

THE RELATIONSHIP BETWEEN FIRST TIME BOARD OF CERTIFICATION
PASSING RATE AND ENTRY-LEVEL PROFESSIONALS' PERCEIVED
CONFIDENCE UPON LENGTH OF ATHLETIC TRAINING CLINICAL
EDUCATION

A THESIS

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INTRODUCTION

The purpose of this study was to analyze if a relationship exists between the length of clinical education experience and student confidence to enter the work field and first time Board of Certification (BOC) passing rates in recently certified athletic trainers. Examining this relationship was important for athletic training education analysis and growth. If a relationship existed between the variables in this study, programs could use this information to adapt their curriculum and potentially better their BOC first time passing rate. The relationships studied in this research project have the potential to change athletic training education in the entry-level setting, and thus have a large impact on the profession. Research has been conducted on all of the individual variables reviewed within this study, but no research has been found to determine how these variables affect each other if at all.

The Commission on Accreditation of Athletic Training Education (CAATE) is the agency that sets the standards for both graduate and undergraduate athletic training entry-level education. A significant amount of research has been

performed to analyze the effectiveness and applicability of the CAATE standards. One set of researchers, Williams and Hadfield,³ examined both didactic and clinical education and how they relate to the BOC exam. The researchers then used this information to determine the most appropriate curriculum for educating students on the six athletic training practice domains; these include prevention, clinical evaluation and diagnosis, immediate care, treatment rehabilitation and reconditioning, administration, and professional responsibility. The researchers did this via a survey that was sent to evaluate how certified athletic trainers learned the information within the six domains, and determine the number of clinic education rotations, grade point average (GPA) requirement, faculty responsibilities, faculty terminal degrees, and other variable. This study found that student pass rates on the BOC exam are greatly affected by the faculty that teach the students. The number of faculty who hold terminal degrees within their educational program affected the students' passing rates more than the way the students learned the information within the domains. The type of presentation the professors used (oral lecture, hands-on-learning, and others) and the level of degree that the professors had affected the passing rate on the BOC exam

more than the number of times the information was presented. This is important when examining the reasoning behind the pass rates within an athletic training education program.

Another research study, conducted by Weidner and Laurent,² was aimed directly at the evaluation techniques CAATE uses to critique clinical education sites. The authors used standards that were already set for the use of evaluating physical therapy sites and combined them with a newly developed evaluation form more suited for athletic training. The subjects within this study were program directors, clinical instructors, and students from 28 different accredited entry-level athletic training education programs. The measurements that were collected were in the form of the respondents' critiques of the clinical sites. These were then rated to identify relevant, practical, and high-quality clinical education. This study determined that the tools used for evaluating these sites should be used as guidelines rather than minimal criteria due to the fact that they are subjective in nature.²

One study, by Stiller-Ostrowski et al, evaluated the level of preparation recently certified athletic trainers had in the practice domain of Psychosocial Intervention and Referral. This qualitative design used athletic trainers

from differing undergraduate athletic training education programs and current job settings. Interviews were transcribed and analyzed to find that these professionals had very limited experience in this area. This was an area in which these individuals claimed to struggle. Areas of weakness are important to know and analyze to improve the quality of athletic training education.³

The level at which a person has been prepared for a situation can affect how confident he or she is in handling it. In addition to being prepared to deal with a situation, student confidence is also reliant on the ability of him/her to critically think through an issue. The purpose of a study by Leaver-Dunn et al⁴ was to evaluate the tendency of undergraduate athletic training students to think critically in certain situations. The authors suggested that professors stimulate the process of critical thinking within the classroom. The stimulation of critical thinking within the classroom is important because the tactics are used in the classroom they then can be implemented in clinical education to decrease the amount of downtime and make the clinical experience more rewarding.

The results of the present study help to guide athletic training education. This study will show if relationships exist among aspects of education that can be

adapted and modified. To a practicing clinician who works with students, this study might highlight the level of perceived importance of his/her job to senior level students. To an educator, this study may encourage program adaptations or flexibilities. Analysis such as what these researchers did is extremely important for the continued development within the discipline of athletic training.

This study is significant to the growth and development of athletic training education in that it analyzed potentially existing relationships in an effort to determine what curriculum is best for the success of the student. The results of this study may help to change athletic training education.

METHODS

The primary purpose of this study was to examine the relationship of length of clinical education on student confidence and first time Board of Certification passing rate. This section includes the following subsections: research design, subjects, instruments, procedures, hypotheses, and data analysis.

Research Design

This descriptive research utilized a survey style design. The independent variable for this study was the length, in years, of the clinical education experience of students who have graduated from an accredited entry-level athletic training education program. This condition had two levels: less than three years and greater than or equal to three years. The dependent variables were student confidence and self-reported performance of the first attempt at the Board of Certification exam. A panel of experts and a preliminary group of participants reviewed

this survey prior to data collection to improve the instrument's validity and reliability.

Subjects

The participants used for this study were 1,000 randomly selected certified athletic trainers who are members of the National Athletic Trainers' Association and over the age of 18 years old. The NATA selected and electronically distributed the survey to these members that have specific attributes according to their databases. The specific attributes necessary to qualify to participate in this study include having graduated from a CAATE accredited program and have been certified through the Board of Certification within the past two calendar years. The first three questions of the survey determined participants' eligibility to participate in the study. If participants did not qualify, they were thanked for their time and their survey was immediately terminated.

Each participant was asked to complete an online survey (Appendix C1). This survey consisted of eighteen questions that were answered using a five-point Likert scale, a six-point ranking scale, or yes or no answers. Informed consent was assumed by his/her completing the

survey. The study was approved by the Institutional Review Board (Appendix C2, C3, C4) at California University of PA prior to data collection. Each participant's identity remained confidential and was not included in the study.

Preliminary Research

After the researcher created the survey, a panel of experts evaluated it for individual question reliability and validity. Necessary modifications were made and the survey was sent to a preliminary group of participants on two occasions with seven days between each viewing. This preliminary research tested for consistency and reliability of the survey questions. This sample of convenience group of participants consisted of 15 subjects that met the criteria of the study. The researcher was looking for variance in answers from the first trial to the second within each participant. Reliability was determined via appropriate statistical analysis and questions with moderate to weak correlation coefficients were modified or deleted from the final survey instruments.

Instruments

An eighteen question survey (Appendix C1) evaluated the relationship that length of clinical education has on confidence and first-time Board of Certification passing rate, using a 5-point Likert scale, 6-point ranking scale, and yes or no questions.

Procedure

An email template explaining electronic informed consent and a cover letter explaining the purpose of the survey was compiled. All of the required information was submitted to the National Athletic Trainers' Association (NATA) to be distributed to one thousand participants that fit the criteria explained. Within the e-mail template, there was a link to the online survey. Two weeks after the NATA sent out the first email, a reminder email was drafted and sent. At the end of the third week, the survey was closed and the data was analyzed.

Hypotheses

The following hypotheses were based previous research and the researcher's intuition based on a review of the literature.

1. There will be no difference in first-time BOC passing rate dependent upon clinical education length.
2. There will be no difference in confidence dependent upon clinical education length.

Data Analysis

All data was analyzed using SPSS version 18.0 for Windows at an alpha level of 0.05. The research hypotheses were analyzed using a repeated measures analysis of variance. A Chi-square test was used to examine the relationship between first-time Board of Certification pass rate and clinical education length. In addition, an independent t-test was used to determine if a relationship exists between confidence level and clinical education length.

RESULTS

The following section contains the data collected throughout this study via survey research. It is organized into three subsections: Demographic Education Information, Hypotheses Testing, and Additional Findings.

Demographic Information

One thousand members of the National Athletic Trainers' Association who met the qualification criteria were chosen at random to participate in the survey. These individuals received the cover letter along with a link to the survey via the email address they had given to the NATA via their demographic information. Two hundred and eighty individuals attempted the survey. Of those individuals, 188 met the criteria to complete the entire survey. Of the 188 qualified individuals, 40.96% (n=77) stated they attended an athletic training education program that had a clinical education length of less than three years. The remaining 59.04% attended a Clinical Education program three years or

more in length. These statistics in addition to overall Board of Certification success can be seen in Table 1.

Table 1. Success on Board of Certification Exam Based on Athletic Training Clinical Education Length

Clinical Education Length	Did Pass BOC on First Attempt	Did Not Pass BOC on First Attempt	Total
< 3 years	84	9	93
≥ 3 years	116	17	133

Hypothesis Testing

The following hypotheses were tested in this study. All hypotheses were tested with a level of significance set at $\alpha \leq 0.05$. A Chi-square analysis was completed to test the first hypothesis. The second hypothesis was tested using an independent t-test.

Hypothesis 1: There will be no difference in first time BOC pass rate dependent upon clinical education length.

Conclusion: A chi-square test of independence was performed to examine the potential relationship between length of clinical education and first-time Board of Certification passing rate. The relation between these variables was not statistically significant, ($\chi^2(1) = .518, p > .05$).

