAINERS' ASSOCIATION DISTRICT 2 (DE, NJ, NY, PA)

Resource Group Help Network Committee Member
 Technology Subcommittee, October 2011-July 2012

CALIFORNIA UNIVERSITY OF PENNSYLVANIA UNDERGRADUATE ATHLETIC TRAINING EDUCATION

Therapeutic Exercise, California, PA
 Isokinetic Presentation and Lab Instruction-Fall 2011

UNIVERSITY OF NORTH CAROLINA AT PEMBROKE UNDERGRADUATE ATHLETIC TRAINING EDUCATION

Clinical Evaluation II, Pembroke, NH
 Isokinetic Presentation and Lab Instruction, Spring Semester 2012 & Spring Semester 2011

Boston Athletic Association Marathon

Volunteer at Competitor Emergency Medical Tent/Finish Line, Boston MA, April
 2008

RESEARCH EXPERIENCE

Daley, J, Zuchelkowski, E, Dicesaro, S, Meyer, M, West, T. (2009). A Correlation between muscular imbalances of the lower extremity (H:Q ratio) and force production. California University of Pennsylvania, California, PA.

Daley, J, Fantasia, D, Gross, E, Meisner, M. (2008). Effects of muscular strength imbalances on hamstring flexibility and squat technique. Colby-Sawyer, new London, NH.

ACTIVITIES AND LEADERSHIP

Spaulding Rehabilitatio Network Outreach Lecture & Leraning Lab
 “Appropriate Prehospital Management of the Spine Injured Athlete” Position
 Statement Update
 Endicott College, Beverly, MA, September 2015

Sport Goverance and Policy- SM 365 Guest Lecturer
 Athletic Training Goverance, Statues & Compliance
 Endicott College, Beverly MA, Spring Semester 2014-2015

Endicott College Keys to Degrees Scholarship Program
 John Hancock Boston Athletic Association marathon Non-Profit Program
 Fundraiser/Finisher
 Beverly, Ma & Boston, MA, October 2012-April 2013

The 7 Habits of Highly Effective People Signature Program
 Franklin Covey Workshops
 California University of Pennsylvania, California, PA, Spring 2009

KRISTIN L. PHILLIPS
 1902 Jose Way, Murfreesboro, TN 37120
 (615)217-7593
 Kristi.phillips@mtsu.edu

EDUCATION

Auburn University, Auburn AL
 M.Ed. Educational Foundations, Leadership and Technology, 1999
 Major: Higher Education and Administration

Univeristy of Illinois, Urbana-Champaign, IL
 B.S. Kinesiology with emphasis in Athletic Training, 1997

PROFESSIONAL EXPERIENCE

Middle Tennesse State Univeristy August 2002-
 Present

Clinical Coordinator/Instructor

- Served as the clinical coordinator and instructor for the only CAATE accredited public institutions in the state of Tennessee.
- Responsible for revising the clinical instructor manual.
- Host Approved Clinical Instructor workshops on Middle Tennessee State University's campus.
- Assign 40-45 students to affiliation sites and then visit affiliation sites to ensure credentialing standards are being met for our athletic training students.
- Mentor graduate assistants serving as our clinical instructors.
- Advise 93 students currently in the athletic training education program and observation students applying to the program.
- Provide advisement to students who display an interest in the athletic training education program.
- Set up new affiliation sites yearly for our athletic training students.
- Helped prepare and collect all data for CAATE reaccreditation.
- Sponsor athletic training students to local, regional, and national athletic training conferences.
- Maintain 40-45 student portfolios to demonstrate the learning overtime concept
- Maintain 15-20 clinical instructor portfolios.
- Act as a Student Athletic Trainer Association faculty representative.
- Organize observation student's assignments and hours in the athletic training room, maintain all paperwork included in the application process, and conduct interviews for entrance into the program.
- Serve on department faculty committees.
- Organize the Student Athletic Trainer awards banquet yearly

Auburn University
2002

August 2001-July

Assistant Athletic Trainer

- Primary sport coverage for Men's and Women's Track and Field.
- Supervise graduate assistant athletic trainers and student athletic trainers responsible for Men's and Women's tennis and golf.
- Responsible for getting Auburn University CEU provider status.
- Maintain correspondence with alumni through a quarterly letter.
- Responsible for scheduling of all student and staff monthly inservices.
- Responsible for organizing and carrying out end of the semester oral and written exams for our student athletic trainers.

