STANDARD OPERATING PROCEDURES IN NATA DISTRICT TWO
HIGH SCHOOLS

A THESIS

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of California University of Pennsylvania in partial fulfillment of the requirements for the degree of

Master of Science

BY

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGNATURE PAGE</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHODS</td>
<td>5</td>
</tr>
<tr>
<td>Research Design.</td>
<td>5</td>
</tr>
<tr>
<td>Subjects.</td>
<td>6</td>
</tr>
<tr>
<td>Panel of Experts.</td>
<td>7</td>
</tr>
<tr>
<td>Instruments.</td>
<td>8</td>
</tr>
<tr>
<td>Procedures.</td>
<td>9</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>11</td>
</tr>
<tr>
<td>Data Analysis.</td>
<td>12</td>
</tr>
<tr>
<td>RESULTS</td>
<td>13</td>
</tr>
<tr>
<td>Demographic Data.</td>
<td>13</td>
</tr>
<tr>
<td>Hypotheses Testing</td>
<td>17</td>
</tr>
<tr>
<td>Additional Findings.</td>
<td>18</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>21</td>
</tr>
<tr>
<td>Discussion of Results</td>
<td>21</td>
</tr>
<tr>
<td>Conclusions</td>
<td>27</td>
</tr>
<tr>
<td>Recommendations</td>
<td>28</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>30</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table                                                  Page
1 State Location of High School. . . . . . . . . . . . . . . . . 13
2 High School Distance from Nearest Hospital. . . . . . 14
3 Enrollment of High Schools. . . . . . . . . . . . . . . . . . . 15
4 Employment Status of Athletic Trainers Surveyed . . 15
5 Standard Operating Procedure Types. . . . . . . . . . 20

LIST OF FIGURES

Figure                                                  Page
1 Number of ATC Respondents per State. . . . . . . . . . . . . . . . . . . . 14
2 Years of Experience of the ATC. . . . . . . . . . . . . . . . . . . . . . . . . . . 16
3 Type of SOP by State. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 25
4 Team Physician Presence vs. Enrollment. . . . . . . 26
5 Years Experience vs. Type of SOP present. . . . . . . . . . 27
INTRODUCTION

Athletics has become significant to and greatly affects the development of our student-athletes, and therefore has become a very important part of everyday life.\textsuperscript{1} In the healthy as well as the injured, certified athletic trainers (ATCs) are most often the first and only medical professional to see the athlete.\textsuperscript{2} Athletic trainers have an extensive background and unique education designed to help them properly treat traumatic and acute injuries in athletes and the physically active. They see the athletes when they are healthy and competing, as well as when they are injured and trying to return to play. The relationship that develops between the athlete and athletic trainer can be extremely important to the athlete’s psychological return to sport, as well as his/her physical ability to return to participation.\textsuperscript{2} Athletic trainers become a key component in the recovery cycle of high school athletes through the care they provide and the close working relationships with their supervising physicians who provide additional care to the athletes.

An athletic trainer’s organizational and administrative skills are used to aid in obtaining the proper medical care for the athlete, keeping them on track
to being healthy.\textsuperscript{3-5} In order to obtain the proper medical care, the ATC must have the ability to communicate well with others, especially those whom they work closely with on a regular basis. Athletic trainers must work under the direction of and work closely with a physician. Additionally, athletic trainers work in cooperation with other healthcare professionals, athletic administrators, coaches and parents in order to provide the appropriate care and treatment of injuries in the most effective manner.\textsuperscript{4} Because ATCs are the often the first to see and evaluate an injury, the athletes place their trust in their athletic trainers. Trust is earned based on the experience the athlete has with the ATC. If there is some inconsistency in the level of care provided by the athletic trainer, it could damage the athlete/athletic trainer relationship. The trust and communication could dissolve and ultimately affect future care.

An ATC is educated in ways to align the best medical practices associated with consistent and reliable care of their athletes. They have also been educated to make return-to-play decisions of athletes and do so in accordance with a team or over-seeing physician.\textsuperscript{3,6,7} When it comes to choosing a team physician, all aspects of the medical field and areas of special concern for athletics
need to be understood. Decisions regarding injury situations should not be left to persons lacking the necessary training; the training that athletic trainers, health care professionals and medical professionals obtain in their formal education.\textsuperscript{3,6,7}

Physicians and/or medical directors should have the most experience and knowledge of the best medical procedures to reduce the risk involved with the care of adolescent athletes. The ideal method to reduce the risk of athletic injuries is to have written standard operating procedures (SOPs) for direction when the team/over-seeing physician or medical director cannot be reached to aid in decision making.\textsuperscript{8,9} These SOPs can be composed of policies for everyday procedures in the athletic training room, as well as an Emergency Action Plan (EAP) and other policies and procedures on medical coverage of practices and games.\textsuperscript{1,3,5-8} Every high school is different and may not include the same components in their SOPs. Having a physician or group of physicians readily available to provide services, as well as aid in the development of the SOPs for that particular high school or school district, would be the ideal situation.\textsuperscript{5,8,9}

A 2005-06 study conducted by the Department of Health and Human Services reported an injury rate of 2.44 injuries
per 1,000 athlete exposures. Additionally, high school athletes account for about 2 million injuries, 500,000 doctor visits, and 30,000 hospitalizations every year. Athletic trainers are trained to provide adequate care for injuries and help avoid unnecessary physician appointments. With the cooperation of a physician and a well written SOP, the athlete will have the best care possible provided to them.

There are many uncertainties about the contents and presence of SOPs in the high school setting. The more information gathered about SOPs, the better our sports medicine and athletic programs can become. The purpose of this study is to determine the presence of SOPs in high schools, the presence of a team or over-seeing physician in the high schools, and identify trends in demographics such as employment setting (clinic/out-reach versus high school/school district employee) leading to the presence of SOPs and/or team/over-seeing physician. The lack of information about SOPs raises some key questions. Are there written SOPs in high schools? Is there an over-seeing physician or team physician to allow the athletic trainer to practice as an athletic trainer? Does the location of the school or employment setting have an effect on whether or not the school has SOPs?
METHODS

The purpose of this study was to examine SOPs in high schools, emphasize trends and frequencies in the ones that exist, and examine the presence of a team physician. The following sections were the methods for this study and include: 1) Research Design, 2) Subjects, 3) Panel of Experts, 4) Preliminary Research, 5) Instruments, 6) Procedures, 7) Hypotheses, and 8) Data Analysis.

Research Design

A descriptive design utilizing a survey was used for this study. The survey constructed by the researcher was completed by ATCs working in the high school setting via the internet. The dependent variable is the presence of a formal written set of SOPs (yes: written, yes: informal, no, I don’t know). The independent variables are: presence of a team/over-seeing physician (yes, no), the principle employer of the ATC (clinical out-reach, high school, school district, self-employed), and the location of the school (0-15 miles, 16-30 miles, 31-50 miles, 50+ miles) from the nearest city. The descriptive design of this study was proposed to lead the researcher to create
awareness on the presence of SOPs. One limitation of the research design was the inability to generalize the findings to relate to some university settings, considering that most colleges and universities have team physicians and many have undergraduate athletic training education programs (ATEPs) that require team physicians in order to receive accreditation. Another limitation was only valid e-mail addresses obtained from the National Athletic Trainers’ Association (NATA) were used to obtain results.

