

AN EXAMINATION OF THE RELATIONSHIP BETWEEN THE MENTORSHIP OF
STUDENT ATHLETIC TRAINERS AND THEIR OUTCOME ON THE NATIONAL
ATHLETIC TRAINERS' ASSOCIATION CERTIFICATION EXAMINATION

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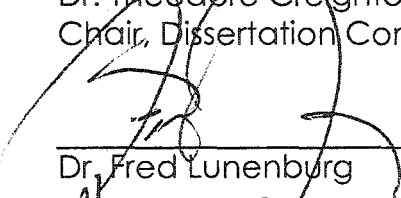
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This dissertation follows the format and style of the *Publication Manual of the American Psychological Association, 5th edition*, except where superseded by the directions from the Office of Graduate Studies at Sam Houston State University.

DEDICATION

This work is dedicated to my wife Kathryn and my children: Ryan, Rebecca, and Molly, for their unwavering support during this process. In their own little ways, they each represented the shining light of God in my life and in my world.

ABSTRACT

Pickard, Jerry V., *An Examination of the Relationship Between the Mentorship of Student Athletic Trainers and Their Outcome on the National Athletic Trainers' Association Certification Examination*. Doctor of Education (Educational Leadership), December, 2003. Sam Houston State University, Huntsville, TX, 135 pp.

Purpose

The purpose of this study was to determine if the mentorship of student athletic trainers affects outcome on the National Athletic Trainers' Association Board of Certification (NATABOC) examination.

Method

Results from the Athletic Training Mentor Questionnaire and NATABOC examination test scores for each part (written, oral, written simulation) were used as variables within the study. The sample population for this study consisted of 119 participants who completed both sections of the required study information and delimiting questions applied to the population. Proper methods of selection were incorporated into the study to assure that a national population would be represented.

Results

Each hypothesis was analyzed using selected statistical methods. The finding of this study showed no statistically significant difference between mentorship scores and the outcome of the NATABOC examination. The results indicated that not only does mentoring

relationships not affect outcome, but mentoring relationships are not measured by the NATABOC examination.

Analysis did determine that the Athletic Training Mentor Questionnaire developed for this study was reliable and valid in ascertaining the mentor relationship that existed between the student athletic trainer and his/her mentor.

Further research should be given to determine the role of mentoring in athletic training education and its effect on outcome of the NATABOC examination.

Dr. Theodore B. Creighton
Chair, Dissertation Committee

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CHAPTER I

INTRODUCTION

In order to ensure an established standardization of care and a professional code of ethical conduct, individuals from around the nation gathered in Kansas City for the first national meeting of athletic trainers. The National Athletic Trainers' Association (NATA) was founded at this meeting on June 25, 1950 (O'Shea, 1980). The primary goal of the organization, after adopting a constitution and code of ethics, was to develop a standard for educational requirements and professional preparation for entry-level athletic trainers. In June 1959, the NATA adopted an athletic training educational program to establish the requirements for a member athletic trainer. The educational program was not enforced until 1968 when the Professional Education Committee (PEC) was formed by the NATA to study the certification process of athletic trainers (O'Shea, 1980). The PEC established requirements for universities to maintain if individuals working as student trainers wished to become certified by the national organization. The first minimal requirements for athletic training programs were established in 1969 (Appendix A).

Additional educational requirements and changes occurred between 1977 and 1983. Behavioral objectives were added to the curriculum in 1977 and again in 1980 (NATA, 1977; 1980). In the summer of

1983, the NATA adopted additional guidelines resulting from a role delineation study that had been conducted to determine the best representation of time-on-task for seven domains within the athletic training educational program (NATA, 1983b). Updated continuously, these guidelines have remained as the established standard for curriculum education programs in athletic training today.

The development of a certification examination in June 1973 created a difficult situation for the NATA and the majority of its members. Most colleges and universities did not desire the establishment of an approved curriculum program in athletic training or could not afford the cost of establishing a curriculum program within their existing educational programs. In order for students outside the curriculum route to be eligible to take the certification exam, the NATA developed minimal standards for educational programs (O'Shea, 1980). The formation of these guidelines resulted in the development of a second route to certification, the internship.

The internship program is a practical, educational work experience approach to gaining the knowledge and skills needed to fulfill the requirements for certification (NATABOC, 2000). The current requirements for the internship route consist of two parts. Over a period of two years candidates must complete 1500 hours of athletic training experience under the direct supervision of a certified athletic trainer and 21 hours of

selected academic courses (Appendix B). Upon completion of both requirements, the candidate is then endorsed by his/her supervising athletic trainer to sit for the NATA certification examination. Internship programs were designed to give practical, educational experiences with a close, personal relationship developing between the student trainer and professional athletic trainer. Many of these supervising athletic trainers have been identified as "mentors" within the profession (O'Shea, 1980). The majority of the colleges and universities in the United States offer athletic training through this route to certification (NATA, 1996).

In 1994, the NATA formed the Educational Task Force (ETF) to review the educational requirements for certification and to evaluate the formation of a single route to certification. Two areas were determined by the task force to be in support of a single route to certification. First, the task force noted that in statistical research those students in curriculum education programs in athletic training successfully completed each part of the national exam at a significantly greater rate than their counterparts in internship programs (Starkey & Henderson, 1995). Secondly, the task force noted that the NATA is the only allied health profession that employs two completely different routes to certification (McMullan, 1997). The task force recommended that both routes be eliminated by the year 2004 and that one single route be used to certify athletic trainers within the profession (NATA, 1996).

The ETF further recommended that the Commission on Accreditation of Allied Health Education Programs (CAAHEP) be contracted by the association to determine which member institutions would be eligible to certify individuals for the NATA certification. A university's accreditation would be based upon its ability to teach the competencies required by the CAAHEP within its educational programs. With greater flexibility in showing the required competencies within their education programs, accreditation would be easier for most universities than the previous the NATA approved curriculum program. However, determining which qualities of each route should be included in the new model remains undecided.

The creation of a single route to national certification and the need to determine the best possible way to prepare student athletic trainers for the professional requirements of the 21st century are issues being considered in athletic training education today. Implementation of the CAAHEP's guidelines (Appendix C) for athletic training education programs in January of 2001 has created debate over the importance of the internship program's use of mentoring to facilitate learning within the clinical setting. An understanding of the role of mentoring and its potential effects on success within the athletic training profession are paramount. This study will help assess the effectiveness of mentoring as a methodology for preparing students in the athletic training profession.