Middle Tennessee State Univeristy
2001

July 2000-August

Assistant Athletic Trainer

- Primary sport coverage for Women's Basketball.
- Direct supervision of student athletic trainers in the undergraduate athletic training education program.
- Supervise graduate assistant athletic trainers responsible for softball, track, and volleyball.
- Coordinate and maintain pre-participation history and insurance forms for all athletes.
- Responsible for graduate assistant application, scheduling interviews, and itineraries.

Charleston Southern University
2000

July 1999-July

Assistant Athletic Trainer

- Coordination and management of daily coverage for 8 women's sports: basketball, track and field, cross country, volleyball, tennis, softball, golf and soccer.
- Assisted with the clinical education of student athletic trainers.
- Coordinated and maintained pre-participation history and insurance forms for all athletes.

Auburn University
July 1999

August 1997-

Graduate Assistant Athletic Trainer

- Delivered athletic training coverage for varsity football.
- Assisted with clinical and competency education of student athletic trainers as well as inservice presentations.
- Provided fiscal management for athletic training purchases.
- Helped in the organization of state and regional athletic training meetings.
- Provided coverage for summer football camps.

- Performed other administrative duties as assigned by the Director of Sports Medicine.

University of Illinois
1997

August 1993-July

Student Athletic Trainer

- Clinical experience included providing care to football, swimming, track and field, volleyball, and soccer athletes.

TEACHING EXPERIENCE

Middle Tennessee State University

August 2002-Present

Department of Health and Human Performance

Instructor for the following classes:

Introduction to Athletic Training: Modern principles in care, prevention, and management of sports injuries.

Rehabilitation Techniques: Methods and techniques used in the selection and application of rehabilitation techniques.

Clinical 3000: Psychomotor skills in the application of protective equipment.

Clinical 3001: Psychomotor skills used in the evaluation and assessment of injuries to the lower extremity.

Clinical 3002: Psychomotor skills used in the evaluation and assessment of injuries to the upper extremity.

Clinical 3003: Psychomotor skills used in the rehabilitation of musculoskeletal injuries.

Modalities Lab: Psychomotor skills relevant to the use of modalities.

Upper Extremity Evaluation: Evaluation and assessment of injuries to the upper extremity and thorax.

Lower Extremity Evaluation: Evaluation and assessment of injuries to the lower extremity and lumbar spine.

Pathology: Pathology of special problems and general medical conditions of athletes and others involved with physical activity.

Senior Seminar: Preparation for the BOC exam and discussion of current research in athletic training and sports medicine.

Kinesiology: The study of human movement.

Practicum in Athletic Training: Internship in a non-traditional athletic training setting at a physical therapy site.

Topics in Athletic Training: Various taping techniques for athletic training students and coaches

Human Structure and Movement: The study of anatomical structures, biomechanics, and how those relate to everyday activity and movement.

Middle Tennessee State University
2008

July 2002-

Continuing Studies Massage Therapy Program

Instructor for the following classes:

Kinesiology
Anatomy and Physiology I & II

Middle Tennessee State University August 2000-May
2001

Department of Health, Physical Education, Recreatio & Safety
Instructor for the following classes

First Aid and Safety: Deals with first aid measures and accident prevention
Topics in Athletic Training: Various taping techniques for athletic training
students and coaches
Introduction to Athletic Training
Clinical 3003: Psychomotor skills used in rehabilitation techniques.

Auburn University Summer 1998,
1999

Cramer Student Athletic Trainer Workshop
Onsite workshop coordinator
Workshop lecturer covering the following topics: nutrition, heat illnesses,
knee evaluation, ankle evaluation, massage, etc.