Subjects

The population surveyed was all high school athletic trainers registered with the NATA in District 2 (total n = 655). They were either employed by or contracted out to that particular high school and were required to be BOC (Board of Certification) Certified. Contact information was not obtained. The NATA constructed a mass e-mail list and sent out the surveys upon their approval. Informed consent was assumed by voluntary completion of the survey. All information obtained from the survey was kept anonymous for data and analytical purposes. Demographics obtained included: enrollment, and location of high school in miles from the nearest hospital (0-15, 16-30, 31-50, 50+), years
Panel of Experts

Before the survey was sent out, the researcher constructed a panel of experts to examine and increase the content validity of the preliminary survey (Appendix C1). The panel had knowledge of SOPs and other medical procedures and suggested any necessary changes to the survey. This panel included an Emergency Medical Technician Paramedic (EMT-P), a nurse practitioner, and a certified athletic trainer. These experts were chosen based upon their knowledge of SOPs and athletic training principles. A list of the hypotheses of the study was sent with a letter to each of the experts chosen (Appendix C2). The members were asked to examine the survey for content validity pertaining to the hypotheses of the study, comprehension of the questions, and general appearance and appeal. The members were asked to provide feedback on how to improve the survey after they had time to review the hypotheses and survey.

The members determined that the questions were obtaining information about the hypotheses the researcher
had chosen. They made remarks on the questions as to relevancy, numeric scale, wording and length of the questionnaire. This panel aided in focusing the survey to measure the hypotheses, which increased the content validity of the instrument. The survey in Appendix C1 was the result of the panel of experts input and was used to obtain the data needed to conduct this research.

Instruments

A survey was constructed by the researcher to examine the presence of SOPs in high schools. The Standard Operating Procedures Survey (Appendix C1) was used to gather information about SOPs and the demographics of the high schools and athletic trainers surveyed. The survey consisted of ten questions. Each question was close-ended with some having the option to explain their response (team physician involvement, other employment settings, etc). Questions were set up as: yes or no (including one “I don’t know”) answers or have choices A-D. The entire survey would have taken no more than ten minutes to complete. The results were analyzed according to contingency tables and Chi-square test for independence. The survey was deemed to
have content validity based upon the expertise of the members of the panel of experts.

Procedures

The study was reviewed by the California University of Pennsylvania Institutional Review Board (Appendix C3). Following approval, the preliminary survey (Appendix C1) and cover letter was distributed to the panel of experts (Appendix C2). After the critiques were obtained from the panel of experts, a revised survey was constructed based on their professional input. Their comments and suggestions created content validity for the instrument. The revised valid survey was posted on the internet on a website built specifically to house the survey. The researcher obtained the approximate number of possible participants from the NATA District 2 Secretary for all ATCs working in the high school setting. After the approval from the NATA, an e-mail was sent to the e-mail addresses on the NATA list serve and included a cover letter stating the purpose and significance of the survey and the importance of his/her participation in the study (Appendix C4). The e-mail contained a disclaimer from the NATA stating their non-involvement along with the link to the on-line survey website which the subject was to click on to complete the survey. The researcher did not
receive a 40% return rate after 10 days, so a follow-up e-mail to encourage participation was sent. After sending the follow-up email, the researcher received a 38.8% (254 responses out of 655 subjects) return rate. The subjects were under no obligation to complete the survey, and remained completely anonymous to all parties involved in examining the research. The data obtained was analyzed according to the research hypotheses and through contingency tables.
Hypotheses

Based on the review of the literature, there were great uncertainties regarding the presence of SOPs in high schools. In addition, the researcher believed the location of the high school and the presence of a team physician would have an effect on the presence of these SOPs. The researcher foresaw a direct relationship between those items and the presence of SOPs in high schools. The following were hypotheses that were tested in this study:

1) The presence of written standard operating procedures will be dependent upon the employment status of the certified athletic trainer.

2) The presence of a team physician will be dependent upon the location of the high school.

3) The presence of written standard operating procedures in the high school will be dependent upon the presence of a team physician.
Data Analysis

A Chi-square test for independence was utilized to examine the relationship between the presence of written SOPs and the employment status of the high school ATC; the presence of a team physician and the location of the high school; and the presence of written SOPs and the presence of a team physician. The data from the on-line survey was entered into SPSS 14.0 statistical software. Contingency tables were reviewed to determine results, and results were formulated into tables and graphs as descriptive data. The statistically significant alpha value used was $P < 0.05$. 
RESULTS

The following section encompasses the information obtained through the collection and analysis of the Standard Operating Procedures Survey distributed to NATA District 2 high school Certified Athletic Trainers. The results have been divided into the subsequent sections: (1) Demographic Data, (2) Hypotheses Testing, and (3) Additional Findings.

Demographic Data

Surveys were sent via e-mail to 655 NATA District 2 Certified Athletic Trainers (ATCs) working in the high school setting. Of the ATCs surveyed, 248 responded. As illustrated in Table 1 and Figure 1, the 247 ATCs who gave a response listed their state as Delaware, New Jersey, New York, or Pennsylvania.

<table>
<thead>
<tr>
<th>State</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware</td>
<td>7</td>
<td>2.8</td>
</tr>
<tr>
<td>New Jersey</td>
<td>89</td>
<td>35.9</td>
</tr>
<tr>
<td>New York</td>
<td>29</td>
<td>11.7</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>122</td>
<td>49.2</td>
</tr>
</tbody>
</table>
Figure 1. Number of ATC Respondents per State.

<table>
<thead>
<tr>
<th>State</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware</td>
<td>7</td>
</tr>
<tr>
<td>New Jersey</td>
<td>89</td>
</tr>
<tr>
<td>New York</td>
<td>122</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 2 shows the frequency in percent of the distance from the high school to the nearest hospital.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15 miles</td>
<td>230</td>
<td>92.7</td>
</tr>
<tr>
<td>16-50 miles</td>
<td>18</td>
<td>7.3</td>
</tr>
</tbody>
</table>

The enrollment of the schools is illustrated in Table 3, with the majority of the schools having 1001+ students enrolled.
Table 3. Enrollment of High Schools

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-500</td>
<td>43</td>
<td>17.3</td>
</tr>
<tr>
<td>501-1000</td>
<td>76</td>
<td>30.6</td>
</tr>
<tr>
<td>1001+</td>
<td>129</td>
<td>52.0</td>
</tr>
</tbody>
</table>

Of the 248 ATCs who responded, 68.5% said they worked for the high school either as working for one specific high school, a school district with one high school, or a school district with multiple school responsibilities. The other 31.5% said they worked at the high schools through an outreach program stemming from a clinic or hospital. Most ATCs surveyed had more than 11 years of experience as a Certified Athletic Trainer. These findings are illustrated in Figure 2 and Table 4.

Table 4. Employment Status of Athletic Trainers Surveyed

<table>
<thead>
<tr>
<th>Employment Setting</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>170</td>
<td>68.5</td>
</tr>
<tr>
<td>Clinic</td>
<td>78</td>
<td>31.5</td>
</tr>
</tbody>
</table>
Figure 2. Years of Experience of the ATC.
Hypotheses Testing

The survey was constructed to examine the presence of SOPs and the factors that affect their presence. The following hypotheses were investigated by this study:

Hypothesis 1: The presence of written SOPs will be dependent upon the employment status of the certified athletic trainer.

Conclusion: A Chi-square of independence was calculated comparing the frequency of the presence of SOPs and the employment of the ATC. No significant relationship was found ($\chi^2(2) = .796, P > .05$). The Chi-Square value was .455. The presence of SOPs and the ATC’s employment setting appear to be independent of each other.

Hypothesis 2: The presence of a team physician will be dependent upon the location of the high school.

Conclusion: A Chi-square of independence was calculated comparing the frequency of the presence of a team physician and the distance of the high school from the nearest hospital. No significant relationship was found
(\chi^2(1) = .335, \ P > .05). The Chi-Square value was .929. The presence of a team physician appeared to be independent of the distance from the nearest hospital.

Hypothesis 3: The presence of written SOPs in the high school will be dependent upon the presence of a team physician.