In order to assess this hypothesis, participants were asked to answer a yes or no question about their initial success on the Board of Certification exam. Eighty-four individuals who attended a clinical education program less than three years in length reported to have passed the Board of Certification exam on their first attempt. Nine individuals from the same clinical education length group reported to have not passed the Board of Certification exam on their first attempt. One hundred sixteen participants who attended a clinical education program of greater than or equal to three years reported to have passed the Board of Certification exam on their first attempt. Seventeen participants in the same clinical education length group reported to not have passed the Board of Certification exam on their first attempt. Of the individuals whom participated in a clinical education program of less than three years, there was a reported 90.3% first-time Board of Certification passing rate. Of the individuals whom participated in a clinical education program of greater than or equal to three years, there was a reported 87.2% first time Board of Certification passing rate. There was no statistical significance between these numbers ($\chi^2(1)=.518, p >.05$). Please refer to Table 1 for an outline of these statistics.

Hypothesis 2: There will be no difference in confidence dependent upon clinical education length.

Conclusion: An independent-samples t test was calculated comparing the mean scores of the two clinical education length groups in terms of individuals' confidence levels. No significant difference was found ($t = -0.477(218) = .916, p > .05$). The mean confidence score, which was calculated by summing the scores from questions 8, 11, 13 and 14, of individuals with less than three years of clinical education experience was ($m = 16.3, sd = 2.46$) not significantly different from the mean of individuals with greater than or equal to three years of clinical education length ($m = 16.4, sd = 2.57$). The means and standard deviations for this data are depicted in Table 2.

Table 2. Mean Confidence Score Based on Athletic Training Clinical Education Length

Clinical Education Length	Confidence Score	Standard Deviation
< 3 years	16.3	2.46
≥ 3 years	16.4	2.57

There was one confidence-based question that was not included in the overall confidence score. This was question 16 of the survey. This question assessed confidence level

through ranking each domain of athletic training (Table 3). Overall, there is no significant difference between length of clinical education levels and entry-level confidence. The means and significance levels for each aspect of this question can be seen in Table 3.

Table 3. Mean Confidence Rankings (SD, significance level) by Athletic Training Practice Domain

ClinEd	Admin	EmResp	Eval	InjPrev	PsyInt	TherEx
1 (< 3 years)	4.8 (1.17, .298)	2.8 (1.36, .112)	1.8 (.98, .247)	2.9 (1.07, .792)	5.3, (.94, <.001*)	3.2 (1.45, .079)
2 (≥ 3 years)	4.9 (1.24, .298)	2.5 (1.24, .112)	2.0 (1.06, .247)	2.9 (1.45, .792)	4.8, (1.13, <.001*)	3.5, (1.48, .079)

Confidence Ranking - 1=Most confident, 6=least confident

ClinEd=Clinical Education Length Group

Domains - Administration=Admin, EmResp=Emergency Response, Eval=Injury Evaluation, InjPrev=Injury Prevention, PsyInt=Psychosocial Intervention, TherEx=Therapeutic Exercise

*=Significance is <.05

Additional Findings

Other tests, besides those that satisfied the hypotheses for this research, were completed on the data gathered. The mean ranking position of psychosocial intervention in terms of entry-level confidence (survey question 16 depicted in Table 3) for those who reported to have taken less than three years of clinical education was 5.45 with a standard deviation of .94. The mean score of

the same domain in the same question for those who reported to have greater than or equal to three years of clinical education was 4.95 with a standard deviation of 1.13. These numbers are statistically significant with a significance level of $< .001$. Secondly, a thorough examination of how individuals prepared for the Board of Certification was done. The results from this analysis can be seen in Table 4.

Table 4. Frequency of Tools Used To Prepare For Board of Certification Exam

Initial BOC Success	ACES	Rev Bks	OnTests	PRev Ses	FacAd Ses	Pract Exms	Other
Yes	20	161	132	72	104	83	70
No	2	21	17	12	13	19	5

Initial BOC Success=Passed the Board of Certification exam on the first attempt, RevBks=Review Books, OnTests=Online Tests, PRevSes=Peer Review Sessions, FacAdSes=Faculty Administered Sessions, PractExms=Practical Exams

Based on the results of this survey question, review books and online practice tests were the most popular tool for preparation by those who passed on the first attempt. Likewise, review books and practical exams were the most popular tools used by individuals who did not pass the Board of Certification exam on the first attempt.

Based on previous research, Approved Clinical Instructors (ACIs) have shown to be key components in the success of athletic training clinical education. According to the data gathered, students who attended a program with

less than 3 years of clinical education stated with an average ranking of 4.22 (standard deviation .97) that their ACIs helped to improve their entry-level confidence. While students whom attended a program with greater than or equal to 3 years of clinical education stated with an average ranking of 4.12 (standard deviation 1.15) that the ACIs with who they worked alongside helped to improve their entry-level confidence. These numbers are not statistically different.

Second, individuals who attended a clinical education program of less than three years reported a ranking of 4.2 with a standard deviation of .92 in terms of how well they felt the clinical education portion of their athletic training curriculum prepared them for the Board of Certification exam. When asked the same question, individuals who attended a program of greater than or equal to 3 years in clinical education length, reported a mean ranking score of 4.28 with a standard deviation of .863. These numbers are not statistically different but they pose an area for deeper analysis. Thirdly, students who reported to have gone to a program of less than 3 years in clinical education length stated that on average they spent just under 80 percent of time (mean ranking of 3.82 with a standard deviation of .87) doing hands-on activities while

at their clinical education site. Those participants who attended a clinical education program that was greater than or equal to 3 years in length reported to have spent 80 percent of time (mean ranking of 3.9 with a standard deviation of .81) doing the same types of activities. These numbers are not statistically different but rather interesting because it evaluates the amount of time spent doing hands-on activities in the clinical education setting.

In regards to overall preparedness to enter the field as a certified athletic trainer, each practice domain was assessed. No statistical significance was found based on clinical education length. The results for this analysis (means and standard deviation) can be viewed in Table 5.

Table 5. Overall Entry-Level Preparedness As a Certified Athletic Trainer Based on Clinical Education Length (mean, standard deviation)

ClinEd	Admin	EmResp	Eval	InjPrev	PsyInt	TherEx
<3 years	4.8 (1.34)	2.95 (1.30)	1.61 (.89)	2.87 (1.08)	5.44 (.78)	3.24 (1.35)
≥3 years	5.0 (1.36)	2.8 (1.25)	1.7 (.04)	3.0 (1.34)	5.0 (.941)	3.42 (1.33)

Preparedness Ranking - 1=Strongly Disagree, 5=Strongly Agree

ClinEd=Clinical Education Length Group

Domains - Administration=Admin, EmResp=Emergency Response, Eval=Injury Evaluation, InjPrev=Injury Prevention, PsyInt=Psychosocial Intervention, TherEx=Therapeutic Exercise

DISCUSSION

The purpose of this study was to analyze if a relationship existed between the length of the clinical education experience and entry-level confidence along with first time Board of Certification passing rates in athletic training education. Examining this relationship is important for athletic training education analysis and growth. Determining whether a relationship exists between the variables in this study could help programs adapt their curriculum and potentially better their Board of Certification first-time pass rate. The relationships studied in this research project have the potential to change athletic training education in the entry-level setting and thus have a large impact on the profession. In addition to potentially adapting athletic training education, this study could impact the Commission on Accreditation of Athletic Training Education (CAATE) standards. This study can be added to the research that has been conducted to assess the effectiveness and appropriateness of standards within entry-level athletic training education programs.¹ The following discussion is

comprised of three subsections: Discussion of Results, Conclusions, and Recommendations.

Discussion of Results

Based on the data gathered in this and previous studies, no relationship exists between length of clinical education and first-time Board of Certification passing rate. This finding is similar to the findings of other studies done in this area. One set of researchers, Williams and Hadfield,³ examined both didactic and clinical education and how they relate to the BOC exam. This study found that the only influence on BOC passing rate is the number of faculty with a terminal degree within a program. This being said, there is no benefit in terms of certification rate to network in order to create more ACIs clinical sites to place students as sophomores. This could potentially mean that, in terms of Board of Certification passing rate, schools that pay their students for travel expenses or pay ACIs/clinical sites for their time with extra or younger students may be wasting their money. Secondly, the findings of this study relate to the findings of research done in other fields. One study by McClintock and Gravelee examined American Board of Anesthesiology Examination performance

and factors that may affect it. Over two thousand participants were included in this study. The results demonstrated that pass rates were only higher when the exam was taken while the students were still in training versus being out for a year or more. The results went on to explain that passing rates were not dependent on the program that the individuals graduated from.