Statement of the Problem

With the growing need for an intense, educational experience during the student trainer's pre-certification years, "mentoring" has become a strong issue of debate (Miller, 1982). The need for clinical hours in the athletic training setting is important in the development of entry-level skills within the profession (NATA, 1996). A strong mentorship during these clinical hours is imperative to the development of entry-level athletic trainers; however, limited research on the effects of mentoring in the preparation of entry-level athletic trainers has been conducted or published.

Purpose of the Study

Research in the area of mentoring in athletic training should be conducted to determine if a correlation exists between mentoring and the successful completion of the certification examination for entry-level athletic trainers. Internship programs use clinical hours as the primary bases for meeting the NATA competence. Research indicates that a high level of mentoring transpires within this clinical learning environment (Pickard, 1998). The study determined if mentoring should be incorporated into the requirements for accreditation by CAAHEP. The purpose of the study was to determine if a relationship exists between those athletic training candidates who exhibit a positive mentorship

experience and successful completion of the NATA certification examination.

Research Questions

Since the purpose of this study was to determine if a relationship exists between those athletic training candidates who were exposed to a positive mentorship experience and their successful completion of the NATABOC certification examination, the research questions addressed in this study are:

1. To what extent does a mentor relationship in athletic training affect outcome success of entry-level athletic training candidates on the NATABOC certification examination?
2. Are there differences in mentor relationships between candidates from curriculum routes versus internship routes as they affect outcome success of entry-level athletic training candidates on the NATABOC certification examination?
3. What is the extent of the relationship between mentor scores and raw scores on the oral, written, and written simulation components of the NATABOC certification exam?
4. Are there differences between curriculum and internship raw scores on the oral, written, and written simulation components of the NATABOC exam when mentorship scores are controlled?

Significance of the Study

The value of a positive mentorship in athletic training was the center point of the athletic training profession in the early years (O'Shea, 1980). Nevertheless, the need for a high degree of "clinical" hours under the guidance of a head athletic trainer, or mentor, has been a greatly debated issue (Miller, 1982). Recent research in the area of student trainers' perceptions of a clinical supervisor's behavior indicates that mentoring receives the highest rating of critical incidents found within the study (Curtis, Helion, & Domsohn, 1998). The need for clinical hours in actual athletic training settings is important in the development of entry-level skills within the profession (NATA, 1996). If, at the conclusion of this study, it is determined that a relationship exists between athletic training candidates who exhibit a positive mentorship experience and their successful completion of the NATABOC certification examination, then educational programs must address the inclusion of mentoring within their curriculum programs.

The concept of mentoring and the ideology that one is "doing mentoring" well or poorly are slippery concepts to define (Peper, 1994). Consideration as to the type of mentoring to conduct and how to include "mentoring instruction" for individuals who will be involved with the educational preparation of students will become increasingly important. If it can be determined that a positive mentoring relationship is a

significant predictor of success on the NATABOC examination, then weight should be given to the importance of clinical hours under a supervising mentor to learn the practical application of athletic training.

The number of clinical hours that should be required of students in an athletic training education program continues to be debated. A recent study found that a student athletic trainers' GPA was the only predictor of success for the NATABOC exam and that no correlation between success on the NATABOC exam and the number of clinical hours worked (Middlemas, Manning, Gazzillo, & Young, 2001). The authors conclude that "the lack of significant prediction of examination scores from the number of clinical hours completed and the low amount of the total variance accounted for by the data suggest factors contributing to examination performance that have not been identified" (p. 138) (Middlemas, et al.). Is one of the contributing factors, not yet identified, mentoring? In addition, if mentoring relationships are determined to be one of these contributing factors which predict performance on the NATABOC exam, then how do we incorporate mentoring into clinical hours? If the mentoring relationship between student athletic trainers and their clinical directors, athletic trainers, or program directors is important to the overall development and preparation for the profession of athletic training, then the determination of how to incorporate this into the educational process is important. Research in this area is limited. The work

of this study may answer some of the many questions arising from the use of mentoring and its importance in the preparation of future athletic trainers.

Definition of Terms

Mentor. An individual who provides support for the student by serving in a variety of roles.

Mentorship. A personal relationship developed for guidance and instructional purposes in the understanding of a new professional role (Ashburn, Mann & Purdue, 1987).

Entry-level athletic trainer. A person entering the profession of athletic training who possesses the competencies established by the National Athletic Trainers' Association (NATA) and Commission on Accreditation of Allied Health Education Programs (CAAHEP) (NATA, 1991; 1996).

National Athletic Trainers' Association (NATA). The national organization recognized by the American Medical Association as the representative of the athletic training profession. The NATA is responsible for the certification of athletic trainers worldwide.

Commission on Accreditation of Allied Health Education Programs (CAAHEP). CAAHEP is the accrediting body of the American Medical Association and is responsible for the accreditation of all allied health

educational programs: physical therapy, nursing, physician's assistant, nutrition, athletic training, etc.

Curriculum education program. An athletic training program approved by the NATA/CAAHEP for meeting the guidelines of educational competencies. Usually the curriculum program is a freestanding degree program within a college or university. Requirements include a predetermined number of academic hours within a curricular structure.

Internship. A practical work experience approach to gaining the knowledge and skills needed to fulfill the requirements for certification. Learning opportunities are designed by the student and a certified athletic trainer to satisfy the eligibility requirements for the internship candidacy (NATA, 2000).

Delimitations and Limitations

This study examined first time test candidates from the National Athletic Trainers' Association Board of Certification (NATABOC) examination administered on June 10, 2001. The Athletic Training Mentor Questionnaire (ATMQ) was mailed to each of the NATABOC exam candidates twenty days before the selected exam date with follow-up letters being sent out fifteen days later. Only questionnaires received with a postmark before June 10 were included in the study. All candidates who completed the

questionnaire and returned it within the prescribed time were sent the Test Results Release Form thirty days after the NATABOC examination date.

To ensure pretest validity, delimiting questions on the ATMQ established that only surveys of first time candidates were used in the study. Candidates with previous educational or professional backgrounds in physical therapy, nursing, occupational therapy, or academic credit from a medical school were removed. The sample population included all candidates from across the United States and Canada. It was assumed that the population sample represented the statistical average of comparable population samples from previous years. No assumptions were made that the sample population had greater success on the certification examination than in previous or future populations.