Conclusion: A Chi-square test of independence was calculated comparing the presence of written SOPs and the presence of a team physician. A significant interaction was found (\chi^2(2) = .009, \ P < .05). The Chi-Square value was 9.345. High school ATCs were more likely to have SOPs if they also have a team physician.

Additional Findings

When reviewing the data and contemplating other variables that may affect the presence of SOPs, the following findings were discovered:

A Chi-square test of independence was calculated between the presence of SOPs and the enrollment of the high school. No significant relationship was found (\chi^2(4) =
The Chi-Square value was 5.242. The presence of SOPs was not dependent upon the enrollment of the high school.

A Chi-square test of independence was calculated between the presence of a team physician and the enrollment of the high school. No significant relationship was found ($\chi^2(2) = .897, P > .05$). The Chi-Square value was .216. The presence of a team physician was not dependent upon the enrollment of the high school.

A Chi-square test of independence was calculated between the years of experience of the ATC and the presence of SOPs. A significant interaction was found ($\chi^2(4) = .022, P < .05$). The Chi-Square value was 11.434. Certified athletic trainers who had more experience were more likely to have SOPs.

A Chi-square test of independence was calculated between the state and the presence of SOPs. A significant interaction was found ($\chi^2(6) = .007, P < .05$). The Chi-Square value was 17.735. The presence of SOPs was dependent on in what state the high school was located.
Over half of the ATCs surveyed said they had a team or over-seeing physician (n = 223) with the majority of those team or over-seeing physicians having credentials of M.D. (n = 183, 73.8%).

When asked if the ATC had standard operating procedures outlining everyday procedures for the certified athletic trainer, 80.2% of the ATCs responded that they had SOPs in some form.

Table 5. Standard Operating Procedure Types

<table>
<thead>
<tr>
<th>SOP Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>49</td>
<td>19.8</td>
</tr>
<tr>
<td>Written/Formal</td>
<td>132</td>
<td>53.2</td>
</tr>
<tr>
<td>Verbal/Informal</td>
<td>67</td>
<td>27.0</td>
</tr>
</tbody>
</table>
DISCUSSION

In discussion of the findings of this study, the following sections are presented: (1) Discussion of Results, (2) Conclusions, and (3) Recommendations for further study.

Discussion of Results

In this study, the presence of SOPs was examined, as well as the factors that may influence their existence. There is little known about the factors that affect the presence of SOPs, and there is a lack of consistency in terms of whether or not an athletic trainer needs SOPs to operate efficiently. When examining the risk and liability aspects of athletic training, it is appropriate to have guidelines set up on how an athletic trainer should handle certain situation and perform specific tasks. Composition of SOPs may include policies for everyday procedures in the athletic training room, as well as an EAP and other policies and procedures on medical coverage of practices and games. 1, 3, 5-8 An EAP takes care of catastrophic injuries and emergency care aspects of an athletic trainer’s job, as well as providing weather safety, minimizing the risk for harm to the athletes and spectators, and procedures for
handling such events. However, when it comes to performing every day tasks and procedures, there is no consistent set of guidelines to reduce risk and liability.

Surveys were e-mailed to 655 ATCs in District 2 (Delaware, New Jersey, New York, Pennsylvania), with a response rate of 38.8%. There were a total of 254 surveys returned, but only 248 were completed beyond state, years of experience, and enrollment of high school, for a 37.7% return. Of these 248 ATCs, a little over half (53.2%) stated they had formal written SOPs implemented in their high schools. When asked about the presence of a team physician, 89.9% of those surveyed stated they had one. The statistical analysis showed that the ATCs who reported a team physician were more likely to report having SOPs. According to a statement provided by the NATA on ATCs in the high school, the American Academy of Family Physicians (AAFP) encourages high schools to have a BOC certified or registered/licensed athletic trainer as an integral part of the high school athletic program, whenever possible. Without the supervision of a team physician allowing the athletic trainers to perform within their scope of practice legally, according to the BOC, ATCs can function only as a first-aid provider. In Delaware, athletic trainers may not progress through rehabilitation protocols without the
direct supervision of a team physician.\textsuperscript{12} Their practice act also states that they "may not treat anything except athletic injuries sustained in scholastic, recreational, professional or sanctioned amateur athletic activities."\textsuperscript{12} Of the 223 ATCs who responded they had a team physician, 183 reported their physician or physicians had credentials of MD, 55 reported credentials of DO, and of the remaining 10 responses, 3 reported having an orthopedic surgeon as a team physician. Only a couple (one each) of the remaining 10 responses stated they had a resident or that their "team physician" was doing a sports medicine fellowship.

Development of SOPs should be constructed with the help of a team physician or medical director.\textsuperscript{1,3} This would create a significant reduction in the liability an athletic trainer would incur. According to the data retrieved, the top three persons involved in the creation of these SOPs were school district administrators (16.9%), team physicians (27%), and the ATC (70.6%). Athletic directors were involved in 6.9% of the SOPs constructed.

In examining the frequencies of SOP presence, 53.2% of the ATCs worked with written SOPs. Considering that written SOPs are more advantageous for eliminating risk than verbal SOPs, it could be stated that the other 46.8% of the surveyed population did not have SOPs. If there
would be a situation in which the school or ATC was questioned about why they did the treatments or actions they did, the written SOPs would stand up in court. Verbal/informal SOPs can be misconstrued and forgotten. Written SOPs are readily available in the case of any questions pertaining to the duties of the ATC, communications with the physician, or any other actions the SOPs may outline. The percentages of states with written SOPs versus verbal/informal or no SOPs was of interest. In Delaware, 28.5% had written SOPs; New Jersey: 51.6%; New York: 24%; Pennsylvania: 62.2% (Figure 3). This difference may occur because of differences in state practice acts for athletic trainers. Pennsylvania’s athletic trainer practice act states that ATCs must practice with standard operating procedures. It states specifically that the development must be in agreement with a physician, dentist, or podiatrist and the athletic trainer. Other states’ practice acts may or may not outline the use of SOPs. This demonstrates a big discrepancy in the quality of care between each state in the Eastern Athletic Trainers’ Association (EATA). This may also be due to the low number of responses from the states of New York (n = 29) and Delaware (n = 7). This information may need to be assessed in other research.
It was hypothesized that, possibly because of corporate liability and administrational responsibilities, job setting would have an effect on the presence of SOPs. This was disproved in the analysis of the data. Regardless of the job setting, SOPs were more consistently present with the presence of a team physician ($\chi^2(2) = .009, P < .05$).

Higher student enrollment was hypothetically linked to increased wealth. Without confirmation of that thought, the researcher looked at the enrollment of the students and the presence of a team physician to see if there was a dependent relationship between the two. Although the majority of the schools reported having SOPs, there was no
significant difference found with a Chi-square test for independence between school size and SOPs presence.

Figure 4. Team Physician Presence vs. Enrollment

The presence of a team physician was not dependent on school size, nor was it dependent on the distance of the high school from the nearest hospital. This latter link was hypothesized with the thought that being in close proximity to the resources may make them more readily available. This proved to be untrue in this situation.

The number of years of experience the ATC had seemed to play a role in the presence of SOPs. Those surveyed with more experience reported having written SOPs. This information is illustrated in Figure 5.
This may be due to the practical experience of the ATCs at that level. This may also be due to the lack of emphasis on the importance of team physicians and SOPs in the athletic training education programs. Another reason may be because the less experienced ATCs do not have the confidence to correct their working environments.

Conclusions

Risk reduction can be accomplished in part by having written SOPs for direction when the team/over-seeing physician or medical director cannot be reached to aid in decision making. All hypotheses showed the presence of SOPs was only dependent upon the presence of a team physician. The team physician is the link to creating SOPs
for reduced liability and risk associated with participation in high school, or any type, of athletics.