Although, as a whole, there is not a benefit to having a longer clinical education program in terms of first-time Board of Certification passing rate, there was a statistically significant difference for individually ranked confidence level of psychosocial intervention. Individuals who attended a clinical education program less than three years in length ranked psychosocial intervention almost an entire rank less confident than those who attended a longer program. It can be assumed that these individuals are less confident in terms of psychosocial intervention because they are exposed to fewer situations in which it is used because they have a shortened program and less time in the athletic training room. These findings relate directly with the results of other studies. One study, by Stiller-Ostrowski and Ostroski,⁵ evaluated the level of preparation recently certified athletic trainers had in the practice domain of Psychosocial Intervention and

Referral. Interviews were transcribed and analyzed to find that these professionals had very limited experience in this area. This was an area that these individuals claimed to struggle. Based on this and other similar research the results gathered from this study were expected and alarming in the area of psychosocial intervention and referral. Besides psychosocial intervention, there was no reported difference in entry-level confidence based on length of athletic training clinical education.

Based on the analysis of survey question eight regarding how well ACIs prepared students for entry-level positions in the field of athletic training, clinical education length was not significant. This means that students from one clinical education group felt equally prepared by their ACIs as those from the other. One study by Armstrong et al⁶ can partially explain these findings. Armstrong et al's study was completed to identify the methods that ACIs use to evaluate students' proficiencies. The results of this study show that most clinical proficiencies are evaluated in a simulation method regardless of the length of the clinical education program thus, students from varying programs are being evaluated in the same way and potentially getting equal feedback. This study suggests that in terms of proficiency evaluation,

there is no benefit to attending a program with longer clinical education. The importance does not lie in the type of clinical education evaluation but rather the quality of ACI doing those evaluations.

Research suggests that having quality ACIs is as important as having quality hands-on experiences. Quality ACIs engage the students and utilize time wisely to encourage constant growth and development as a professional and an athletic trainer. The purpose of a study by Leaver-Dunn et al⁷ was to evaluate the tendency of undergraduate athletic training students to think critically in certain situations. The authors suggest that professors stimulate the process of critical thinking within the classroom. This is important because the tactics used in the classroom to increase critical thinking can be implemented in clinical education to decrease the amount of downtime and make the clinical experience more rewarding. In addition, one study by Caswell and Gould⁸ evaluated moral philosophies and ethical decision-making within the field of athletic training. This coincides with critical thinking in that it requires athletic trainers and students to analyze their decisions before they act. The researchers attempted to see if athletic trainers changed their ethics approach to specific situations based on who they were addressing and

what issues they were dealing with. This study found that athletic trainers did not change ethics to address based on specific situations. This being said, both clinical and didactic athletic trainers do not change their approach when dealing with certain situations thus they are not teaching students how to adapt to situations in the appropriate professional manner. This could explain why individuals feel so much less confident in terms of psychosocial intervention. Based on these previous research studies, Approved Clinical Instructors and professors in the classroom should utilize critical thinking tactics in combination with psychosocial intervention strategies to continue to develop their confidence.

The results from this study coincide with previous research while still remaining unique and necessary. Overall, this study has found results that add to the body of knowledge and profession of athletic training.

Conclusions

Length of clinical education has no substantial overall effect on first-time Board of Certification passing rate and entry-level confidence. Based on the data collected from the survey the first null hypothesis was

supported. There was no difference in first-time BOC passing rate dependent upon clinical education length. There was no statistical evidence to suggest that having a longer clinical education program in anyway helps or hinders ones performance on the Board of Certification exam.

Secondly, with the exception of the psychosocial intervention practice domain, there was no statistical significance between length of clinical education and entry-level confidence. The second null hypothesis is supported. There was no difference in confidence dependent upon Clinical Education length. Based on the survey questions and the data gathered the only benefit to attending a longer clinical education program is that individuals report to be more confident in psychosocial intervention than those that completed a shorter program.

These two findings, in combination with the additional findings, show there is very little difference in attending a program that consists of < 3 years or ≥ 3 years of clinical education. Although there is no major difference in clinical education programs based solely on their length, this study is clinically significant in that students can read this research and make education choices knowing that clinical education length is not the

determining factor in first time Board of Certification passing rate and entry-level confidence. Secondly, educators can now assess the amount of student exposure to psychosocial intervention in an effort to raise their confidence in this domain. This is especially true of programs with > 3 years of clinical education since individuals who completed those programs reported less confidence in this area. Also, the frequency and success of students who used different Board of Certification study techniques are noted in Table 2. These can be analyzed to determine effectiveness and success for the use and implementation in education programs of any length.

Recommendations

Based on this study and those completed in the past, it is evident that more research needs to be completed in the area of Athletic Training Clinical Education. Future research should tackle many varying topics assessing a variety of different individuals. Future research should include a larger number of respondents. This study had less than a 28% response rate. Future research should strive for at least a 30% response rate. Secondly, future research should include open-ended response questions. This would

allow for individuals to talk about very individual and subjective concerns and to voice comments about specific strong areas or shortcomings of their clinical education program. Also, professors' and program directors' opinions and suggestions should be heard. There are aspects of education that can only be received via the educators. Hearing from these varying individuals will give these individuals the opportunity to not only voice strengths and weaknesses about their work place but also the performance of their students. By surveying these different individuals, research will be done from a very different perspective and can assess similar but unique variables. There is much potential for growth and development in terms of athletic training education. The potential for growth also creates an unique and necessary opportunity for research. This research should be completed to better the discipline of athletic training.

REFERENCES

1. Commission on accreditation of athletic training education.
<http://www.caate.net/imis15/CAATE/About/CAATE/About.aspx?hkey=1b198b36-7205-4b7f-9447-abd3800a3264>. Accessed October 3, 2011.
2. Weidner TG, Laurent T. Selection and evaluation guidelines for clinical education settings in athletic training. *J Athl Train*. 2001;36(1):62-67.
3. Williams RB, Hadfield OD. Attributes of curriculum athletic training programs related to the passing rate of first-time certification examinees. *J Allied Health*. 2003 Winter;32(4):240-5.
4. McClintock JC, Gravlee GP. Predicting success on the certification examinations of the American Board of Anesthesiology. *Anesthesiology*. 2010 Jan;112(1):212-9.
5. Stiller-Ostrowski JL, Ostrowski JA. Recently certified athletic trainers' undergraduate educational preparation in psychosocial intervention and referral. *J Athl Train*. 2009 Jan-Feb; 44(1): 67-75.
6. Armstrong KJ, Weidner TG, Walker SE. Athletic training approved clinical instructors' reports of real-time opportunities for evaluating clinical proficiencies. *J Athl Train*. 2009 Nov-Dec; 44(6): 630-638. doi: 10.4085/1062-6050-44.6.630.
7. Leaver-Dunn D, Harrelson GL, Martin M, Wyatt T. Critical-thinking predisposition among undergraduate athletic training students. *J Athl Train*. 2002 Dec;37(4 Suppl):S147-S151.
8. Caswell SV, Gould TE. Individual moral philosophies and ethical decision making of undergraduate athletic training students and educators. *J Athl Train*. 2008 Mar-Apr; 43(2): 205-214.

APPENDICES

APPENDIX A
Review of Literature

REVIEW OF LITERATURE

Accredited entry-level athletic training education programs have two major academic components: didactic and clinical learning. There is a vast amount of variance in the delivery of both of these facets of education throughout programs in the United States. Clinical education is the main focus of this Review of Literature.

Entry-level athletic training programs must follow certain standards to ensure they meet the needs set by their accreditation agency. Although this agency sets standards, they are entry-level criteria, with programs often exceeding minimum standards.¹ One aspect of these minimum standards is the length of time that students are involved in clinical education. Some programs offer the three or fewer years of clinical experience while others offer more than three years.¹ This literature review will examine if the length of a student's clinical experience has an impact on his/her career preparation. In addition, the students' overall confidence in their ability to work in the field as an entry-level athletic trainer will be

reviewed in this document. Student confidence, entry-level confidence and clinical education will be reviewed.

The purpose of this Review of Literature is to inform the reader about different perspectives of athletic training education and how they affect an entry-level confidence in one's abilities and skills. This will be accomplished in the following sections: Commission on Accreditation of Athletic Training Education (CAATE), Other Professions' Education and Student Confidence.

Commission on Accreditation of Athletic Training Education

The Commission on Accreditation of Athletic Training Education or CAATE was established to set basic and minimal standards to be met by entry-level athletic training education programs.¹ These standards were acquired from both objective and academic criteria. The standards are reviewed and input is gathered from all agencies that sponsor CAATE, colleges and universities, and athletic trainers who utilize CAATE service or hire graduates of a CAATE accredited program.¹

This organization has standards for both didactic and clinical education. The standards put forth by this

organization set a required minimum or "entry-level" that programs can take and adapt. This allows for a level of uniqueness within each program. Although this review will focus mostly on clinical education, variability does exist in didactic education. This occurs mostly because some programs require students to take courses that others do not. Some of these courses may include chemistry, pharmacology, emergency medical technician training, sports psychology, etc. These courses may add extra insight to an area of athletic training but they are not required across the board through CAATE standards. In addition to clinical education, these are aspects of athletic training education programs that may affect student confidence and Board of Certification first time pass rate.