Limitations within the study include the presumed differences of gender, age, grade point averages, race, and religion as they affect outcome on the certification examination. Previous mentoring experience, personal mentoring preferences, and individual personalities were not controlled within the study.

Summary

The purpose of this research study was to determine the relationship of mentoring and the NATABOC examination. Results from the ATMQ and the correlating test scores for each of the candidates were used to address each of the research questions. Chapter 1 included a brief

overview of the research, a discussion of the research significance, and the scope and limitations within the study.

Organization of the Study

Chapter I includes an introduction of the research, statement of the problem, purpose of the study, research questions, significance of the study, definition of terms, scope, delimitations and limitations, and a summary.

Chapter II contains a review of the literature as it relates to the history of the NATA, athletic training education, and certification. The process of mentoring and the use of mentoring in higher education was also discussed. Certification examinations for other allied health professions were reviewed, and predictors of success are discussed. Finally, reviews of the predictors of success for the NATABOC examination are discussed.

Chapter III outlines the procedures of the study. The participants and setting of the study, instrumentation, data collection, data analysis, hypotheses, and summary are presented.

Chapter IV presents the data and findings related to each research question, and Chapter V summarizes the findings as related to the literature presented in Chapter II. Conclusions are presented, followed by recommendations for future study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The literature review provided within this chapter consists of seven major components: (1) A historical review of the of the NATA, its educational and certification competencies, and ongoing changes in the certification process of athletic trainers; (2) the establishment of a definition for mentoring; (3) research into the practice of mentoring; (4) the evaluation of successful mentoring; (5) a review of research in the area of mentoring in education, higher education, the medical profession, and in the field of athletic training; (6) the formation of the NATA certification examination; and (7) predictors of success including mentoring on the NATA examination. A thorough understanding of mentoring and its desired outcomes are important in determining the significance of the research conducted in this study.

Chapter II concludes with a review of certification examinations and their predictors of success within the area of athletic training and followed by a review of research in the area of predictors of success on the NATABOC examination.

Historical Background

Athletic Training Education: Curriculum

The formation of the athletic training profession came about on June 25, 1950, when athletic trainers from across the nation founded the National Athletic Trainers' Association (NATA) (O'Shea, 1980). One of the primary goals of the organization was to develop a standard for educational requirements and professional preparation for entry-level athletic trainers. By 1955, the NATA had grown to 279 active members and a number of committees. In 1956, *The Journal of Athletic Training* was founded, a code of ethics was adopted (1957), and professional acceptance was realized from several national organizations as a professional organization for the field of athletic training (Ebel, 1999).

The Board of Directors of the NATA formed the Professional Advancement Committee (PAC) in June 1956 to research and develop a professional pre-preparation program for athletic training (Ebel, 1999). Three years later, the Board gave approval for an educational curriculum program in athletic training (Appendix C). The PAC endorsed the concept that athletic trainers should be associated with a high school setting and aligned the program to not only produce athletic trainers, but also high school teachers (Ebel, 1999). With the framework for professional educational programs now in place, the NATA prepared universities to submit athletic training curriculum programs for NATA approval. A decade

later, only one school had submitted and received NATA approval for an educational program in athletic training (Delforge & Behnke, 1999).

In 1969, the PAC was divided into two subcommittees: the Subcommittee on Professional Education, which would later become the NATA Professional Education Committee (PEC), and the Subcommittee on Certification, which would later become the NATA Certification Committee (Delforge & Behnke, 1999). The PEC continued to develop curriculum approval for universities across the nation, and by 1973, 14 universities had been approved for athletic training education programs with one graduate level program approved in 1972 (Ebel, 1999). The NATA approval involved campus visitations every five years by members of the PEC to discuss the curriculum and process for study towards an athletic training education with individuals involved with the educational programs. Their findings and recommendations were then sent to the NATA Board of Directors for approval (Ebel, 1999). This process was followed until the educational reforms of the mid-1990s were enacted.

The 1970s saw a dramatic increase in the number of NATA approved educational programs. By 1982, 62 schools were approved for undergraduate programs in athletic training and nine schools for graduate level programs in athletic training (Delforge & Behnke, 1999). During this period of growth, the PEC revised the 1959 athletic training curriculum (Appendix D) to indicate a transition from the older model,

which relied on a physical therapy based educational program, to a more independent curriculum dedicated to educational experiences which are more reflective of the athletic training profession (Delforge & Behnke, 1999).

The curriculum changes were incorporated into the *Guidelines for Development and Implementation of NATA Approved Undergraduate Athletic Training Education Programs* (Ebel, 1999). The PEC identified educational behavioral objectives as an important development in the athletic training education curriculum to determine the desired learning outcomes for the athletic training student (Delforge & Behnke, 1999). The PEC listed all objectives for each course contained in the *Guidelines*, as well as, skill competency checklists to guide student development in each of the required classes (NATA, 1980). The combination of these changes within the NATA educational program fostered the next round of educational growth within the association.

With the growth of the professional organization and the desire to continue to develop the educational curriculum, the newly structured NATA Board of Directors, with input from the PEC, introduced the concept of an academic major in athletic training. In 1980 the Board approved the creation of an athletic training major degree and authorized the requirement that schools with NATA approved curricula must develop major degree programs by 1986 (Delforge, 1982). This timetable was later

revised to indicate that universities must be in the process of creating a major field of study in athletic training and later revised it to include programs that met equivalent standards for a major field of study within the departments overseeing athletic training education (Delforge, 1982).

The required components of this new major field of study were developed by the PEC and culminated in the June 1983 edition of the *Guidelines for Development and Implementation of NATA Approved Undergraduate Athletic Training Education Programs* (NATA, 1983a). The behavioral objectives were replaced by "performance domains" for certified athletic trainers identified in the first role-delineation study conducted by the NATA Board of Certification in 1982 and resulted in the publication of the *Competencies in Athletic Training* (NATA, 1983b).