Recommendations

Based on the research performed in this study, the following are recommendations for future research:

1) Since not much is known about the components of SOPs, the first step would be to examine the SOPs themselves and to identify typical make-up of these documents.

2) Examine each state’s policies or practice acts for athletic trainers and the presence of SOPs accordingly.

3) Exam reasons for not having or having team physicians in each individual high school. If these reasons are identified, there may be a way to resolve this problem.

These recommendations could keep high school athletics from increasing their risk by allowing athletic trainers to function and perform under their scope legally, without repercussion and with the utmost efficiency.
Based on the results of this study, the following policy recommendations were made:

1) Because of the importance of EAPs and SOPs, there should be a protocol or template SOP created to give an outline of what the SOP should contain.

2) The information about SOPs should be implemented into athletic training education programs. Athletic training students need to be aware of the importance of these documents and understand the processes behind creating them. This will help those future certified athletic trainers to further minimize risk and make sure they are working within the scope of their practice.
REFERENCES


APPENDICES
APPENDIX A

Review of the Literature
INTRODUCTION

Standard operating procedures (SOPs) is a term used to define guidelines on how an institution should operate in order to manage risk.\textsuperscript{1} In the field of athletic training, SOPs are considered the guidelines on how a certified athletic trainer working in a high school should go about doing their job. Standard operating procedures outline how to perform one’s job in every instance in case of an emergency or a situation out of his/her scope of practice.\textsuperscript{2} They also outline procedures of how to go about everyday functions such as location of the athletes’ medical files and how to gain access, coverage of practices and competitions, how to keep the athletic training room clean and maintained, etc. Some institutions may have procedures or protocols that are followed, but may not have them formally written. Every institution is different so it is unknown what could actually be contained in their SOPs, or whether there are local, regional or state SOPs in which to make reference. Some states have a Practice Act for athletic trainers outlining their regulated scope of practice.\textsuperscript{3,4}

Emergency Medical Technicians (EMTs) have Basic Life Support (BLS) Protocols\textsuperscript{5} that outline every emergency
situation and what the procedures are for handling them. These protocols are specific to each state. Recently, the state of Pennsylvania adopted state wide BLS & ALS (Advanced Life Support) protocols to increase standardization across the state. This was also done to reduce variances in the treatment procedures and operational guidelines. Emergency Medical Technicians protocols have a chain of command defining who is in charge, and who they are supposed to contact to receive direction in case the need should arise. These SOPs, or in this case BLS Protocols, are the closest comparative documents to what athletic trainers could have to operate safely and efficiently in the high school setting, aside from the Emergency Action Plan set up for that particular high school. The job of an athletic trainer is more similar to EMTs than to nurses or physicians because athletic trainers and EMTs need to be supervised by a physician. The purpose of this literature review is to outline physician referral criteria; emphasize the roles of athletic trainers and physicians of various disciplines; and to discuss the relationship and communication between the medical entities and other members of the chain of command.
Physician Referral Criteria

Athletes sustain injuries everyday that may or may not need specialized care or further medical assessment. Some high schools have SOPs that direct physician referral, whereas others do not. It is unclear how the athletic trainers whom lack SOPs choose a physician to refer the athlete. Most often, the high school athlete would see his/her family physician for evaluation of an injury and this physician would direct them to an orthopedic specialist who would continue care. Since Athletic trainers work with orthopedic injuries in many settings, their discipline provides them with the background to acknowledge which specialty group of physicians would best meet the needs of the injured athlete. Unfortunately, due to lack of mandatory standardization of SOPs, many plans are in place that lack the language that outlines the referral process. Some schools may not even have any sort of SOPs.

In Anderson et. al\(^1\), it is stated that SOPs should incorporate recommendations from leading medical organizations in an effort to individualize those procedures to most efficiently and practically provide for the health care of the institution's student-athletes.\(^1\) It
also states that the SOPs should be developed with the help of a team physician or medical director.\textsuperscript{1,3} This is because the physician or medical director would have the most experience and knowledge of the best medical procedures to reduce the risk involved with the care of adolescent athletes. Additionally, the physician or medical director must be involved to meet the scope of the practice as defined by the BOC requiring the athletic trainer to work under an over-seeing or team physician in order to practice as such.\textsuperscript{3,4,6} In an ideal situation, the high school would have a physician or group of physicians readily available to provide services, as well as aid in writing the SOPs. In that particular case, the question of referral would not be a difficult one. However, many high schools do not have such resources available for a variety of reasons.

Rankin et al\textsuperscript{7} recommends having a doctor of medicine (M.D.) and a doctor of osteopathy (D.O.) available to treat the athletes. Osteopathic physicians are specialized in musculoskeletal intervention and are trained to handle most types of common injuries such as sprains, strains, and fractures.\textsuperscript{7,8} Both doctors may use all available treatment methods, but medical physicians are more involved with using drug therapy.\textsuperscript{7} That method would be most effective
for physical illnesses such as internal medicine problems and colds.

Cucos et al. performed a survey on the current status of sports medicine training in the United States internal medicine residency programs. It was concluded from the information obtained that when developing internal medicine residency curricula in the U.S., little attention is given to the subject of sports medicine. In the committee review guidelines for internal medicine, The Accreditation Council for Graduate Medical Education addressed the topic of sports medicine as follows:

"It is desirable that all residents receive instruction in the areas of pre-participation sports assessment, injury prevention, evaluative management and rehabilitation related to athletic and recreational injuries."

With this statement, one would believe that all physicians should be somewhat trained in the area of sports medicine. However, it does not appear to be mandatory across the United States.

Medical programs with formal sports medicine curriculum are more likely to have sports medicine education activities included in their block rotations. However, a small minority of the directors of these
programs reported having an actual formal curriculum. In many residency medicine programs, with the exception of orthopedics, the attention given to the sports aspect of medicine is relatively small. Cucos et al concluded that there is inadequate sports medicine training in internal medicine residency programs. In situations dealing with athletics, if the physician does not have sports medicine experience, he/she may not be adequately prepared to deal with injuries that may be sustained. This could cause a delay in the evaluation process and lead to potential risks to the student athlete’s physical health.

Recognizing the differences in curriculum, field and/or clinical rotations of a medical residents internship versus an orthopedic specialist, the ATC must utilize their knowledge of the differences to include both disciplines in their chain of care to provide the best possible care to the athletes. However, this does not solve the consistency problem completely since chiropractors, podiatrists, physical therapists, school nurses, and various fitness professionals may also be involved in the athletes’ health care. Each group treats the athletes according to their medical discipline. Although it may be ideal to employ such a variety of health professionals, most high schools do not have the ability or financial resources to employ
such health care and fitness professionals. In order to provide adequate health care to the athletes and compensate for the lack of resources, many high schools have a physician the athletic trainer may call when questions arise concerning rehabilitation protocols or treatments. This aids in eliminating the chance of misunderstanding when the rehab and treatment is outside the athletic trainer’s scope of practice.

During competitions, 51% of schools surveyed in North Carolina were not covered by licensed or certified personnel including athletic trainers and/or physicians. Without qualified personnel to provide proper care, the schools may be liable for injuries or illnesses that may occur in athletes during their activities. Not only should athletic trainers be present at sporting events and practices, a physician should be there to provide guidance for the immediate treatment of the athletic injury as well, especially in high risk sport situations. Although injuries and illnesses may occur in non-contact sports, ATC’s need to be prepared in advance and become a dedicated advocate to ensure the safety and well-being of the athlete is provided for. They should recognize the need for medical coverage of various sports and take steps to provide the best medical coverage possible for those
particular events.\textsuperscript{1,3,4,6,12,13} The coverage may be provided through proper medical direction by a physician, availability of EMS personnel, and well prepared, cohesive emergency action plans and SOPs.