ASSOCIATED EXPERIENCE

SEC Student Athletic Trainer Workshop
Served as co-coordinator for the event Spring 1999
Workshop lecturer covering knee and ankle evaluation Spring 1998,
1999

National Athletic Trainers' Association Board of Certification
Model for the certification exam June 1998
Examiner for the certification exam 2000-present

SEC Officials Physical Testing Spring, Fall
1998

Assisted in the organization and height/weight station of the physical exam

Member of the Tennessee Athletic Trainers Society Annual Meeting Committee 2002-
2009

Chair, Tennessee Athletic Trainers Society Scholarship Committee 2010-present
Tennessee Health Occupations Students of America Spring 2006

Served as a judge for the local HOSA organization

Presenter for Student SEATA Conference in Atlanta, GA
Topic: Unique Taping Techniques 2007, 2008, 2010-
present

Topic: Kinesiotaping 2012-present

CERTIFICATIONS AND LICENSES

BOC, Inc Certification #079702561 June 1997-
present

Tennessee Licensed Athletic Trainer	August 2002-
present	
NATA Member	1994-present
Professional Rescuer certified	2005-present
BOC Examiner certified	1999-2007
Clinical Instructor Educator	2003-present

KAREN RICHARDS, DNP, NR, NE-BC
 17921 Stevens Blvd, Fort Myers Beach, Florida 33931
 (603) 770-5751
krichards@elliott-hs.org

CAREER ACCOMPLISHMENTS

Project leader and writer for a successful Magnet designation
 Implementation of Shared Governance Model
 9 Years of administrative oversight for an Ambulatory Division
 Demonstrated financial management judgeise
 Project Manager for several new business developments
 Broad leadership qualifications
 Computer operating systems, software applications, and installation experience
 Clinical judgeise in Emergency Care

PROFESSIONAL EXPERIENCE

ELLIOT HEALTH SYSTEM

Elliot Health System (EHS) is the largest provider of comprehensive healthcare services in Southern New Hampshire. The cornerstone of EHS is Elliot Hospital, 296-bed acute care facility located in Manchester (New Hampshire's largest city).

Executive Director, Professional Practice 2013-current

- Responsible for the advancement of nursing practice and improving patient care outcomes by enculturating the tenets of Magnet and related organizational systems and processes.
- Provide consultation to the shared governance structure
- Magnet document writer

WESTERN GOVERNORS UNIVERSITY, Salt Lake City Utah 2013- current

Faculty Evaluator, Nursing Department

EXETER HOSPITAL, Exeter New Hampshire

A 100 MagnetTM designated bed acute care community hospital with outpatient volumes accounting for more than 60% of hospital business.

Director for Magnet and the Advancement of Nursing Practice 2013 –Nov 2013

- Responsible for the advancement of nursing practice and improving patient care outcomes by enculturating the tenets of Magnet and related organizational systems and processes.
- Provide nursing support to Lean initiatives and projects.
- Site Coordinator for the National Database of Nursing Quality Indicators and Nursing Engagement Survey

Director, Nursing Administration / Magnet Document Writer 2010 – 2012

Director, Nursing Administration / Magnet Project Leader 2005 – 2013
 ➤ Provided direction and support for the hospital's Magnet journey. Responsible for the Nursing division's operations and intergration of an environment and culture that enabled the hospital to fulfill its mission and meet or exceed its goals.

Director, Ambulatory Care 1996- 2005

Responsible for the integration of the Paramedicine Department / ALS intercept service into Emergency Services. Start up of the organization's medical call center and after hours nurse triage service, to include a corporate non clinical health and wellness information center. Team leader for the redesign of Emergency Department ancillary services, based on benchmarks from the Health Care Advisory Board – *Lab Turnaround Times, Inpatient admission Wait Times, and Radiology Turn Around Times*. Sole responsibility for the development of a 7 operatory pediatric dental center, a school based mobile dental program, and a free standing diabetes center, all designed to treat the medically underserved in the community, as well as administrative oversight for the following outpatient departments.