Much research has been conducted on the standards set by CAATE. One research study, conducted by Weidner and Laurent², was aimed directly at the evaluation techniques CAATE uses to critique clinical education sites. The authors used standards that were already set for the use of evaluating physical therapy sites and combined them with a newly developed evaluation form more suited for athletic training. The subjects within this study were program directors, clinical instructors, and students from 28 different accredited athletic training programs from all

different districts across the country. The measurements collected were in the form of the respondents' critiques of the clinical sites. These were then rated to see if they were relevant, practical, and suggestive of high-quality clinical education. This study found the tools that were used for evaluating these sites should be used as guidelines rather than required criteria due to the fact that they are subjective in nature.

Subjectivity in athletic training education accreditation is something many researchers have tried to eliminate through the use of analysis and control groups. A study³ attempted to do this by making the realm of athletic training more business-like. The purpose of this study was to apply a commonly used business tactic to improve entry-level athletic training education program accreditation. The data was synthesized and concluded that accreditation is necessary to have a baseline of standards. Although at times these regulations cause issues within programs, they are the best way to ensure adequate education. This is important when determining the entry-level standards that should be present during clinical education. Although this study found that business-like accreditation helps form necessary standards, many personal and professional

opinions go into deciding what those minimal standards must be in athletic training education.

Research has been completed to decide which educational standards are best for athletic training. One study in particular, conducted by Lauber et al,⁴ surveyed over 300 individuals, some of which were program directors and the others were clinical instructors. First, the participants were presented with statements made by clinical instructors. The participants then had to place those statements into one of the following categories: instructional, interpersonal, evaluative, personal, and professional. This study showed that program directors and clinical instructors differed greatly in their opinions about which category each statement fell under. This shows how professional colleagues vary greatly in their opinions of subjective information. Also, this leads into the need for critical evaluation and minimal CAATE standards for clinical instructors to ensure professionalism during a student's clinical education experience.

Another study by Weidner and Henning⁵ was completed to develop standards for the selection, training, and evaluation of approved clinical instructors (ACIs). The authors used seven criteria that were used for physical therapy clinical instructors and added two more to set up

the criteria outline. A panel of researchers analyzed the relevance of these criteria. This study found that the original criteria could not be used to evaluate clinical instructors for athletic training. Another set of criteria was determined. It is important to know how to choose and evaluate ACIs in order to ensure quality clinical experiences.⁵⁻⁹

The importance of accreditation standards is not only in place for athletic trainers, but also for students as well. Peer assisted learning is a tool that is stressed in many athletic training education programs. This prepares students to be teachers or mentors within the profession. The purpose of one study completed by Henning et al¹⁰ was to examine the presence of peer-assisted learning in athletic training clinical education and to identify the students' perceptions about it. A convenience sample of 138 entry-level athletic training students was taken at the National Athletic Trainers' Association in 2002. A survey was conducted and the results showed that peer-assisted learning was both present and beneficial in athletic training education programs. Standards are set by CAATE on the environment in which students can learn, but not necessarily on who will be their teachers. Learning from other students has shown to be beneficial.¹⁰

As noted above, programs are required to adhere to minimum standards to ensure accreditation. In order to maintain CAATE accreditation, students must complete proficiencies in certain areas. These are skills that must be taught on two separate occasions to students, and then students demonstrate mastery in order to progress through the program. One study, by Walker et al,¹¹ evaluated the methods that the entry-level athletic training programs use to assess clinical proficiencies. This cross-sectional study evaluated 201 program directors by surveying them on eleven different educational tactics regarding the teaching and performance of required competencies. Simulated instruction was the most common educational tactic. These simulations, however, did not always represent real life situations. In order to provide better clinical education, more real life experiences need to be simulated.

In addition, Barnum¹² examined the ability of approved clinical instructors to ask questions as a teaching strategy. This was a qualitative case study of one particular accredited athletic training education program. It was determined that over two-thirds of the questions asked by these professionals were considered low quality based on the scale used to evaluate them. This shows that not all tools used for education in the clinical setting

are actually useful. The purpose of another study was to identify the methods and tools that approved clinical instructors use to evaluate students' proficiencies. This cross-sectional design asked 135 athletic trainers to complete a survey that characterized their responses on 15 proficiency evaluation techniques. The results of this study show that most clinical proficiencies are evaluated in a simulation method.^{13,14} This is important because without ample quality clinical education, not all simulations will be completed and thus not all techniques can be learned.

The standards set by CAATE have been highly researched for their effectiveness and appropriateness within entry-level athletic training education programs. This agency compiles minimum entry-level standards of equal importance for didactic and clinical education. These standards are reflective of, but set apart from other healthcare professions. It is important to understand the uniqueness of the standards developed and set for athletic training education by CAATE. These standards are entry level and required to maintain accreditation.¹

Board of Certification (BOC)

In order to become a nationally certified athletic trainer, one must not only graduate from a CAATE accredited athletic training program, but also pass the Board of Certification (BOC) examination. Many possible correlations between undergraduate success in certain areas and success on the BOC have been studied.

One set of researchers, Williams and Hadfield,¹⁵ examined both parts of the athletic training education Program; didactic and clinical education. Both of these parts have been examined and accredited by Commission on Accreditation of Allied Health Education Program (CAAHEP) to determine how they relate to the national certification exam. The researchers then used this information to determine the most appropriate curriculum for educating students on all six athletic training educational domains including prevention, clinical evaluation and diagnosis, immediate care, treatment rehabilitation and reconditioning, administration, and professional responsibility. A survey was sent to evaluate how the athletic trainers learned the information within the six domains, number of clinic education rotations, GPA requirement, faculty responsibilities, faculty terminal degrees, etc. This study found that students' passing rates

on the BOC exam are greatly affected by the faculty who teach them. The number of faculty who hold terminal degrees within their educational program affected the students' pass rates more than their method of learning the information within the domains. The type of teaching styles the professors used and the academic degree that the professors have affected the pass rate of the BOC exam more than the number of times the information was presented. This is important when examining the reasoning behind the pass rates within an athletic training education program.

Another set of researchers, Starkey and Henderson,¹⁶ supported the idea that early test taking and clinical experience are influential factors on overall test performance. This is relevant when determining the importance and necessary length of clinical education in relation to confidence and readiness to enter the field of athletic training. Another related and supporting article, by Turocy et al,¹⁷ reported on research that was conducted to examine if there was a relationship between grade point average, number of clinical education hours, and performance of the national certification exam. The data collection forms were sent out in the mail along with a consent form but then the exam scores were obtained from Columbia Assessment Services. This study examined 270

first-time exam takers for the months of April and June in 1998. This study found there was not a difference between the scores of men and women in any section of the exam. There were, however, differences between the curriculum and internship candidates on some sections of the exam and that grade point average was a significant predictor of performance on all parts of the exam.

Although it is evident that there is research supporting the perceived correlations in athletic training education, research that contradicts the correlations also exists. One study¹⁷ determined the efficacy of clinical experience relative to passing the exam. This study used a survey-based design to collect data from 269 subjects. This study concluded that total clinical hours and high-risk sport experiences were not predictive of BOC exam scores. Clinical hours completed above the required amount did not correlate with a better score on the exam. Contradictory information is important when evaluating the overall relevance of a conclusion. Further analysis of the data and future research should be conducted to form a stronger conclusion.

Other Professions' Education

Similar to athletic training, many other healthcare professions have education programs that prepare their students to take exams in order to gain all the rights and responsibilities of that profession. Some healthcare fields that require this include dentistry, anesthesiology, gynecology, and optometry.

One study, by DeWald et al,¹⁸ within the field of dentistry was conducted to review the effect of grade point average (GPA) on National Board Examination performance. Also, this study showed the relationship between taking a dental hygiene review course and performance on the exam. Although this study did not find a correlation between performances on the exam and taking a review course there was a correlation between GPA and test score. Another similar study, by McClintock and Gravelee,¹⁹ examined American Board of Anesthesiology Examination performance and factors that may affect it. This study used over two thousand participants. The results demonstrated that pass rates were higher when the test was taken while the students were still in training versus being out for a year or more. Very similar studies and findings exists for a

large array of medical professions.²⁰⁻²⁵ These findings are not new and can be used in athletic training education to predict success on the Board of Certification exam.

Student Confidence

Self-confidence can be described as having trust in one's own powers and abilities. Students gain self-confidence through education and positive feedback. In the field of athletic training, confidence is necessary to properly and safely complete the duties of the job. It is important to understand and evaluate students' self-confidence in order to properly prepare them for their careers as athletic trainers. Many research studies have been performed to evaluate both direct and indirect components of student confidence.

One study, by Caswell and Gould,²⁶ evaluated moral philosophies and ethical decision-making within the field of athletic training. The purpose of this study was to expand the research done in the area of ethics. Expansion was done by describing undergraduate athletic training students' and educators' philosophies and ethical decision-making abilities. Once the research was completed, researchers investigated the effects of gender and level of

education on decision-making and ethical scores. This stratified, multistage, cluster-sample correlation study used undergraduate students and educators from 25 accredited programs. This study found that athletic training ethics did not change to address sex-specific needs. This being said, professors should take into account their students' own moral philosophies to facilitate the most growth.²⁶ In addition to reviewing how each individual feels or responds to a situation, research on what the athletic trainer was taught and how prepared he or she is for a specific situation was evaluated as well.