Two milestones occurred during the early 1990s. In June 1990, The NATA was formally recognized by the American Medical Association as an allied health profession, placing athletic training on the same level of professional recognition as physical therapy and nursing (NATA, 1990). The subsequent result of this recognition was the renewed interest of using an outside agency for accreditation of the athletic training education programs currently under the supervision of the PEC. In October 1990, the NATA Professional Education Committee and the Committee on Allied Health Education and Accreditation (CAHEA) met to form a committee to review the accreditation process of athletic training programs (NATA,

1991). The addition of two members from The Academy of Family Physicians and the American Academy of Pediatrics to those representatives from the PEC and the AMA created the Joint Review Committee on Educational Programs in Athletic Training (JRC-AT)(NATA, 1991).

The first task of the JRC-AT was to develop standards and guidelines for accreditation by modifying the *Guidelines for Development and Implementation of NATA Approved Undergraduate Athletic Training Education Programs* developed by the PEC in 1983. This new document was released in December 1991 as the *Essentials and Guidelines for an Accredited Educational Program for the Athletic Trainer* (NATA, 1991). Although CAHEA was discontinued and replaced by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), accreditation of athletic training programs continued without interruption (Weithaus 1993). Accreditation was a great advancement in the recognition of athletic training as a viable allied health profession, and with the recommendation of the NATA Educational Task Force in December 1996, the process of athletic education would be changed forever.

Athletic Training Education: Internship

As early as 1956, the NATA PAC understood the importance of an educational base for the professional preparation of athletic trainers. The

proposed curriculum approved by the board in 1959 was a first step in the educational framework of the athletic training profession (Ebel, 1999).

Without certification on the horizon for the profession, however, students were expected to work under the direction of the athletic trainer at their respective college or university. This head trainer "mentor" would then recommend the student for membership into the professional organization (O'Shea, 1980). With the creation of the certification exam for athletic training in 1970, the NATA adopted minimum requirements for certification of athletic trainers. They included (O'Shea, 1980):

1. Being a college graduate with a teaching license.
2. Working under a NATA certified trainer with:
 - a. Approved curriculum program (2 years)
 - b. Physical Therapy Degree (2 years)
 - c. Apprenticeship program (2 years)
3. Participated as a NATA membership one year prior to examination
4. Passing the NATA certification examination

The development of a certification examination created a precarious situation for the NATA and the majority of its members. Most colleges and universities could not establish or did not desire an approved curriculum program in athletic training. In order for students outside the curriculum route to be eligible to take the certification exam, the NATA developed minimal standards for educational programs (O'Shea, 1980).

The formation of these guidelines resulted in the development of a second route to certification, the internship (apprenticeship). The internship program is defined by the NATABOC (NATABOC, 2000):

...a practical/educational/work experience approach to gaining the knowledge and skills needed to fulfill the requirements for certification. Learning opportunities are designed by a student and certified athletic trainer to satisfy the eligibility requirements for internship candidacy. Athletic training students of this section are referred to as Interns. (p. 8)

The educational requirements for the internship route consists of 18 hours of academic course work and 1500 hours of supervised work under the direction of a certified athletic trainer (Appendix E) (NATABOC, 2000). The majority of the colleges and universities in the United States have offered athletic training through this form of certification (NATA, 1996). This route to certification did not require NATA approval; it only requires the intern to meet the certification requirements in place at the time of candidacy and to be endorsed by the certified athletic trainer who oversaw his or her work. Without NATA review, universities were allowed greater range in structuring the educational and work experience of the athletic training students. This route of certification will be eliminated on December 31, 2004.

Athletic Training Education: Certification

After the division of the PAC in 1969, the effort to develop a certification program for the athletic training profession was given top priority (Delforge & Behnke, 1999). The task was given to the Subcommittee on Certification, later becoming the NATA Certification Committee (Delforge & Behnke, 1999). At the June 1969 meeting of the Board of Directors, the approval for a certification test in athletic training was given and after December 31, 1969, certified membership into the association was only available to those members who passed the certification examination (O'Shea, 1980). All members active in the association at the time who had applications submitted prior to December 31, 1969 were automatically certified under the grandfather clause (Grace, 1999).

The American Public Health Association's Professional Education Committee (PES) was contracted to administer the examination. Construction of the examination was performed by the Certification Examination Subcommittee by soliciting membership input into the development of the content in three categories: basic sciences, theory of athletic training, and practical application of athletic training (Grace, 1999). Members were asked to place degrees of emphasis (in percentage) and rank each subject matter listed in a questionnaire distributed to the association (Grace, 1999). The final version of the

certification examination consisted of 150 multiple-choice questions and five oral-practical questions. It was administered for the first time in July 1970 (O'Shea, 1980).

With the increase in certification examinations for professional organizations in the late 1970s and early 1980s, the NATA undertook steps to assure the athletic training profession that the certification of athletic trainers would be the sole responsibility of the NATA (Grace, 1999). To secure the quality of athletic training services and to protect the membership from other organizations claiming certification programs for athletic training, the NATA made application for accreditation with the National Commission for Health Certifying Agencies (NCHCA) in 1981. Two major changes in the structure of the NATA were made to accomplish this accreditation. First, the NATA was required to structure the Board of Certification in such a way that it would act independently with regards to certification matters (Grace, 1999). This change was enacted in the winter of 1982.

Secondly, the NATA was required to demonstrate that the certification examination was reliable, fair, job-related, and that it tested for skills needed in the profession (Grace, 1999). This requirement produced the first role delineation study conducted in 1982 to determine the skills needed for an entry-level athletic trainer. The study considered five domains: (a) prevention of athletic injuries; (b) recognition and

evaluation of athletic injuries; (c) management, treatment, and disposition of athletic injuries; (d) rehabilitation of athletic injuries, and; (e) organization and administration (NATA, 1983b). Three role delineation studies have been conducted since 1983 to assure that the NATA remains current with entry-level practices of the athletic training profession.

The final change within the Board of Certification came in 1989. With increased concern about potential antitrust liabilities involving the Board, the NATA elected to create a separate organization for the purpose of certifying athletic trainers in the profession (NATA, 1989). The NATABOC, Inc. allowed the NATA Board of Certification to be recognized as the sole provider of athletic training certification worldwide and to develop changes in the certification of athletic trainers within the profession.

Athletic Training Education: One Route to Certification

Effective January 1, 2004, the way in which athletic trainers throughout the world are certified will change dramatically. The history behind this change and the significant role it will play in the future of athletic training are paramount to understanding the importance of this research. In June 1994, the Board of Directors of the NATA created the Educational Task Force to address the educational preparation for those persons entering the athletic training profession (NATA, 1994).