Healthreach Mobile Dental Program	2002- 2010
Healthreach Diabetes, Endocrine & Nutrition Center	2002- 2005
Core Dental Center for Children	2000- 2010
Healthreach Community Partners in Wellness	1999- 2005
Osteoporosis Program	
Pulmonary Center	
Injury prevention program	
Community Outreach	
Pediatric Rehabilitation (Speech, Occupational & Physical Therapy)	1999- 2005
Interim Director for the Center for Cardiac Services	1997-1998
Echocardiography	
EKG	
Cath Lab	
Cardiac Rehabilitation	
Critical Transport Team	1997- 2004
Telehealth Services (Medical Call Center)	1996- 2009
Paramedicine Intercept Program	1996- 2005
EMS Education Program	1996- 2005
Carelink Plus Nurse Triage Service	1995- 2009
Occupational Medicine Clinic	1995- 1999
Emergency Department	1994- 2005
Exeter Emergency Physicians PA	1994- 2005

Director, Emergency Services 1995 – 1996

➤ Restructured a financially strapped free standing occupational medicine clinic into a 24 hour hospital based clinic with a net margin approaching a half a million dollars.

- Department oversight for the Emergency Department, The Trauma Nurse Program, Exeter Emergency Physicians PA contract, and the Occupational Medicine Clinic.
- Nurse Manager, Emergency Department 1994 – 1995
- Responsible for restructuring of patient care services and a redesign of the management structure.
- Assistant Nurse Manager, Emergency Department 1986 - 1994
- Trauma Nurse Coordinator
 - Education Coordinator
- Staff Nurse 1983 - 1986
- Emergency Department and
 - Special Care Unit
- BETH ISRAEL HOSPITAL, Boston Massachusetts 1980 - 1983
Clinical Nurse III
Thoracic Surgical Unit
- Site Coordinator for the National Database of Nursing Quality Indicators and Nursing Engagment Survey
 - Primary responsibilities for this key position encompassed providing project management for key initiatives led by the CEO and senior leadership team including, but not limited to nursing strategic planning, new business line development, outreach activities, data gathering and presentations.
 - Sole responsibility for the vision and start up of an adult dental and oral surgery practice, designed to treat the medically underserved in the community. Developed a three year expansion plan to grow the practice and provide a variety of dental services to the area.
 - Additional leadership responsibilities included:

Core Oral Surgery Center	2007 - 2010
Core Dental Center	2006 – 2010
Core Mobile Dental Progam	2002 - 2010
Core Dental Center for Children	2000 - 2010
Healthreach Information Center (organization’s call center)	1996 - 2009
Carelink Nurse Triage Service	1995 – 2008

PROJECT LEADERSHIP

- Shared Governance Development 2013-2014
- Magnet™ Journey 2005- present
- Relationship Based Care steering committee 2009
- Hospital based Oral Surgery program 2007
- Short Term Stay/PACU conversion to Perioperative Services 2006
- General Dentistry program start up 2005
- Magnet Program Leader 2005
- Emergency Department expansion & design project, team leader 2004
- Freeman White Consulting; Emergency Department throughput , team leader 2003

- Surgical Services redesign, outpatient day surgery program development, team leader 2002
- Dental Program product line design, team leader 2000
- Joint Commission function leader –*Provision of Care Team Leader* 1999 – 2009

EDUCATION

Case Western Reserve University <i>Doctorate in Nursing Practice, Suma Cum Laude</i>	2010
New Hampshire Institute for Public Health <i>Core Public Health Concepts, certificate</i>	2006
Antioch University New England <i>Masters of Science Management</i>	1993
University of New Hampshire <i>Bachelor of Science in Nursing</i> <i>Bachelor of Arts, Psychology</i>	1981

PROFESSIONAL

Board Certified, Nursing Administration, 2004-present
 American Organization of Nurse Executives
 Sigma Theta Tau
 New Hampshire Seacoast Dental Coalition
 NH Nursing License 026718-21
 Florida Nursing License RN 9397453
 Washington Nursing License RN60546917
 Special Care Dentistry, American Association of Hospital Dentists
 Organization of Nurse Leaders Massachusetts, Rhode Island, & New Hampshire

PUBLICATIONS

Richards, K., Mellot, J., (2013). *Great Expectations: Linking Vision to Everyday Work*.
 Nurse Leader 12(3) 67.

Richards, K., Tonry, L., Bularzik, A., (2012). *Translating Caring Theory into Practice, an RBC Experience*. Nurse Leader, 10(5) , 44.

Fieler, V., Jaglowski, T., Richards, K. *Eliminating Errors in Vital Signs Documentation*.
 CIN: Computers, Informatics, Nursing., 31(9),.