One study, by Stiller-Ostrowski and Ostrowski,²⁷ evaluated the level of preparation recently certified athletic trainers had in the area of Psychosocial Intervention and Referral. This qualitative design used 11 athletic trainers from differing undergraduate athletic training education programs and current job settings. Interviews were transcribed and analyzed to find that these professionals had very limited experience in this area. This was an area that these individuals claimed to struggle with. Areas of weakness are important to know and be able to analyze in order to improve the quality of athletic training education. The level at which a person has been prepared for a situation can affect how confident he or she

is in handling it. In addition to being prepared to handle a situation, student confidence is also reliant on the ability for one to critically think through an issue.

The purpose of a study by Leaver-Dunn et al²⁸ was to evaluate the tendency of undergraduate athletic training students to think critically in certain situations. Ninety-one students were involved in this study and the findings showed that these students were inclined to think critically. Although this relationship was evident it was somewhat weak. The authors suggest that professors stimulate the process of critical thinking within the classroom. This is important because the tactics used in the classroom to increase critical thinking can be implemented in clinical education to decrease the amount of downtime and make the clinical experience more rewarding.

Many aspects of education and personal growth play a role in overall student confidence. Without a high level of confidence an athletic trainer could act wrongfully in a situation and cause serious harm or injury to an athlete. Overall confidence is crucial in the field of athletic training.

Theories Based on Teaching Techniques

Just as there are many different types of learners,

there are also many different types of teaching strategies. Although, all of them hold the same goal of education in mind they go about achieving it very differently. This too has been a highly researched and very applicable topic in athletic training.

One study, by Carr and Drummond,²⁹ measured the observations and perceptions of physical presence, cooperation, and communication between clinical and classroom instructors. Also, this study determined if these differences had an effect on the students. A survey was designed to assess the opinions of clinical instructors, classroom instructors, and athletic training students. It was found within this study that communication and cooperation between clinical and classroom instructors had a large effect on the education of the athletic training students. Also, it was determined that having clinical instructors be classroom instructors is beneficial to students' education as well. In addition to having the instructors from didactic and clinical education overlap, using different pedagogic styles has shown to be effective as well.

Gould and Caswell³⁰ reviewed the pedagogic styles of athletic training professors and introduced some unfamiliar styles to determine their effects on learning. This

correlation research study examined 10 different athletic training education programs and found that different educational methods work as tool for presenting information but sex and academic role style differences should be considered when adding these to a curriculum. The use of these different styles not only increases the ability for students to learn in different ways but it also broadens their educational exposure and could potentially give them an educational tool to use in the clinic or classroom with other students.

As mentioned previously, a large portion of learning in athletic training education can come from other students within the clinical setting. Many of these experiences include an older student teaching a younger or less experienced student. This is very common and typical of athletic training. This type of mentorship was researched in entry-level athletic training students. In one study 16 interviews were conducted, some with athletic training students and some with other individuals who were considered to be mentors. The interviews were transcribed and then analyzed using a coding process. The results showed that students who claimed to have a mentor named that person as their clinical instructor. It was stated that the mentors must be reliable and approachable. This

being said, it is easy to see that clinical education is important not only to gain experience but also to formulate mentorship experiences that are important and obviously memorable.

Summary

This literature review reveals many different findings in terms of entry-level athletic training education. First, the review exposes the need and purpose of the accreditation standards set by CAATE.¹ In addition, it details the fact that these standards are simply minimum entry-level requirements that can and should be surpassed. This overachievement should be completed to ensure student success on the BOC exam and to foster both individual program and overall professional growth.

Second, the review highlights how other professions can predict their students' success on certification exams based on classroom performance. This is a tool that can be used within the athletic training education system. Low pass rates may possibly correlate with a poor educational program and thus should encourage change within the program to increase success.

Finally, both student and entry-level confidence in and out of the classroom were examined and showed the key importance of mentorship within athletic training. All three of these factors combined show that more research needs to be done to determine what type of clinical education program will provide the most education and foster high entry-level confidence within entry level athletic training education.

APPENDIX B

The Problem

STATEMENT OF THE PROBLEM

The purpose of this study was to analyze if a relationship exists between the length clinical education experience and entry-level confidence along with first-time Board of Certification passing rates in athletic training education. Examining this relationship was important for athletic training education analysis and growth. If a relationship existed between the variables in this study, programs could use this education to adapt their curriculum and potentially better their Board of Certification first time pass rate. The relationships studied in this research project had the potential to change athletic training education in the entry-level setting and thus have a large impact on the profession.

Definition of Terms -

The following definitions of terms will be defined for this study:

- 1) Undergraduate Student - a student in a university or college setting who has not received his/her Bachelors degree
- 2) Graduate Student - a student in a university or college setting who has receive his Bachelors degree and is attempting to achieve a higher degree (this differs greatly from the term "graduate"
- 3) Entry Level - the lowest level job or ability; suitable for a beginner in a particular field
- 4) Confidence - belief in one's powers or abilities

Basic Assumptions

The following were basic assumptions of this study:

- 1) The subjects were honest when they completed their surveys.
- 2) The subjects answered questions to the best of their ability.
- 3) The questions were not leading or biased.
- 4) All respondents were given adequate time to complete the survey.

Limitations of the Study

The following were possible limitations of the study:

- 1) Only graduates who have received their degree from an accredited program and certification in the past two years were studied; thus decreasing the subject pool.
- 2) Not all individuals returned the survey.
- 3) Other aspects of athletic training education affect the pass/fail rate on Board of Certification exam.

Significance of the Study

The results of this study can help to guide athletic training education. This study showed the relationships that exist among aspects of education that can be adapted and modified. To a practicing clinician who works with students this study might highlight the level of perceived importance of their job to entry-level athletic trainers. To an educator, this study may encourage program adaptations or flexibility. This study is extremely important for the field of athletic training because it is significant to the growth and development of athletic training education programs in that it analyses potentially existing relationships in an effort to determine what curriculum is best for the success of the student. The results of this study may help to change athletic training education.

APPENDIX C

Additional Methods

APPENDIX C1
Online Survey

Dear Fellow Certified Athletic Trainer:

My name is Megan Little and I am currently a graduate student at California University of Pennsylvania pursuing a Master of Science in Athletic Training. Part of the graduate study curriculum is to complete a research thesis. I am conducting survey research to determine if there is a relationship between clinical education length and first time Board of Certification pass rate along with student confidence at the time of graduation. All three variables will be accessed using the survey to examine any possible correlation between the three.

One thousand Certified Athletic Trainers over the age of 18 years old nationwide have been invited to participate in this fifteen minute survey; however, your participation is voluntary. You also have the right to discontinue participation without penalty at any time during the survey completion process at which time your data will be discarded immediately. The California University of Pennsylvania Institutional Review Board has reviewed and approved this project. The approval is effective 12/16/2011 and expires 12/15/2012.

All survey responses are anonymous and will be kept confidential, and informed consent to use the data collected will be assumed upon completion of the survey. Aggregate survey responses will be housed in a password protected file on the CalU server. Minimal risk is posed by participating as a subject in this study. I ask that you please take this survey at your earliest convenience as it will take approximately 15 minutes to complete. The information gathered from this research project will be used to enrich the body of knowledge to advance that profession of Athletic Training in regards to length of clinical education. If you have any questions regarding this project, please feel free to contact the primary researcher, Megan Little at Lit8495@calu.edu. You can also contact the faculty advisor for this research, Dr. Linda Platt Meyer, EdD, ATC, PES at Meyer@calu.edu. Thanks in advance for your participation.

Thank you for taking the time to take part in my thesis research. I greatly appreciate your time and effort put into this task.

Sincerely,
Megan Little, ATC
Primary Researcher
California University of Pennsylvania
250 University Ave
California, PA 15419
301-305-9023

Please answer the following 18 questions by selecting the most appropriate answer. Use the bubbles to select your answers. Thank you so much for your time and help in this research.

***1. Are you over the age of 18 years old?**

Yes

No

***2. I am _____**

male.

female.

***3. Did you graduate from a CAATE accredited athletic training program AFTER December 1, 2009?**

Yes

No

***4. Did you pass the Board of Certification exam AFTER December 1, 2009?**

Yes

No

Disqualification Page

Thank you for your time however, you do not meet the qualifications of this study. Your participation is greatly appreciated. Please exit the survey at this time.

***5. My ENTRY-LEVEL athletic training program was _____**

- an undergraduate program.
- a graduate program.