The Role of the High School Athletic Trainer

The following is a direct quote from the National Athletic Trainers' Association (NATA):

"The NATA is confident that the best way to protect the public is to allow only Board of Certification certified athletic trainers and state licensed athletic trainers to practice as athletic trainers. The NATA is not alone in these beliefs. The American Medical Association has stated that certified athletic trainers should be used as part of a high school's medical team. The American Academy of Family Physicians agrees and states on its web site, "The AAFP encourages high schools to have, whenever possible, a BOC certified or registered/licensed athletic trainer as an integral part of the high school athletic program".\textsuperscript{3(p1)}

In order to practice as a certified athletic trainer, a candidate must complete a minimum of four years in an accredited athletic training education program to obtain a
bachelors degree, and take the national certification test. In some states, athletic trainers have to apply for licensure through the State Board of Medicine or Osteopathy in order to practice as an athletic trainer. Athletic trainers have an extensive background and unique education designed to help them properly treat traumatic and acute injuries and recognize signs and symptoms of common medical emergencies in the physically active population. Additionally, athletic trainers have been educated to make return-to-play decisions of athletes and do so in accordance with a team or over-seeing physician. Such situations should not be left to persons not having this specialized training.

Professional Responsibilities

Certified athletic trainers act like physician extenders. They are to work directly under the supervision of a physician to provide the physically active with adequate care for their activity-related injuries. "As part of a complete healthcare team, the certified athletic trainer works under the direction of a physician and in cooperation with other healthcare professionals, athletic administrators, coaches and parents. The certified athletic
trainer gets to know each patient/client individually and can treat injuries more effectively."^{4(p1)} Additionally, athletic trainers are trained to provide adequate care for injuries and help avoid unnecessary physician appointments. In many settings, they are directly involved in monitoring rehabilitation activities to insure the injured person returns to normal activities of everyday living.\(^4\) In this particular case, athletic trainers are charged with making athletic competition safe for America's youth.\(^4,6,14\)

A physician is recommended to be on scene during competitions, especially contact sports such as football and other equipment intensive sports.\(^{12,13}\) That physician, in ideal situations, would be a team physician chosen by the athletic trainer and his or her employer. However challenging the selecting of a team physician is, considerations must be made toward those physicians whom adjust and attain new skills to keep up with the ever evolving field of medicine.\(^{15}\) The selection process should include an overview of their educational background as well as taking into account their experience during residency.\(^{9,15,16}\)

In the educator aspect of an athletic trainer's professional responsibilities, he/she must understand the basic principles behind the athletic training profession.\(^6\)
This quality is needed to educate not only the athletes about what they need to do to stay healthy, but to educate the public, including coaches, administrators and parents also.\textsuperscript{6} Education helps to increase the recognition received by the public and various allied medical health care professionals about the scope of athletic training and what their roles and responsibilities entail.\textsuperscript{6}

Athletic trainers must act as counselors to parents, coaches, and athletes in addition to other various duties. They have been educated on the nature of injuries and how those injuries may affect an athlete’s physical involvement in activities and need to convey these to all parties involved in the process of rehabilitation.\textsuperscript{6} Additionally, they see the athletes when they are healthy and competing, as well as when they are injured and trying to return to play. The relationship that develops between the athlete and athletic trainer can be extremely important to the athlete’s psychological return to sport as well as his/her physical ability to return to participation. This important transition develops over time as the athletic trainer gains the trust of the athlete. This trust relationship will enhance the other aspects of the athlete’s interpersonal relationships in a positive manner and becomes a means of social support for them.\textsuperscript{6,14} The
trust and respect of the athletic trainer’s judgment is not only present in the physical aspect of injury, but in the personal and mental aspect of the athlete’s life as well.\textsuperscript{6,14} The trust an athlete puts in their athletic trainer could be placed in jeopardy if there is an inconsistency in the type of care provided to the athlete.

Domains of Athletic Training

Athletic trainers are most often the first and only medical professional to see the injured athlete.\textsuperscript{14} The athlete sees the athletic trainer almost on a daily basis from the time they are injured until they get better.\textsuperscript{14} Along with the rehabilitation of injuries, athletic trainers have six other domains that their responsibilities fall under.\textsuperscript{4,6} Those domains include: prevention; clinical evaluation and diagnosis of injuries; immediate care; treatment, rehabilitation and reconditioning of injuries; organization and administration; and professional development and responsibilities.\textsuperscript{4,6} Athletic trainers have been proficiently educated in these areas. However, they are not allowed by law to practice without a supervising or over-seeing physician.
When injuries occur, recognition and rehabilitation are the most important domains to an athletic trainer.\textsuperscript{3,4,6} They must ensure that the athletes get the proper medical care needed and make a speedy yet safe return to their activity. An athletic trainer’s organizational and administrational skills prove to aid them in obtaining the proper medical care and keeping the athlete on track to becoming and staying healthy.\textsuperscript{6,7,17}

Treatment logs must be kept along with doctor notes, rehabilitation progress, the athlete’s compliance, and all information obtained in the pre-participation evaluations.\textsuperscript{6,7} All information regarding an athlete or the ability of that athletic trainer to perform his or her job must be kept up-to-date and available to back up any question or litigation that may arise.\textsuperscript{6,7,17} If an athletic trainer cannot provide documentation of their actions or the actions of the athletes, a lawsuit could take away their job.\textsuperscript{7,17,18} This is why it is critically important for athletic trainers to have a team of experts who assist them in working within the scope of their certification guidelines.
Risk Management

All of the domains of athletic training focus on managing risk to the athletes they are working with as well as to the athletic trainers themselves and their profession. In order to reduce risk for the athletic trainer, they must in turn reduce risk for their athletes. Policies and procedures aid in this reduction. They provide specific actions to be performed on a day-to-day basis in the athletic training room. Emergency Action Plans (EAPs) should be established to limit the exposure or an athlete to life threatening events. Referral channels should be set up for if and when an athlete needs to see a physician. All of these things should be set up and written by the athletic trainer in charge as part of their administrative and organizational domains.

Before and after the injury, the athletic trainer must be sure they are keeping the playing environment safe and protected by applying appropriate protective equipment. The application of protective equipment not only involves selecting the equipment, but fitting it and keeping up on its maintenance as well. As a key component of the injury prevention domain, an athletic trainer must make and keep the competitive environment as safe as possible. This
reduces the risk of injury and makes the athletic trainer’s job somewhat easier.⁶

Risk management is advantageous to the function of a smooth sports medicine program and affects the ease of an athletic trainer’s job. As emphasized previously, all efforts must be made to provide a safe environment for all athletes.¹⁷ This can be accomplished by having aligned medical support and policies set forth for emergencies and quick physician referrals when the occurrences are out of the athletic trainers’ scope of practice. The team physician or over-seeing physician should then be consulted to ensure proper medical care to the athlete, and all chain of events should be documented to reduce risk of liability to all involved in the plan of care.¹,³⁻⁵,¹⁷

The Relationship Between the Athletic Trainer and the Supervising Physician

The Morbidity and Mortality Weekly Report (MMWR) states that high school athletes account for about 2 million injuries, 500,000 doctor visits, and 30,000 hospitalizations every year.¹⁹ In the study performed by the Department of Health and Human Services, an injury rate of 2.44 injuries per 1,000 athlete exposures was
Athletic trainers and physicians work together to provide appropriate care to these injured athletes. This is a major part of the relationship between a physician and an athletic trainer, and a building block for a sports medicine team.\textsuperscript{6,11,17}

A close working relationship between high school or school district administrators, athletic trainers, primary care specialists, and orthopedic surgeons is a key component of a successful and competent sports medicine team.\textsuperscript{4,8} Communication should be open between the physician and the athletic trainer in order to provide the best care to the athletes. In order to maintain an efficient and congruent work environment, there needs to be a mutual respect between the athletic trainer, the physicians, the administration, and the athletes.\textsuperscript{4} In most high schools, each athlete may have their own medical practitioner—primary care physician. The athletic trainer must look into the credibility of the physicians who will be working with their athletes, especially if they are being considered for the title of “Team Physician”.\textsuperscript{4} Treating the athletes’ injuries is the team physician’s main role in the sports medicine team.\textsuperscript{20}

The athletic trainer working at a high school should have written protocols or SOPs stating frequencies and
methods of communication between themselves and the supervising physician.\textsuperscript{2} This agreement and documentation of standing orders from the physician allows the athletic trainer to do their job efficiently and in the best interest of the athletes. Without the communication between the physician and the athletic trainer, including the possibility of the high school not having a team physician or an over-seeing physician, the high school athletes may not be able to get the health care they need to return to play and stay active.