The task force members represented athletic training educators, members of the Board of Certification, and athletic trainers for both the curriculum and internship routes. After developing a list of 120 recommendations, the task force spent the next three years researching educational requirements for the field of athletic training and closely aligned health-care professional organizations with certification programs (McMullan, 1996). The task force received professional responses to the proposed recommendations and developed additional recommendations from the concerns of the membership. In December 1997, the Task Force made 18 recommendations to the Board for consideration (McMullan, 1997). The NATA Board of Directors approved all recommendations and authorized the establishment of a 45 member Educational Council to oversee the implementation of the educational reform (NATA, 1997).

Of the 18 provisions adopted by the Board, the first provision has created the greatest change to the education of student athletic trainers. The task force recommended that:

The NATA should work with the NATABOC to institute a requirement, to take effect in 2004, that in order to be eligible for NATA certification, all candidates must possess a baccalaureate degree and have successfully completed a CAAHEP accredited entry-level athletic training education program (NATA, 1997, p. 24).

This provision eliminated the internship route of certification and, with the elimination of the other three routes prior to 1996, created one route to NATA certification (Delforge & Behnke, 1999). With internships eliminated, the rich history of preparing student athletic trainers for certification through a practical/educational/work experience approach by head athletic trainers at colleges and universities was discontinued. A clinical, competency approach for athletic training education was formed.

Mentoring

Mentoring: In Search of a Definition

The term mentor originates from Homer's epic poem *The Odyssey*, where Odysseus asks his friend Mentor to act as a father, teacher, protector, guide, role model, and counselor to his son, Telemachus (Beye, 1976). Although the historical reference is easily traced, the concept of mentoring and the ideology that one is "doing mentoring" well or poorly are slippery concepts to define (Peper, 1994). The term mentor has been used to identify an organizational member who is committed to providing support to a student's professional career (Kram, 1985).

It is characterized by several unique functions. Mentors can provide training, both inside and outside the organizational structure, as well as provide support for the student by serving in a wide variety of roles: counselor, teacher, role-model, and coach (Hunt & Michael, 1983).

Mentors can also provide buffers between the organization and the student (Zey, 1984), as well as encourage reflective growth and development among their students (Playko, 1991).

Mentoring has been loosely defined as a "trainer/coach" who provides a positive role model for the protégé while leading and protecting his/her from the organization (Galvez-Hjornevik, 1986). In his book, *The Seasons of a Man's Life*, Levinson (1978) indicates that a positive mentoring experience is paramount to the determination of success in a man's life. Researchers have defined mentoring as a personal relationship developed for guidance and instructional purposes in understanding a new profession (Ashburn, Mann & Purdue, 1987). Researchers concluded that a mentor relationship was positive for the protégé's career success on all levels (Shapiro, Haseltine, & Rowe, 1978) and that successful professional careers were more likely to involve a positive mentor relationship than not (Schmidt, 1987).

Further research indicates that both men and women benefit from a mentoring relationship (Burk, 1984) and women who develop mentoring relationships advance within the profession at a greater pace than those without this relationship (McIlhone, 1984). However, a successful mentoring relationship is much more difficult for women than men. Ragins (1989) identifies five barriers that prevent women from seeking mentor relationships: (a) failure to recognize the importance of a mentoring

relationship; (b) lack of knowledge or strategy in initiating a mentor relationship; (c) lack of female mentors in senior positions within an organization; (d) fear that initiation of a mentor relationship with a senior male could be construed as a sexual approach by the mentor or others within the organization; and (e) fewer opportunities to have formal or informal mentoring than their male counterparts (p.6-7). Although these barriers may exist, research has shown that women view mentoring as more important than their male counterparts in their advancement within the organization (Larwood, Radford, & Berger, 1981).

Mentoring: Educational Leadership

A large body of research exists to suggest that mentoring in the area of educational leadership is important to the development of successful administrators outside the educational process. Mentoring is accepted as a vital part of the pre-service preparation of educational leaders and is a desirable part of the pre-service programming (Daresh & Playko, 1995). Research has supported the importance of mentoring as an avenue for sponsorship among colleagues in higher education (Henderson, 1993).

In her research on mentoring of instructional leaders, Playko (1991) determined that mentors can assist school administrators in coping with the complex organization structure exhibited within school and emphasize the influence an educational leader has on organizational change and

the learning process for students (Playko, 1991). She identified five areas which mentors could provide assistance to other administrative leaders: (1) gaining knowledge of the district's available resources; (2) sharing effective leadership skills to improve teacher performance; (3) serving as role models in the area of school management; (4) sharing insight into effective community relationships; and (5) helping protégés formulate productive work environments to produce teacher satisfaction and student learning.

Daresh and Playko (1990) identified seven unique characteristics needed in mentors of beginning administrators. They are: (1) experience as practicing school administrators; (2) the ability to demonstrate positive leadership qualities; (3) the ability to ask the right questions of the beginner; (4) willingness to accept another way of doing things; (5) aspiration to a greater level of performance from others; (6) the ability to model continuous learning and reflection; and (7) understanding the political and social realities within the school (Daresh & Playko, 1990). In his work with administrative mentors and public school principal interns, Barnett (1990) uses shadowing and reflective interviewing to help interns learn from experienced school administrators. The process requires "mentors and interns to become comfortable working together, to determine task or responsibilities appropriate for interns to engage in, and

to create opportunities for them to reflect on the activities they have preformed" (Barnett, 1990, p. 23).

With mentoring as the center of the protégé's learning, Hopkins-Thompson (2000) indicates that the process should included "determining strengths and improvement needs, setting goals and objectives, identifying job opportunities or places where learning can occur, providing targeted feedback and encouraging reflection" (Hopkins-Thompson 2000, p. 32). Although the accepted line of research in mentoring in educational leadership is towards the needs of the mentoring relationship, not all research is geared towards the mentor. Daresh and Playko (1995) studied the responsibilities of those who are being mentored. In their research with 45 experienced school administrators and ten aspiring principals, they found that protégés must have: (a) a basic understanding of the teaching process and the nature of leadership in an effective organization; (b) good listening and communication skills; (c) openness and collegiality; and (d) a commitment to the mentoring relationship (pp. 4-7). Their conclusion is that universities, which utilize mentoring programs in their professional preparation, should provide training for protégés as well as mentors (Daresh & Playko, 1995).