***6. Did you pass the Board of Certification exam on the first attempt?**

- Yes
 No

***7. Which best describes the length of clinical education at your entry-level institution:**

- <3 years (you clinically studied as an athletic training student in the athletic training/professional setting for less than 3 years during your program)
 ≥3 years (you clinically studied as a student in the athletic training/professional setting for equal to or more than 3 years during your program)

8. I feel as though my ACIs worked to increase my confidence as an Athletic Training Student.

- Strongly Disagree
 Disagree
 Neutral
 Agree
 Strongly Agree

***9. In regards to my _____ I feel the clinical portion of my entry-level athletic training education program prepared me well for an entry-level position.**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Evaluation Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Therapeutic Rehabilitation Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Injury Prevention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychosocial Intervention Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency Management Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. I feel that the clinical portion of my entry-level athletic training education program helped to prepare me for the Board of Certification Exam.

- Completely Disagree
- Disagree
- Neutral
- Agree
- Completely Agree

11. I feel that the clinical portion of my entry-level athletic training education program assisted to increase my confidence as an Athletic Trainer.

- Completely Disagree
- Disagree
- Neutral
- Agree
- Completely Agree

12. My clinical education program was interactive for me as a student ___ of the time. (Please fill in the blank with a percentage estimate from the scale below). An example of interaction would include YOU truly evaluating an ACL injury and not just observing or you taping ankles rather than just watching them being taped.

- 0-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

13. Prior to my first employment setting, on the day of graduation from my entry-level athletic training education program, I felt confident in my skills as a Certified Athletic Trainer.

- Completely Disagree
 Disagree
 Neutral
 Agree
 Completely Agree

14. I believe I had enough practical, interactive experience in my entry-level athletic training education program to be a confident Certified Athletic Trainer.

- Completely Disagree
 Disagree
 Neutral
 Agree
 Completely Agree

15. How did you prepare for the Board of Certification Exam? (Check all that apply)

- ACES
 Review books
 Online practice exams
 Peer review questions
 Faculty administered review sessions
 Practical exams
 Other

16. Rank in order from most confident to least confident the six domains in regards to how confident you felt your skills were, on your graduation day.

	Most Confident	Very Confident	Confident	Somewhat Confident	Unconfident	Least Confident
Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Injury Evaluation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Injury Prevention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychosocial Intervention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Therapeutic Rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Rank in order, from most prepared to least prepared, each domain in regards to how well you feel the clinical portion of your entry-level athletic training program prepared you for the requirements necessary of an entry-level Athletic Trainer.

	Most Prepared	Very Prepared	Prepared	Somewhat Prepared	Unprepared	Least Prepared
Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Injury Evaluation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Injury Prevention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychosocial Intervention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Therapeutic Rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. I believe my clinical education experience, as a whole, adequately prepared me for the Board of Certification exam.

- Completely Disagree
- Disagree
- Neutral
- Agree
- Completely Agree

Thank you very much for your time and participation. For more information on my graduate institute please visit www.calu.edu

APPENDIX C2

Institutional Review Board -
California University of Pennsylvania



California University
of Pennsylvania

Proposal Number

Date Received

PROTOCOL for Research Involving
Human Subjects

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 The Relationship Between First Time Board of Certification Passing Rate and Entry-Level Confidence Upon Length of Athletic Training Clinical Education

Researcher/Project Director Megan Little, ATC

Phone # 3013059023

E-mail Address Lit8495@calu.edu

Faculty Sponsor (if required) Linda P. Meyer, EdD, ATC, PES

Department Health Science

Project Dates January 1, 2012 to December 31, 2012

Sponsoring Agent (if applicable) n/a

Project to be Conducted at California University of Pennsylvania (via the internet)

Project Purpose: **Thesis** **Research** **Class Project** **Other**

Keep a copy of this form for your records.

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(es) 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.*

The purpose of this study is to analyze if a relationship exists between the length clinical education experience and student confidence to enter the work field and first time Board of Certification pass rates in Undergraduate Athletic Training students. Examining this relationship is important for Athletic Training education analysis and growth. If a relationship exists between the variables in this study, programs could use this education to adapt their curriculum and potentially better their Board of Certification first time passing rate. The relationships studied in this research can really change Athletic Training education in the undergraduate setting and thus have a large impact on the profession.

This descriptive research utilizes a survey style design. The independent variable for this study is the length, in years, of the Clinical Education experience of students whom have graduated from an Undergraduate Athletic Training Education Program. This condition will have two levels: less than three years and greater than or equal to three years. The dependent variable is student confidence and self-reported performance of the first attempt at the Board of Certification exam. A panel of experts and a preliminary group of participants will review this survey prior to data collection.

The participants used for this study will be 1000 randomly selected Certified Athletic Trainers who are members of the National Athletic Trainers' Association and over the age of 18 years old. The NATA will select and distribute the survey to these members that have the following attributes according to their databases.

These Athletic Trainers will have graduated from a CAATE accredited program and have been certified through the Board of Certification (BOC) within the past two calendar years and are over the age of 18 years old. The first three questions of the survey will be used to determine the eligibility of subjects. Individuals who do not meet these qualifications will be immediately excluded from this study and thanked for their time.

Each participant will be asked to complete an online survey. This survey will consist of 18 questions that will be answered using a five point Likert scale, rankings, or "yes/no" answers. All survey responses are anonymous and will be kept confidential, and informed consent to use the data collected will be assumed upon completion of the survey. Aggregate survey responses will be housed in a password protected file on the CalU server. Minimal risk is posed by participating as a subject in this study.

An email template explaining electronic informed consent and a cover letter explaining the purpose of the survey along with IRB approval dates will be compiled. This information will be submitted to the National Athletic Trainers' Association to be distributed to one thousand participants that fit the criteria explained. Within the e-mail template, there will be a link to the survey. Two weeks after the NATA sends out the first email a reminder email will be drafted and sent out. At the end of the third week the survey will be closed and the data will be analyzed using appropriate statistical measures.

The hypothesis for this study are:

1. There will be no difference in first time BOC passing rate dependent upon Clinical Education length.
 2. There will be no difference in confidence dependent upon Clinical Education length.
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.*

Approved, September 12, 2005 / (updated 02-09-09)

The possible risks that that could accompany this is the release of the information that is obtained in the surveys. To ensure that this doesn't happen, names will not be asked at all. Information that is gathered will be stored in a password protected file on the CalU server.

- 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.*

One thousand Certified Athletic Trainers over the age of 18 years old will be contacted via the National Athletic Trainers' Association. In order to be qualified for this study individuals will have had to have graduated and passed the Board of Certification exam within the past 2 years. The first 3 questions on the survey will address this esure to ensure the subjects are equitable.

- 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.*

Informed consent to use the data collected will be assumed upon completion of the survey. Minimal risk is posed by participating as a subject in this study. A cover letter will accompany the surveys and will explain all the details.

- 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.*

All survey responses are anonymous and will be kept confidential, and informed consent to use the data collected will be assumed upon completion of the survey. Aggregate survey responses will be housed in a password protected file on the CalU server. Minimal risk is posed by participating as a subject in this study. Information that is gathered from the surveys will strictly be used for research purposes.

3. *Check the appropriate box(es) that describe the subjects you plan to use.*

<input checked="" type="checkbox"/> <i>Adult volunteers</i>	<input type="checkbox"/> <i>Mentally Disabled People</i>
<input type="checkbox"/> <i>CAL University Students</i>	<input type="checkbox"/> <i>Economically Disadvantaged People</i>
<input type="checkbox"/> <i>Other Students</i>	<input type="checkbox"/> <i>Educationally Disadvantaged People</i>
<input type="checkbox"/> <i>Prisoners</i>	<input type="checkbox"/> <i>Fetuses or fetal material</i>
<input type="checkbox"/> <i>Pregnant Women</i>	<input type="checkbox"/> <i>Children Under 18</i>
<input type="checkbox"/> <i>Physically Handicapped People</i>	<input type="checkbox"/> <i>Neonates</i>

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 _____

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.*

California University of Pennsylvania Institutional Review Board
Survey/Interview/Questionnaire Consent Checklist (v02.1209)

This form **MUST** accompany all IRB review requests

Does your research involve **ONLY** a survey, interview or questionnaire?

YES—Complete this form

NO—You **MUST** complete the “Informed Consent Checklist”—skip the remainder of this form

Does your survey/interview/questionnaire cover letter or explanatory statement include:

- (1) Statement about the general nature of the survey and how the data will be used?
- (2) Statement as to who the primary researcher is, including name, phone, and email address?
- (3) **FOR ALL STUDENTS:** Is the faculty advisor’s name and contact information provided?
- (4) Statement that participation is voluntary?
- (5) Statement that participation may be discontinued at any time without penalty and all data discarded?
- (6) Statement that the results are confidential?
- (7) Statement that results are anonymous?
- (8) Statement as to level of risk anticipated or that minimal risk is anticipated? (NOTE: If more than minimal risk is anticipated, a full consent form is required—and the Informed Consent Checklist must be completed)
- (9) Statement that returning the survey is an indication of consent to use the data?
- (10) Who to contact regarding the project and how to contact this person?
- (11) Statement as to where the results will be housed and how maintained? (unless otherwise approved by the IRB, must be a secure location on University premises)
- (12) Is there text equivalent to: “Approved by the California University of Pennsylvania Institutional Review Board. This approval is effective nn/nn/nn and expires mm/mm/mm”? (the actual dates will be specified in the approval notice from the IRB)?
- (13) **FOR ELECTRONIC/WEBSITE SURVEYS:** Does the text of the cover letter or explanatory statement appear before any data is requested from the participant?
- (14) **FOR ELECTRONIC/WEBSITE SURVEYS:** Can the participant discontinue participation at any point in the process and all data is immediately discarded?