POSTER PRESENTATIONS

Mellot, J., Richards, K., Tonry, L., Bularzik, A. *Translating Caring Theory into Practice, an RBC Experience, The 2013 International Relationship Based Care Symposium*, Huron, OH, September 2013.

CURRENT COUNCILS/COMMITTEES

Ethics Committee

Nursing Leadership Council
Nursing Executive Council
Senior Nurse Advisor, Nursing Research Council

BRAD ROHLING, M.Ed., ATC, LAT
 126 Auburn Ct, Murfreesboro, TN 37128
 (615) 473-1654
 Bradley.rohling@mtsu.edu

EDUCATION

Auburn University, Auburn AL M.Ed. in Higher Education Administration	6/00-12/02
Middle Tennessee State University, Murfreesboro, TN B.S. in Athletic Training Minors: Psychology, Athletic Coaching	7/96-5/00

PROFESSIONAL EXPERIENCE

NHC Sports Medicine/Tennessee Orthopaedic Alliance, Murfreesboro, TN <i>Coordinator of Athletic Training Outreach Program</i> Provided and supervised sports medicine coverage for ten high schools Responsible for recruiting and supervising Graduate Assistants and staff Created county-wide concussion policy including ImPACT baseline testing Liaison between local physicians and high school sports medicine programs Director of County wide pre-participation physicals	4/04-Present
Middle Tennessee State University, Murfreesboro, TN <i>Adjunct Faculty-Health and Human Performance Department</i> Instructor for ATHT 4820-Organization and Administration of Athletic Training	8/14-12/14
Auburn University Sports Medicine, Auburn, AL <i>Graduate Assistant Athletic Trainer</i> Assist Head Football Athletic Trainer in daily operations Responsible for educating second year student athletic trainers	7/02-3/04
SportsMed Outreach, Opelika, AL <i>Athletic Trainer</i> Outreach athletic training services to regional high schools	8/00-3/04
Middle Tennessee State University, Murfreesboro, TN <i>Athletic Training Student</i> Rotations with all varsity sports	8/96 -6/00

INTERNSHIPS

Tennessee Titans (Oilers) Football Club, Nashville, TN <i>Athletic Training Intern</i> Assisted athletic training room staff in all aspects of an NFL summer camp's activities	6/98-8/98
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RELATED EXPERIENCE

TSSAA Sports Medicine Advisory Committee Member	2015-Present
TATS Secondary Schools Chairperson	2015 Present
TATS Secondary Schools Co-Chairperson	2014-2015
Accredited Clinical Instructor MTSU Athletic Training Education Program	2005-Present
Guest Lecturer MTSU Athletic Training Education Program	2004-Present
Guest Lecturer Cumberland University Athletic Training Education Program	2012-Present
Rutherford County Health Science Advisory Committee	2011-Present
TSSAA A.F. Bridges Sportsmanship Award Contributor of the Year	2011-2012
TSSAA State High School 5A/6A Football Championships Athletic Trainer	2007, 08, 10
Keynote Speaker MTSU High School Athletic Training Symposium	2008
TSSAA State High School Basketball Championships Athletic Trainer	2005, 06, 08
Tennessee East/West Shrine All-Star Football Classic Head Athletic Trainer	2004
Gaylord Hotels Music City Bowl Assistant Athletic Trainer	2003-2004
Capital One Bowl Assistant Athletic Trainer	2002-2003
SEATA Student Symposium Lab Instructor	2001-2003
Chick-Fil-A Peach Bowl Graduate Assistant Athletic Trainer	2001-2002
Florida Citrus Bowl Graduate Assistant Athletic Trainer	2000-2001
Auburn Tigers Summer Football Camp Athletic Trainer	2000-2003

MEMBERSHIPS

National Athletic Trainers' Association
 Southeast Athletic Trainers' Association
 Tennessee Athletic Trainers' Society
 Tennessee Athletic Trainers' Society High School Sports Medicine Committee

HONORS AND CERTIFICATES

BOC Certified # 020102130
 Tennessee Board of Athletic Trainers Licensure # 873
 ImPACT Trained Athletic Trainer
 Middle Tennessee State University Dean's List
 Middle Tennessee State University Athletic Academic Honor Roll
 American Red Cross First Aid Certified
 American Red Cross CPR/AED Certified