Mentoring: Medicine

The education of medical students has traditionally been involved with the apprentice/internship model of learning. This apprenticeship is the basis for teaching essential professional skills and to help socialize the student to the real world of medicine (Dollase, 1994). In an editorial by Peter A. Setness, MD. (1996), he concludes that mentoring to colleagues with less experience has a greater potential to improve the medical profession than any medical conference one would attend and satisfies one's personal connection to their profession and colleagues. The value of mentoring in the process of teaching medical students is critical to their overall development (Setness, 1996). Ramanan, Phillips, Davis, Silen and Reede (2002) identified specific factors that are significantly associated with satisfactory mentoring relationships in academic medicine. These included clinical skills, teaching, overseeing progress of mentees, developing mentees professional networking, and directions for their research (Ramaman et al, 2002).

A similar study conducted by Boyle and James (1990) indicated that of a hundred management level nurses, 79 % indicated that they had a mentor at some point in their professional development and contributed the mentors with giving feedback, sharing expertise, role modeling, and believing in the protégé. Daresh and Playko (1996) indicated that the medical model for professional development is an area

of great potential (Daresh & Playko, 1996). Specifically, the clinical experiences of the medical school along with the learning through internship and residency are powerful in their development of the physician. Mentoring in medical school is found to bridge the gap between what is learned in medical school and what is expected in practice, as well as determining the needs of the student and matching those needs with appropriate learning (Bedy, 1999). Learning occurs through the use of role modeling, questioning, coaching, and observation and is directed by the physician or elicited by the intern (Dollase, 1994).

Mentoring is considered so important to the development of medical students that research conducted by Cain, Schulkin, Parisi, Power, Holzman, and Williams (2001) indicated that the lack of strong mentoring by academic physicians concluded that there was a loss of interest in staying in academic medicine after the completion of their medical residency program. The research indicated that neither group of residents receives adequate mentorship for careers in academic medicine (Cain et al., 2000). Markakis, Beckman, Suchman and Frankel's (2002) research in the development of humanistic values and attitudes in an internal medicine program at Highland Hospital found that mentoring by faculty advisers was important in the development of a resident's professional preparation and growth and was a critical step in making the most from the residency program.

Research by Curtis, Adam, and Shelvo (1995) found that mentoring by the faculty within the Department of Pediatrics to the residents within the program was most useful for practical advice, emotional support and feedback. Their research found that of the 37 residents graduating from the pediatrics program, 23 found the mentoring program to be very useful while seven found the program to be crucial to survival (Curtis, et al.). Mentoring within the medical profession has been continually proven to play an important role in the development of physicians. The comparison of a residency program in medicine and the internship program in athletic training is very similar and research on mentoring in medicine can easily be inferred in the area of athletic training as well.

Mentoring: Athletic Training

The profession of athletic training has traditionally placed mentoring in the forefront of the athletic training profession. Even with this need in mind, little research has been conducted in the area of mentoring in athletic training. O'Shea (1980) stated that mentoring of student athletic trainers was the backbone of the early association. Miller (1982) questioned the importance of mentoring to the debate over educational reform and the development of the professional athletic trainer. Starkey (1997) stressed the importance of the internship clinical experience and the need for strong instructor mentorship of student athletic trainers. Laurent and Weidner (2001) identified in their research on clinical

instructors that the most helpful characteristic for a clinical instructor was the modeling of professional behaviors to their students.

Curtis et al (1998) identified in their research on student athletic trainer perception of clinical supervisor behavior that the greatest critical incidents for behavior were in the area of mentoring. This supports the findings that the characteristics of a mentor in athletic training are the same as those exhibited in other professional fields (Pickard, 1998).

Research in the area of developing expert male trainers concluded that early in their professional career, the development of athletic trainers is a direct result of mentoring by others within the profession (Malasarn, Bloom & Crumpton 2002). Conversely, athletic trainers within the study not only contributed their acquisition of knowledge in the field of athletic training from their mentors, but also learned how to be patient, supportive, caring, and trusting (Malasarn, et al.). This supports the research of mentoring characteristics within other professional programs.

Although this research supports influences that mentoring has had on individuals within the profession, a lack of research on how mentoring relationships effect certification outcomes in athletic training is important in determining what role mentoring will play in the future education of athletic trainers.

National Athletic Trainers' Association (NATA)

Certification Examination

Predictors of Success

As in all profession preparation programs, predictors of success on certification examinations are continually be sought by those individuals charged with the educational component being tested. In the area of athletic training, several research studies have been conducted to hopefully find the "magic bullet" which would predict successful completion of the NATABOC examination. To date the answer is not complete, but a review of the research indicates a continual search for the important piece to the puzzle.

Several studies were conducted to determine if predictors exist that could show success within varying athletic educational preparation programs. One of the first research studies was conducted by Keskula, Sammarone, and Perrin (1995) in which information received during a candidate's application process was analyzed to determine which variables best predicted his/her final grade point average in a National Athletic Trainers' Association (NATA) graduate athletic training education program. The researchers compared Graduate Record Examination - Quantitative (GRE-Q), Graduate Record Examination - Verbal (GRE-V), preadmission grade point average, total athletic training hours, and undergraduate route (internship or curriculum). Of the variables, only prior

undergraduate grade point average was a significant predictor of success in comparison to the final grade point average (Keskula, et al.).

When looking at learning style as a predictor of successful admissions to athletic training programs, Bower, Stemmans, Ingersoll and Langley (2001) found no dominate learning style among undergraduate athletic training students and no predicting learning style among those students admitted into the athletic training program being studied. This research supports previous research by Draper (1989), which found no relationship between personal learning style or social learning style and successful completion of the NATA certification examination. Platt, Sammarone-Turocy, and McGlumphy (2001) investigated preadmission criteria as predictors of academic success for entry-level athletic training programs and found that only high school grade point average (HSGPA) was a significant predictor of successful completion of the athletic training program.