**California University of Pennsylvania Institutional Review Board
Informed Consent Checklist (v021209)**

This form **MUST** accompany all IRB review requests

Does your research involve **ONLY** a survey, interview, or questionnaire?

YES—DO NOT complete this form. You **MUST** complete the “Survey/Interview/Questionnaire Consent Checklist” instead.

NO—Complete the remainder of this form.

1. Introduction (check each)

- (1.1) Is there a statement that the study involves research?
- (1.2) Is there an explanation of the purpose of the research?

2. Is the participant. (check each)

- (2.1) Given an invitation to participate?
- (2.2) Told why he/she was selected.
- (2.3) Told the expected duration of the participation.
- (2.4) Informed that participation is voluntary?
- (2.5) Informed that all records are confidential?
- (2.6) Told that he/she may withdraw from the research at any time without penalty or loss of benefits?
- (2.7) 18 years of age or older? (if not, see Section #9, Special Considerations below)

3. Procedures (check each).

- (3.1) Are the procedures identified and explained?
- (3.2) Are the procedures that are being investigated clearly identified?
- (3.3) Are treatment conditions identified?

4. Risks and discomforts. (check each)

- (4.1) Are foreseeable risks or discomforts identified?
- (4.2) Is the likelihood of any risks or discomforts identified?
- (4.3) Is there a description of the steps that will be taken to minimize any risks or discomforts?
- (4.4) Is there an acknowledgement of potentially unforeseeable risks?
- (4.5) Is the participant informed about what treatment or follow up courses of action are available should there be some physical, emotional, or psychological harm?
- (4.6) Is there a description of the benefits, if any, to the participant or to others that may be reasonably expected from the research and an estimate of the likelihood of these benefits?
- (4.7) Is there a disclosure of any appropriate alternative procedures or courses of treatment that might be advantageous to the participant?

5. Records and documentation. (check each)

- (5.1) Is there a statement describing how records will be kept confidential?
- (5.2) Is there a statement as to where the records will be kept and that this is a secure location?
- (5.3) Is there a statement as to who will have access to the records?

6. For research involving more than minimal risk (check each),

- (6.1) Is there an explanation and description of any compensation and other medical or counseling treatments that are available if the participants are injured through participation?
- (6.2) Is there a statement where further information can be obtained regarding the treatments?
- (6.3) Is there information regarding who to contact in the event of research-related injury?

7. Contacts.(check each)

- (7.1) Is the participant given a list of contacts for answers to questions about the research and the participant's rights?
- (7.2) Is the principal researcher identified with name and phone number and email address?
- (7.3) FOR ALL STUDENTS: Is the faculty advisor's name and contact information provided?

8. General Considerations (check each)

- (8.1) Is there a statement indicating that the participant is making a decision whether or not to participate, and that his/her signature indicates that he/she has decided to participate having read and discussed the information in the informed consent?
- (8.2) Are all technical terms fully explained to the participant?
- (8.3) Is the informed consent written at a level that the participant can understand?
- (8.4) Is there text equivalent to: "Approved by the California University of Pennsylvania Institutional Review Board. This approval is effective mm/nn/nn and expires mm/mm/nn"? (the actual dates will be specified in the approval notice from the IRB)

9. Specific Considerations (check as appropriate)

- (9.1) If the participant is or may become pregnant is there a statement that the particular treatment or procedure may involve risks, foreseeable or currently unforeseeable, to the participant or to the embryo or fetus?
- (9.2) Is there a statement specifying the circumstances in which the participation may be terminated by the investigator without the participant's consent?
- (9.3) Are any costs to the participant clearly spelled out?
- (9.4) If the participant desires to withdraw from the research, are procedures for orderly termination spelled out?
- (9.5) Is there a statement that the Principal Investigator will inform the participant or any significant new findings developed during the research that may affect them and influence their willingness to continue participation?
- (9.6) Is the participant is less than 18 years of age? If so, a parent or guardian must sign the consent form and assent must be obtained from the child
 - Is the consent form written in such a manner that it is clear that the parent/guardian is giving permission for their child to participate?
 - Is a child assent form being used?
 - Does the assent form (if used) clearly indicate that the child can freely refuse to participate or discontinue participation at any time without penalty or coercion?
- (9.7) Are all consent and assent forms written at a level that the intended participant can understand? (generally, 8th grade level for adults, age-appropriate for children)

California University of Pennsylvania Institutional Review Board
Review Request Checklist (v021209)

This form **MUST** accompany all IRB review requests.
 Unless otherwise specified, **ALL** items must be present in your review request.

Have you:

- (1.0) **FOR ALL STUDIES:** Completed **ALL** items on the Review Request Form?
 Pay particular attention to:
- (1.1) Names and email addresses of all investigators
 - (1.1.1) **FOR ALL STUDENTS:** use only your CalU email address)
 - (1.1.2) **FOR ALL STUDENTS:** Name and email address of your faculty research advisor
 - (1.2) Project dates (must be in the future—no studies will be approved which have already begun or scheduled to begin before final IRB approval—**NO EXCEPTIONS**)
 - (1.3) Answered completely and in detail, the questions in items 2a through 2d?
 - 2a: **NOTE:** No studies can have zero risk, the lowest risk is “minimal risk”. If more than minimal risk is involved you **MUST**:
 - i. Delineate all anticipated risks in detail;
 - ii. Explain in detail how these risks will be minimized;
 - iii. Detail the procedures for dealing with adverse outcomes due to these risks.
 - iv. Cite peer reviewed references in support of your explanation.
 - 2b. Complete all items.
 - 2c. Describe informed consent procedures in detail.
 - 2d. **NOTE:** to maintain security and confidentiality of data, all study records must be housed in a secure (locked) location **ON UNIVERSITY PREMISES**. The actual location (department, office, etc.) must be specified in your explanation and be listed on any consent forms or cover letters.
 - (1.4) Checked all appropriate boxes in Section 3? If participants under the age of 18 years are to be included (regardless of what the study involves) you **MUST**:
 - (1.4.1) Obtain informed consent from the parent or guardian—consent forms must be written so that it is clear that the parent/guardian is giving permission for their child to participate.
 - (1.4.2) Document how you will obtain assent from the child—This must be done in an age-appropriate manner. Regardless of whether the parent/guardian has given permission, a child is completely free to refuse to participate, so the investigator must document how the child indicated agreement to participate (“assent”).
 - (1.5) Included all grant information in section 5?
 - (1.6) Included **ALL** signatures?
- (2.0) **FOR STUDIES INVOLVING MORE THAN JUST SURVEYS, INTERVIEWS, OR QUESTIONNAIRES:**
- (2.1) Attached a copy of all consent form(s)?
 - (2.2) **FOR STUDIES INVOLVING INDIVIDUALS LESS THAN 18 YEARS OF AGE:** attached a copy of all assent forms (if such a form is used)?
 - (2.3) Completed and attached a copy of the Consent Form Checklist? (as appropriate—see that checklist for instructions)

(3.0) FOR STUDIES INVOLVING ONLY SURVEYS, INTERVIEWS, OR QUESTIONNAIRES:

- (3.1) Attached a copy of the cover letter/information sheet?
- (3.2) Completed and attached a copy of the Survey/Interview/Questionnaire Consent Checklist? (see that checklist for instructions)
- (3.3) Attached a copy of the actual survey, interview, or questionnaire questions in their final form?

(4.0) FOR ALL STUDENTS: Has your faculty research advisor:

- (4.1) Thoroughly reviewed and approved your study?
- (4.2) Thoroughly reviewed and approved your IRB paperwork? including:
 - (4.2.1) Review request form,
 - (4.2.2) All consent forms, (if used)
 - (4.2.3) All assent forms (if used)
 - (4.2.4) All Survey/Interview/Questionnaire cover letters (if used)
 - (4.2.5) All checklists
- (4.3) IMPORTANT NOTE: Your advisor's signature on the review request form indicates that they have thoroughly reviewed your proposal and verified that it meets all IRB and University requirements.

(5.0) Have you retained a copy of all submitted documentation for your records?