Athletic trainers and physicians provide the majority of medical coverage for athletic competition, along with EMTs. Immediate assessment of injuries produces the best result.\textsuperscript{20} Since the physician and certified athletic trainer are the front line in injury surveillance, they are extremely important in the proper management of the injuries experienced in these competitions.\textsuperscript{20} If EMS is called onto the scene for an injury that warrants further evaluation, the athletic trainer and team physician will turn the care over to the transporting EMS crew for continuance of care en route to the hospital. In a survey of North Carolina high school athletic directors, Aukerman et al\textsuperscript{10} concluded that the majority of high schools surveyed did not have a physician present at any sporting events
other than football. During high risk sports, it is appropriate for a physician to be present to assist athletic trainers in quality decisions on return to play as well as immediate recommendations for treatment. In addition, some high schools only have one EMS crew on standby with or without an athletic trainer present. This may lead to a disruption in the continuity of care. The communication between the athletic trainer and the qualified physician is a crucial element in the event of a game injury as well as in practice injuries. However, communication and understanding to roles and responsibilities of the EMS crews is vitally important for quick response and proper packaging and transportation of the injured athlete as well. This is why it is imperative to have an emergency action plan (EAP) and/or standard operating procedures (SOPs) that involve the professionals that will be involved in patient care, before an incident occurs.

Preparation and pre-planning communication and respect between the all entities creates a comfortable and efficient environment for the athlete. Without this relationship, many of the procedures for getting the best medical and rehabilitative care for the athlete would be compromised. The athlete’s return-to-play could be delayed
or even postponed for the rest of that season. The relationship between health care providers has a great deal to do with the overall well being of the athlete they are caring for.\textsuperscript{20}

Summary

Athletics has become significant to and greatly affects the development of our student-athletes, and therefore has become a very important part of everyday life.\textsuperscript{21} Every year, high school athletes account for an estimated 2 million injuries, 500,000 doctor visits, and 30,000 hospitalizations, according to the Morbidity and Mortality Weekly Report.\textsuperscript{19} This fact calls for athletic trainers, physicians and all other health care providers to work together to provide appropriate care to these injured athletes. There should be open communication between the physician, athletic trainer, and EMS in order to provide the best care to the athletes. The high school athletic trainer should have written protocols or SOPs stating frequencies and methods of the communication between themselves and the supervising physician to allow for liability reduction as well as a sports medicine team that functions smoothly.\textsuperscript{2} These SOPs can be composed of policies
for everyday procedures in the athletic training room, as well as an Emergency Action Plan (EAP) and other policies and procedures on medical coverage of practices and games.\textsuperscript{1,3,4,17,21}

The domains encompassing athletic training include: prevention; clinical evaluation and diagnosis of injuries; immediate care; treatment, rehabilitation & reconditioning of injuries; organization & administration; and professional development and responsibilities.\textsuperscript{4,6} All of these domains focus on managing risk to the athletes they are working with as well as to the athletic trainer’s profession. SOPs should be written as guidelines on how the high school athletic trainer should go about doing their job in order to manage this potential risk.\textsuperscript{1} The physician or medical director would have the most experience and knowledge of the best medical procedures to reduce the risk involved with the care of adolescent athletes. This being said, the ideal situation would be to have a physician or group of physicians readily available to provide services, as well as aid in writing the SOPs for that particular high school or school district.\textsuperscript{1,2,7,17} With the cooperation of a physician and a well written SOP, the athletic trainer will be able to provide the best care possible to the athlete.\textsuperscript{1,2,7,17,21}
There are many inconsistencies in SOPs and how they are constructed. The high schools should have a team physician or group of physicians since the law states that an over-seeing physician is mandatory in order for the athletic trainer to be working on their own. Most high schools may not have the funding to have a team physician and many times rely on EMS to handle injuries that occur. However, in order to minimize their liability and to have successful teams, obtaining a team physician should be a high priority on their list. Each high school should have its own SOPs because each school district and facility is different. If each school does not have its own, then at the very least there should be a universal one for the school district encompassing the school. This will allow communication to flow between all members of the institutions about how the health of their athletes will be maintained.

Athletic trainers have a unique education that helps to properly treat traumatic and acute injuries in high school athletes. This education involves how and when to make return-to-play decisions for the athletes and when to involve the team or over-seeing physician. The communication and respect between the physician, EMS, and the certified athletic trainer will create a comfortable
and efficient environment for the athlete. Without this relationship, many of the procedures for getting the best medical and rehabilitative care for the athlete would be compromised. That relationship has a great deal to do with the overall well being of the athlete to whom they are providing care. Standard operating procedures aid in making all interactions between involved parties conducive to a productive athletic career for adolescent athletes.
APPENDIX B

The Problem
Statement of the Problem

Standard operating procedures (SOPs) deal with physician referral methods, extending the chain of command for care of the athletes, and making the athletic environment as safe as possible for athletes. Some high schools have written SOPs that outline referral methods. Others may not have any formal written procedures implemented to obtain further assistance when the injury goes beyond the scope of the athletic trainer. While most high schools do not have a team physician or any physician available to over-see the athletic trainer, a problem is presented because athletic trainers are required to have a physician over-see their practice.\textsuperscript{3,4,6} If there are no SOPs to guide the athletic trainer in extending the chain of command and making athletic competition safe, there could be lack of communication between the primary and secondary care-givers and all those involved. There are uncertainties the policies and SOPs of high schools, and especially if policies and procedures do exist. The purpose of this study is to determine the presence of SOPs in high schools, the presence of a team or over-seeing physician in the high schools, and identify trends in demographics leading to the presence of SOPs and/or
team/over-seeing physician.

**Definition of Terms**

For clarification, the following are definitions of terms used in this study:

1) **Chain of command** – identification of the person(s) responsible for the health care of patients and the direction of subordinates.\(^7\)

2) **Doctor of Medicine (M.D.)** – a physician who deals with general medical conditions of the body, more specifically internal medicine.\(^6\)

3) **Doctor of Osteopathy (D.O.)** – a physician specializing in musculoskeletal intervention.\(^6\)

4) **Emergency Action Plan** – a set of policies and procedures written to provide guidance for any unforeseen, emergency, or catastrophic situation that may arise.\(^6,7\)

5) **Over-seeing Physician** – a physician who takes on the responsibility of supervising the actions of the athletic trainer, allowing the athletic trainer to practice as such.

6) **Physician extender** – a health care professional who is performing tasks and carrying out orders of a physician under the direct supervision of a physician, when the physician is not on-site.
7) **Practice Act** – laws defining the practice of athletic trainers. These outline what the title of “athletic trainer” entails according to their scope of practice. These practice acts vary between states.