Research in the area of clinical experiences has yielded valuable information in the predictor of success on the NATABOC certification examination. Research conducted by Sammarone-Turocy, Comfort, Perrin and Gieck (2000) indicated that the number of clinical hours obtained by exam candidates did not predict successful completion of the NATABOC certification examination. The finding supports the need to re-evaluate the requirement of clinical hour within athletic training education

program. This research was supported by Middlemas, et al. (2001) who found that clinical hours were not predictors of success on the NATABOC certification exam and indicated that other factors not yet identified in current research account for a greater amount of variance than clinical hours. The research did indicate that grade point average of examination candidates was a significant predictor of success on the examination (Middlemas, et al.).

Interestingly, research by Erickson and Martin (2000) to determine the contributors of initial success on the NATABOC certification exam may help identify this variance. The researchers surveyed a panel of athletic training educators to determine their perceived contributors to successful completion of the certification exam by their exam candidates. Out of 66 items identified through a Delphi study as possible contributors, 23 items ($m \leq 5.0$) were retained as potential contributors of initial success. One area identified by the Delphi panel as a likely contributor of success was the proper use of mentoring and leadership by a variety of instructors (Erickson & Martin, 2000). Research within the study will help determine if mentoring is a significant contributor to the successful completion of the NATABOC certification examination.

Research of what factors may contribute to the success of candidates on the NATABOC certification exam has continued to elude researchers. Research has indicated that of all contributing variables

studied, grade point average of candidates in athletic training education programs and educational route to certification (Starkey & Henderson, 1995) have yielded the greatest significance of predicting success on the certification exam. Candidates for curriculum education routes score significantly higher on the NATABOC certification examination than those from the internship route and curriculum candidates pass all three sections of the examination at a greater rate than those candidates do from the internship route (Starkey & Henderson, 1995). All other predictors researched showed no significant effect on the passing of the certification exam. With no clear indication of predictability found, the effects of mentoring, as a predictor, should be researched.

Summary

The literature review provided within this chapter consisted of seven major components: (1) A historical review of the of the NATA, its educational and certification competencies, and ongoing changes in the certification process of athletic trainers; (2) the establishment of a definition for mentoring; (3) research into the practice of mentoring; (4) the evaluation of successful mentoring; (5) a review of research in the area of mentoring in education, higher education, the medical profession, and in the field of athletic training; (6) the formation of the NATA certification examination; and (7) predictors of success including

mentoring on the NATA examination. These are the components of the review of literature in Chapter II.

CHAPTER III

PROCEDURES

Methodology

The primary focus of this study was to examine the relationship between the mentorship of student athletic trainers and their outcome on The National Athletic Trainers' Association Board of Certification (NATABOC) examination. Chapter 3 is discussed in seven individual sections: (a) process of identifying and acquiring participants for the study; (b) review of limitations identified within the study; (c) the design and purpose of delimiting questions within the study to secure an acceptable pool of participants; (d) acquisition and development of the Athletic Trainer Questionnaire including testing for validity and reliability; (e) a review of the validity and reliability studies conducted by the NATABOC on the NATABOC examination; (f) a complete overview of the process used for data collection; and (g) the data analysis used to address the questions proposed within the study. This represents the content of Chapter 3.

Participants/Setting

This study was designed to solicit responses from qualified athletic training candidates who are determined by the NATABOC to meet the requirements for athletic training certification and are assigned a certification examination date. The NATABOC offered five test dates

during the 2001 calendar year. The researcher requested addresses of first time candidates for certification that met the eligibility requirements of the NATABOC and were assigned to the June 11, 2001 test date. Addresses for 782 candidates were received from the NATABOC and represented the total population of first time test candidates for the June 11, 2001 test date. The sample population included candidates from across the United States and Canada, as well as those individuals residing or studying overseas.

Limitations

The researcher assumed that the population sample represented the statistical average of comparable population samples from previous years. No assumptions were made that the sample population had greater success on the certification examination than in previous or future populations. The researcher also assumed that the demographics for this population were replicable with any other examination date within the same calendar year. Since the researcher chose to sample the entire population, the presumed differences of gender, age, grade point averages, race, and religion as they affect outcome on the certification examination were not controlled. Previous mentoring experience, personal mentoring preferences, and individual personalities were not controlled.

Delimiting Questions

Since the subjective nature of mentoring and the probability that validity concerns could arise from the inclusion of participants from varying educational and athletic training backgrounds, delimiting questions were used to produce a suitable pool of participants. The following criteria were used to determine eligible candidates for the study:

1. The research group was composed of first-time test candidates. Candidates with previous test experience were eliminated from the study.
2. Individuals with previous experience in an associated allied health setting (physical therapy, physician's assistant, medical school, etc.) were removed from the sample group.
3. Candidates with more than two years of experience as a professional athletic trainer before candidacy for certification were removed from the sample group.

These delimiting questions were developed to eliminate problems in internal validity. The researcher determined that only first time test candidates were desirable for the study to eliminate the possibility of a candidate's improvement from previous test experience. All candidates having educational backgrounds in the medical fields or having attended an allied health college or university because additional educational preparedness in the medical field could affect test scores unduly were

eliminated. Finally, the researcher eliminated all candidates employed in the athletic training profession for greater than two years before they took the NATABOC examination. Two internal validity concerns arise with outside work experience. First, an assumption can be made regarding information acquired from an employment setting and its impact on candidates with and without employment experience. Second, an individual other than his/her head athletic trainer or clinical director could influence the employed candidate, thus creating validity concerns within the questionnaire as it relates to the mentoring relationship and corresponding mentoring scores.

Instrumentation

Mentor Relationship Questionnaire

With the nature of this research indicating the need for a reliable instrument to measure the relationship of mentor to mentee as it relates to the athletic training profession and certification, a survey tool was created to assess the perception of mentor-mentee relationships of the study group. A search for existing mentor relationship instruments was conducted and yielded the Mentor Relationship Questionnaire (Albert & Rumco, 1986) from the *Educational Testing Service (ETS)*, a national test collection center. The rights to modify and use the Mentor Relationship Questionnaire were purchased from the ETS and adapted for use in the athletic training profession. Additional demographic and delimiting questions were added

for data collection and the title changed to the Athletic Trainer Mentor Questionnaire (ATMQ) (Appendix F). Although the original instrument purchased from *Educational Testing Service* was a published questionnaire on mentoring relationships, no published studies on validity or reliability could be found. Several attempts were made to question the authors for information pertaining to validity and reliability for the instrument without reply. It was then determined that independent studies would be conducted to determine content and construct validity as well as reliability using a test-retest model (coefficient of stability).