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

Project Director's Signature

Department Chairperson's Signature

Student or Class Research

Megane Little, ATC
Student Researcher's Signature

J. P. My EDD, ATC
Supervising Faculty Member's
Signature if required

[Signature]
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

Chairperson, Institutional Review Board

Date

**Institutional Review Board
California University of Pennsylvania
Morgan Hall, Room 310
250 University Avenue
California, PA 15419
instreviewboard@calu.edu
Robert Skwarecki, Ph.D., CCC-SLP, Chair**

Dear Megan Little:

Please consider this email as official notification that your proposal titled "The relationship between first time board of certification passing rate and entry-level confidence upon length of athletic training clinical education" (Proposal #11-027) has been approved by the California University of Pennsylvania Institutional Review Board, with the following stipulation:

--:The cover letter/consent form must include text equivalent to "without penalty" in the sentence referring to discontinuing participation.

Once you have revised the cover letter, you may immediately begin data collection. You do not need to wait for further IRB approval. At your earliest convenience, you must forward a copy of the cover letter for the Board's records.

The effective date of the approval is [12/16/2011](#) and the expiration date is [12/15/2012](#). These dates must appear on the consent form.

Please note that Federal Policy requires that you notify the IRB promptly regarding any of the following:

- (1) Any additions or changes in procedures you might wish for your study (additions or changes must be approved by the IRB before they are implemented)**
- (2) Any events that affect the safety or well-being of subjects**
- (3) Any modifications of your study or other responses that are necessitated by any events reported in (2).**
- (4) To continue your research beyond the approval expiration date of [12/15/2012](#) you must file additional information to be considered for continuing review. Please contact instreviewboard@cup.edu**

Please notify the Board when data collection is complete.

**Regards,
Robert Skwarecki, Ph.D., CCC-SLP
Chair, Institutional Review Board**

REFERENCES

1. Commission on accreditation of athletic training education.
<http://www.caate.net/imis15/CAATE/About/CAATE/About.aspx?hkey=1b198b36-7205-4b7f-9447-abd3800a3264>. Accessed October 3, 2011.
2. Weidner TG, Laurent T. Selection and evaluation guidelines for clinical education settings in athletic training. *J Athl Train*. 2001;36(1):62-67.
3. Peer KS, Rakich JS. Accreditation and continuous quality improvement in athletic training education. *J Athl Train*. 2000;35(2):188-193.
4. Lauber CA, Toth PE, Leary PA, Martin RD, Killian CB. Program directors' and clinical instructors' perceptions of important clinical-instructor behavior categories in the delivery of athletic training clinical instruction. *J Athl Train*. 2003;38(4):336-341.
5. Weidner TG, Henning JM. Development of standards and criteria for the selection, training, and evaluation of athletic training approved clinical instructors. *J Athl Train*. 2004;39(4):335-343.
6. Weidner TG, Henning JM. Importance and applicability of approved clinical instructor standards and criteria to certified athletic trainers in different clinical education settings. *J Athl Train*. 2005;40(4):326-332.
7. Weidner TG, Pipkin J. Clinical supervision of athletic training students at colleges and universities needs improvement. *J Athl Train*. 2002 Dec;37(4 Suppl):S241-S247.
8. Wolfe EW, Nogle S. Development of measurability and importance scales for the NATA athletic training educational competencies. *J Appl Meas*. 2002;3(4):431-54.
9. Miller MG, Berry DC. An assessment of athletic training students' clinical-placement hours. *J Athl Train*. 2002 Dec;37(4 Suppl):S229-S235.

10. Henning JM, Weidner TG, Jones J. Peer-Assisted learning in the athletic training clinical setting. *J Athl Train*. 2006; 41(1): 102-108.
11. Walker SE, Weidner TG, Armstrong KJ. Evaluation of athletic training students' clinical proficiencies. *J Athl Train*. 2008 Jul-Aug; 43(4): 386-395.
12. MG Barnum. Questioning skills demonstrated by approved clinical instructors during clinical field experiences. *J Athl Train*. 2008 May-Jun; 43(3): 284-292.
13. Armstrong KJ, Weidner TG, Walker SE. Athletic training approved clinical instructors' reports of real-time opportunities for evaluating clinical proficiencies. *J Athl Train*. 2009 Nov-Dec; 44(6): 630-638. doi: 10.4085/1062-6050-44.6.630.
14. Berry DC, Miller MG, Berry LM. Effects of clinical field experience setting on athletic training students' perceived percentage of time spent on active learning. *J Athl Train*. 2004 Jun;39(2):176-184.
15. Williams RB, Hadfield OD. Attributes of curriculum athletic training programs related to the passing rate of first-time certification examinees. *J Allied Health*. 2003 Winter;32(4):240-5.
16. Starkey C, Henderson J. Performance on the athletic training certification examination based on candidates' routes to eligibility. *J Athl Train*. 1995 Mar;30(1):59-62.
17. Turocy PS, Comfort RE, Perrin DH, Gieck JH. Clinical experiences are not predictive of outcomes on the NATABOC examination. *J Athl Train*. 2000 Jan;35(1):70-5.
18. DeWald JP, Gutmann ME, Solomon ES. Effect of grade point average and enrollment in a dental hygiene National Board review course on student performance on the National Board Examination. *J Dent Educ*. 2004 Jan;68(1):77-80.
19. McClintock JC, Gravlee GP. Predicting success on the certification examinations of the American Board of Anesthesiology. *Anesthesiology*. 2010 Jan;112(1):212-9.

20. Armstrong A, Dahl C, Haffner W. Predictors of performance on the national board of medical examiners obstetrics and gynecology subject examination. *Obstet Gynecol.* 1998 Jun;91(6):1021-2.
21. Bailey JE, Yackle KA, Yuen MT, Voorhees LI. Preoptometry and optometry school grade point average and optometry admissions test scores as predictors of performance on the national board of examiners in optometry part I (basic science) examination. *Optom Vis Sci.* 2000 Apr;77(4):188-93.
22. Platt LS, Turocy PS, McGlumphy BE. Preadmission criteria as predictors of academic success in entry-level athletic training and other allied health educational programs. *J Athl Train.* 2001 Jun;36(2):141-144.
23. Zaglaniczny KL. Factors which predict performance on the national certification examination for nurse anesthetists. *AANA J.* 1992 Dec;60(6):533-40.
24. Fullerton JT, Severino R. Factors that predict performance on the national certification examination for nurse-midwives. *J Nurse Midwifery.* 1995 Jan-Feb;40(1):19-25. Erratum in: *J Nurse Midwifery* 1995 May-Jun;40(3):255.
25. Bauchmoyer SM, Carr MP, Clutter JE, Hoberty PD. Predicting academic and national board dental hygiene examination performance based on academic factors. *J Dent Hyg.* 2004 Winter;78(1):39-45.
26. Caswell SV, Gould TE. Individual moral philosophies and ethical decision making of undergraduate athletic training students and educators. *J Athl Train.* 2008 Mar-Apr; 43(2): 205-214.
27. Stiller-Ostrowski JL, Ostrowski JA. Recently certified Athletic Trainers' undergraduate educational preparation in psychosocial intervention and referral. *J Athl Train.* 2009 Jan-Feb; 44(1): 67-75.
28. Leaver-Dunn D, Harrelson GL, Martin M, Wyatt T. Critical-thinking predisposition among undergraduate athletic training students. *J Athl Train.* 2002 Dec;37(4 Suppl):S147-S151.
29. Carr W, Drummond JL. Collaboration between athletic

training clinical and classroom instructors. *J Athl Train*. 2002;37(suppl 4):S182-S188.

30. Gould TE, Caswell SV. Stylistic learning differences between undergraduate athletic training students and educators: Gregorc mind styles. *J Athl Train*. 2006;41(1):109-116.

ABSTRACT

TITLE: The Relationship Between First Time Board of Certification Passing Rate and Entry-Level Professionals' Perceived Confidence Upon Length of Athletic Training Clinical Education

RESEARCHER: Megan Little

ADVISOR: Dr. Linda P. Meyer

DATE: May 2012

RESEARCH TYPE: Masters Thesis

PURPOSE: The purpose of this study was to analyze if a relationship exists between the length clinical education experience and entry-level confidence along with first time Board of Certification passing rates in athletic training education.

PROBLEM: Programs could use this education to adapt their curriculum and potentially better their students' entry-level confidence and Board of Certification first time pass rate. The relationships studied in this research project have the potential to change athletic training education in the entry-level setting and thus have a large impact on the profession.

METHOD: An online survey containing 18 questions was randomly sent out to 1,000 members of the Nation Athletic Trainers' Association who met the qualification criteria. A week later, a reminder email was sent out from the same organization. Finally, during the third week a final email reminder was sent. In total, 280 participants responded to the survey.

FINDINGS: There is no statistical significance between

length of clinical education and first time Board of Certification passing rate ($X^2(1)=.518, p>.05$). Secondly, confidence is not affected by length of clinical education ($-.477(218) = .916, p>.05$). The only domain that is affected in terms of confidence based on length of clinical education is psychosocial intervention (Table 3).

CONCLUSION: There is no substantial overall effect on first time Board of Certification passing rate and entry-level confidence based on length of clinical education. there was no statistical significance between length of clinical education and entry-level confidence or length of clinical education and first time Board of Certification passing rate.