8) **Standard Operating Procedures (SOPs)** – a general term used to define guidelines on how an institution should operate in order to manage risk.\(^1,7\)

9) **Team physician** – Primary medical authority on the sports medicine team; makes the final decision regarding the health care of the athlete. A “team physician” is willing to lend their services, either by contracted pay or volunteer work, to the team or athletic population.\(^7\)\(^{(p38)}\)

10) **Emergency Medical Service (EMS)** – An Emergency Medical Service system (abbreviated to acronym "EMS" in many countries) is a service providing pre-hospital (or out-of-hospital) acute care to patients with illnesses and injuries. The most common and recognized EMS type is an Ambulance organization.\(^22\)
Basic Assumptions

The following assumptions will be made regarding this study:

1) The survey questions will be answered completely, correctly and to the best knowledge and ability by the athletic trainer.

2) The sample population used in this study is representative of the population.

3) The survey used in this study shows evidence of content validity based upon the review by the panel of experts. However, there is no evidence of reliability.

Limitations of the Study

The following are possible limitation of the study:

1) Only athletic trainers that have a valid e-mail address and are registered with the EATA or NATA’s District 2 will be surveyed.

2) A low response rate may result in non-response bias.

3) Conclusions are based on information obtained from the questionnaire. There may be other factors involved in the implementation of standard operating procedures in high schools.
Significance of the Study

There are many different branches of medical care for the injured high school athlete, coinciding with the various injuries they can sustain. While athletic trainers are the front line for these athletes in most cases, some high schools do not have SOPs outlining how to obtain assistance when the injury proves to need further assessment.

A physician is required to over-see an athletic trainer in their practice. However, most high schools do not have one, either on site or readily available. If there is no preferred/designated physician or group of physicians, there could be lack of communication between the primary and secondary care-givers. It also leaves the medical care of the athletes open to bias. The athlete may not receive the quality of care needed by seeing a general practitioner when a specialist is warranted.

SOPs deal with physician referral methods, extending the chain of command for care of the athletes, and making the athletic environment as safe as possible for those athletes. The uncertainties remain about the presence or availability of SOPs in high schools and what factors cause their presence/availability. There may be procedures that are followed, but they may be unwritten. Informal
guidelines may not be followed. It is hypothesized that
there is a trend between the presence of SOPs and the
employment status of the ATC (clinic/out-reach versus high
school/school district employee). Additionally, it is
hypothesized that there will be a trend in the location of
the school and the presence of a team physician, and that
the presence of a team/over-seeing physician will have an
effect on the presence of SOPs. Therefore, it is
imperative that the presence of SOPs in the NATA District 2
high schools be determined and reasons affecting their
presence be brought to attention.
APPENDIX C

Additional Methods
APPENDIX C1

Standard Operating Procedures Survey
Standard Operating Procedures
Survey

1) In what state is your high school located?
   a) Pennsylvania
   b) New York
   c) New Jersey
   d) Delaware

2) How far is the closest city far the school?
   a) 0-15 miles
   b) 16-30 miles
   c) 31-50 miles
   d) 51+ miles

3) What is the student enrollment of your school (Grade 9-12)?
   a) 0-500
   b) 501-1,000
   c) 1,001-3,000
   d) 3,001-5,000
   e) \( \geq 5,001 \)

4) How many years of experience do you have as a Certified Athletic Trainer?
   a) 0-2 years
   b) 3-5 years
   c) 6-10 years
   d) 11+ years

5) Which statement best describes your employment setting?
   a) I am employed by one specific school.
   b) I am employed by one School District and provide services to more than one school.
   c) I am employed by a Clinic and provide services to a designated school.
   d) I am Self-employed.

6) Does your school have a Team/Over-seeing Physician?
   a) yes
   b) no
7) If yes, what credentials does the team physician have?  
   a) M.D.  
   b) D.O.  
   c) D.C.  
   d) Other: (Be Specific: _________________________)

8) Do you have standard operating procedures outlining every day procedures for the certified athletic trainer?  
   a) Yes, written/formal  
   b) Yes, verbal/informal  
   c) No

9) Who created those standard operating procedures? (You may choose more than one, pick all who were involved)  
   a) Clinic/Out-reach employer  
   b) School Principal  
   c) School Nurse  
   d) School District Administrators  
   e) Team Physician  
   f) Certified Athletic Trainer (yourself)  
   g) Other: (Be Specific: _________________________)  
   h) I do not have standard operating procedures.

10) Do you have standard operating procedures outlining specific injuries/illnesses that are signed-off on by a physician (i.e. sprains/strains, concussions, heat illness, etc.)?  
    a) Yes  
    b) No  
    c) I do not have any standard operating procedures
APPENDIX C2

Letter to Panel of Experts
Date January 29, 2007

Dear ____________:

I am a graduate athletic training student at California University of Pennsylvania pursuing a Master of Science degree in Athletic Training. To fulfill the thesis requirement for this program, I am conducting a descriptive study in the form of a survey. The objective of this study is to examine the presence of Standard Operating Procedures in NATA’s District 2 high schools and give in-site to the possible reasons for their presence/absence. The following are variables in this study: Dependent – presence of SOPs; Independent – employment status of the ATC, location of the school, and the presence of a team physician. In order to increase the content validity of the instrument, a panel of experts has been chosen to review the survey. You have been selected as one of the three professionals in the health care field to be on this panel. Due to your position and experience, your feedback is very important to the success of this study. The information obtained by this panel of experts review will be used to make revisions and create the final survey to be distributed to the population sample. Your responses are voluntary and will be confidential.

Please answer the following questions based on the variables given and the attached survey and make any other additional comments you deem appropriate. Please return your comments and revisions via e-mail no later than February 5, 2007. If you have any questions or concerns, please do not hesitate to contact me.

1. Are the questions appropriate, valid, and understandable?
2. Comment on the overall presentation of the survey.
3. Which questions, if any, should be excluded from the survey?
4. Which questions, if any, should be added to the survey?

Thank you in advance for your time and efforts.

Sincerely,

Katie J. Fox, ATC
California University of Pennsylvania
APPENDIX C3

Institutional Review Board

Form
Institutional Review Board (IRB) approval is required before beginning any research and/or data collection involving human subjects.

(Reference IRB Policies and Procedures for clarification)

### Project Title

**Standard Operating Procedures in District 2 High Schools**

### Researcher/Project Director

Katie Jo Fox

### Phone #

570-660-9253

### E-mail Address

fox8952@cup.edu

### Faculty Sponsor (if required)

Dr. Robert Kane

### Department

Health Science and Sport Studies

### Project Dates

January 2007 to March 2007

### Sponsoring Agent (if applicable)


### Project to be Conducted at

California University of Pennsylvania

### Project Purpose:

- [X] Thesis
- [ ] Research
- [ ] Class Project
- [ ] Other

Keep a copy of this form for your records.

### Required IRB Training

The training requirement can be satisfied by completing the online training session at [http://cme.nci.nih.gov/](http://cme.nci.nih.gov/). A copy of your certification of training must be attached to this IRB Protocol. If you have completed the training at an earlier date and have already provided documentation to the
Please attach a typed, detailed summary of your project AND complete items 2 through 6.

1. Provide an overview of your project-proposal describing what you plan to do and how you will go about doing it. Include any hypothesis(ses) or research questions that might be involved and explain how the information you gather will be analyzed. For a complete list of what should be included in your summary, please refer to Appendix B of the IRB Policies and Procedures Manual.

Standard operating procedures (SOPs) deal with physician referral methods, extending the chain of command in care for athletes, and making the athletic environment as safe as possible for those athletes. This study will survey high school certified athletic trainers about the presence of SOPs. The researcher hypothesizes that the presence of SOPs will be dependent on a team/over-seeing physician and/or on the location of the high school in miles from the nearest city. Additionally, the researcher hypothesizes that the presence of written SOPs will be dependent upon the employment status of the ATC. The information obtained will be analyzed according to the Chi-square of Independence statistical analysis and placed in contingency tables for review.

2. Section 46.11 of the Federal Regulations state that research proposals involving human subjects must satisfy certain requirements before the IRB can grant approval. You should describe in detail how the following requirements will be satisfied. Be sure to address each area separately.

   a. How will you insure that any risks to subjects are minimized? If there are potential risks, describe what will be done to minimize these risks. If there are risks, describe why the risks to participants are reasonable in relation to the anticipated benefits.
The results from the survey will be kept completely anonymous and will not involve any risk to the certified athletic trainer completing the survey.

b. How will you insure that the selection of subjects is equitable? Take into account your purpose(s). Be sure you address research problems involving vulnerable populations such as children, prisoners, pregnant women, mentally disabled persons, and economically or educationally disadvantaged persons. If this is an in-class project describe how you will minimize the possibility that students will feel coerced.

Subject contact information will be received from the NATA District 2 Secretary. The subjects will be obtained from the list of e-mails obtained from the secretary and all persons on the list fitting into the criteria of high school certified athletic trainer will be sent an e-mail asking for voluntary participation in the study.

c. How will you obtain informed consent from each participant or the subject’s legally authorized representative and ensure that all consent forms are appropriately documented? Be sure to attach a copy of your consent form to the project summary.

Subjects will give implied consent by filling out the survey completely and to the best of their knowledge. The subjects are under no obligation to fill out the survey.

d. Show that the research plan makes provisions to monitor the data collected to insure the safety of all subjects. This includes the privacy of subjects’ responses and provisions for maintaining the security and confidentiality of the data.

An e-mail will be sent to the prospective subjects explaining the voluntary completion of the survey. The e-mail will contain a link to click on that will take them directly to the survey located online. There will be no questions asking the identity of the subject or the school in which they work. There will be no way to trace the subject’s information back to them after completion of the survey. All information will be kept completely confidential and the subjects’ identity will not be disclosed to the researcher.
3. **Check the appropriate box(es) that describe the subjects you plan to use.**

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<tr>
<td>☒</td>
<td>Adult volunteers</td>
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<td>CAL University Students</td>
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<td>Pregnant Women</td>
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<td>Physically Handicapped People</td>
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4. **Is remuneration involved in your project? ☐ Yes or ☒ No. If yes, Explain here.**

5. **Is this project part of a grant? ☐ Yes or ☒ No**  
   If yes, provide the following information:
   
   - Title of the Grant Proposal ____________________________
   - Name of the Funding Agency ____________________________
   - Dates of the Project Period ____________________________

6. **Does your project involve the debriefing of those who participated? ☐ Yes or ☒ No**  
   If Yes, explain the debriefing process here.

7. **If your project involves a questionnaire interview, ensure that it meets the requirements of Appendix __ in the Policies and Procedures Manual.**

---

**Project Director’s Certification**  
**Program Involving HUMAN SUBJECTS**

The proposed investigation involves the use of human subjects and I am submitting the complete application form and project description to the Institutional Review Board for Research Involving Human Subjects.

I understand that Institutional Review Board (IRB) approval is required before beginning any research and/or data collection involving human subjects. If the Board grants approval of this application, I agree to:
1. Abide by any conditions or changes in the project required by the Board.
2. Report to the Board any change in the research plan that affects the method of using human subjects before such change is instituted.
3. Report to the Board any problems that arise in connection with the use of human subjects.
4. Seek advice of the Board whenever I believe such advice is necessary or would be helpful.
5. Secure the informed, written consent of all human subjects participating in the project.
6. Cooperate with the Board in its effort to provide a continuing review after investigations have been initiated.

I have reviewed the Federal and State regulations concerning the use of human subjects in research and training programs and the guidelines. I agree to abide by the regulations and guidelines aforementioned and will adhere to policies and procedures described in my application. I understand that changes to the research must be approved by the IRB before they are implemented.

**Professional Research**

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<tr>
<th>Project Director’s Signature</th>
<th>Department Chairperson’s Signature</th>
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**Student or Class Research**

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<tr>
<th>Student Researcher’s Signature</th>
<th>Supervising Faculty Member’s Signature if required</th>
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**Department Chairperson’s Signature**

**ACTION OF REVIEW BOARD (IRB use only)**

The Institutional Review Board for Research Involving Human Subjects has reviewed this application to ascertain whether or not the proposed project:

1. provides adequate safeguards of the rights and welfare of human subjects involved in the investigations;
2. uses appropriate methods to obtain informed, written consent;
3. indicates that the potential benefits of the investigation substantially outweigh the risk involved.
4. provides adequate debriefing of human participants.
5. provides adequate follow-up services to participants who may have incurred physical, mental, or emotional harm.

☑ Approved  ☐ Disapproved

[Signature]  01-18-07
Chairperson, Institutional Review Board  Date
APPENDIX C4

Cover Letter to High School Athletic Trainers
Dear Fellow Certified Athletic Trainer:

I am a master’s degree candidate at California University of Pennsylvania, requesting your help to complete part of the requirements for the Master of Science in Athletic Training degree. Please follow the link at the end of this letter to an online survey titled: Standard Operating Procedures Survey.

The survey consists of questions pertaining to the demographics of your school and the presence and construction of your SOPs. This is a completely anonymous questionnaire and upon submission, neither your name nor email address will be attached to your answers. Your information will be kept strictly confidential. Informed consent will be implied upon completion of the survey. All results will be stored on a hard drive and only available to the researcher and research advisor. The California University of Pennsylvania Institutional Review Board has approved this study for the Protection of Human Subjects.

As a fellow certified athletic trainer, your knowledge and opinions regarding this topic makes your input invaluable. Please take a few minutes to fill out the anonymous questionnaire you will find by clicking on this link and submit it by March 16, 2007:

(http://www.surveymonkey.com/s.asp?u=714623309774)

Thank you in advance for your time and consideration. If you have any questions, please feel free to contact me.

Sincerely,

Katie J. Fox, ATC
California University of Pennsylvania
250 University Ave.
California, PA 15419
Fox8952@cup.edu
570-660-9253

DISCLAIMER: Participants for this survey were selected at random from the NATA membership database according to the selection criteria provided by the student doing the survey. This student survey is not approved or endorsed by NATA. It is being sent to you because of NATA’s commitment to athletic training education and research.
REFERENCES


16) Lippencott, Williams, Wilkins. The ethics of selecting a team physician: “Show me the money” shouldn’t be part of the process. *Sports Medicine Digest.* 2001;23:37-38.


ABSTRACT

TITLE: STANDARD OPERATING PROCEDURES IN NATA DISTRICT TWO HIGH SCHOOLS

RESEARCHER: Katie J. Fox, ATC, PES

ADVISOR: Robert Kane, EdD, ATC

DATE: May 2007

RESEARCH TYPE: Master’s Thesis

PURPOSE: The purpose of this study was to determine the presence of standard operating procedures (SOPs) in high schools, the presence of a team or over-seeing physician in the high schools, and identify trends in demographics leading to the presence of SOPs and/or team/over-seeing physician.

PROBLEM: There is little information about SOPs.

METHOD: A descriptive research design, using 655 NATA District Two Certified Athletic Trainers, was conducted. The instrument used was the Standard Operating Procedures Survey, which was developed by the researcher.

FINDINGS: Team physicians play a huge role in the presence of SOPs with 89.9% surveyed having a team physician and 80.2% of ATCs having SOPs. The level of experience affected the presence of SOPs. The more experience an ATC had, the more likely they were to have SOPs. Team physicians, school administrators and ATCs were the top three professionals reported to have constructed the SOPs.

CONCLUSION: The inconsistency in SOPs presence and the apparent dependence of their presence on the presence of a team physician needs to be brought into awareness.