Validity

Content validity. Content validity was conducted using a Delphi Technique. Three members chosen by the researcher for their background in questionnaire development and recognized as experts in the area of mentoring were identified and asked to participate in the Delphi study. Sample drafts of the ATMQ were sent to each member for review, and recommendations from each of the members were incorporated into the questionnaire after each round of review. If critical changes were desired by one member, then all members were informed of the change and given the opportunity to discuss the changes independently before continuing to a secondary round. After members came to agreement on major changes, the questionnaire was returned to

them for further review. These processes of review, comment, change, and return continued until complete member agreement was achieved.

In the first round of comments, member discussion was obtained on three components of the ATMQ. It was determined that the length of the ATMQ, forty-three questions, could possibly prevent an adequate return rate for data collection. Members agreed that the ATMQ needed fewer than thirty questions to facilitate a higher return rate. Nine questions were determined by all members to be ambiguous or repetitive and were removed. It was agreed that of the remaining 34 questions, additional questions could be removed after reliability testing was completed. Suggested changes in sentence structure and spelling were incorporated into the questionnaire and a complete review for grammatical problems was conducted by an outside expert in question design.

Member discussion of the rating scale presented two areas of concern. First, questions arose from the attitude scale and the range of freedom it offered the participants in the study. The original Mentor Questionnaire was designed on a five point Likert scale. A suggestion was made that the scale range be reduced from five points to four or three points. To address these concerns, a research statistician was consulted to determine the proper scale rate for the questionnaire. The statistician recommended that a five point Likert scale be used to assure a wider

range of possible scores, which would subsequently allow for a greater range of statistical freedom during data collection.

The second concern addressed by the Delphi members was the construct of the wording used to determine ratings within the scale. The original scale from the Mentor Questionnaire ranged from rarely to maximally. Delphi members' discussions focused on the proper terminology for the rating scale and if a response of none or neutral should be added. The resulting variations are presented in Table I.

Table I

Delphi Study Member Variation on Likert Scale Wording

Scale Format	1	2	3	4	5
Original format	Rarely	Slightly	Moderately	Considerably	Extremely
Round I format	None	Some	Moderately	Often	Maximally
Round II Format	None	Minimally	Moderately	Often	Maximally
Final format	Rarely	Minimally	Moderately	Considerably	Maximally

Most members agreed that the wording to convey the second (2) and fifth (5) ratings were inappropriate for the survey tool. Many members considered the meaning of "slightly" too ambiguous for use and the use of "extremely" as a defining action as not being associated with mentoring. None and often were incorporated into the first the third ratings but after further review by Delphi members were removed and replaced with the

original wording. In keeping with the same type of action wording throughout the scale, member agreement was achieved by the addition of minimally and maximally to the original scale. With the completion of the third round member agreement was reached, and the final form of the ATMQ was completed. Each of the members returned the third round version with no corrections or recommendations.

Construct validity. After the completion of the Delphi Study, it was determined that an exploratory factor analysis would be performed to determine if the ATMQ presented definable factors within the questionnaire, and if these factors represented characteristics of a mentoring relationship. Data collected from each participant's questionnaire were placed in a spreadsheet (Microsoft Excel 2000) and analyzed using an inter-correlation matrix. Answers to each question on the ATMQ were then placed into three correlated clusters. A favorable correlation was obtained from statistical analysis and will be discussed in detail in Chapter 4.

Reliability

Reliability testing of the ATMQ (Appendix G) was performed using test/re-test correlation. After securing approval from the University Human Subjects Committee (Appendix H) to conduct the research, the ATMQ was distributed to five head athletic trainers at universities in Louisiana, Texas, and New Mexico. The questionnaire was given to each student athletic

trainer enrolled in upper level athletic training classes at each of the universities during the fall 2000 semester. The ATMQ was repeated seven days later to the same controlled group. Identifying marks were placed on each questionnaire to insure matched paired samples. All questionnaires were returned to the researcher for analysis.

Twenty-four participants were determined to be matched for test re-test correlation. Bonferroni Correlation was performed to determine instrument reliability. Instruments are considered reliable if an (r) factor of .700 or greater was obtained ($p < .05$). The Bonferroni Correlation of the ATMQ yielded an r-value of .74481 ($p < .05$). To further evaluate the reliability of the instrument, question reliability was performed utilizing a simple correlation for each question response. Findings from the analysis of correlation for each question are presented in Table II with all questions having an $r \leq .700$ shaded. Eight (8) questions were found to have a Pearson correlation coefficient of .700 or less. Review of these eight questions further indicated that their wording suggested ambiguity of meaning as it related to the athletic training profession.

Table II

Question Reliability Using Pearson Correlation Coefficients

Question	1	2	3	4	5	6	7	8	9	10
Pearson (<i>r</i>)	.894	.337	.779	.938	.884	.883	.883	.589	.816	.530
Question	11	12	13	14	15	16	17	18	19	20
Pearson (<i>r</i>)	.842	.625	.903	.800	.639	.800	.762	.912	.917	.949
Question	21	22	23	24	25	26	27	28	29	30
Pearson (<i>r</i>)	.846	.917	.853	.870	.776	.866	.847	.927	.695	.842
Question	31	32	33	34						
Pearson (<i>r</i>)	.678	.519	.756	.718						

(*r*) ($p < .05$)

Shaded area indicate questions with low correlation coefficients

After consideration for the length of the questionnaire and the low correlation of these eight responses, the ATMQ was changed from thirty-four to twenty-six questions. This allowed for an overall correlation coefficient of .811 ($p < .05$) to be achieved and allowed the research questions to fit within the restriction of the printable design for the questionnaire.

With the removal of the low correlating responses from the questionnaire, the final form of the ATMQ was sent for editing and placed in a printable format. In order to achieve a high response rate for the study, a professional four-sided pamphlet format was chosen for the ATMQ. A process for candidate identification on returned questionnaires was developed and added, and the ATMQ was sent for printing.

NATABOC Examination

The NATABOC Examination consists of three parts: written, practical, and written simulation. Each part of the examination measures competences within the various functions of the athletic training profession. The NATABOC written examination assesses basic knowledge in the area of athletic training and consists of 150 five-option multiple-choice questions (NATABOC, 2000). The practical examination assesses the use of critical skills within an applied setting and the written simulation examination tests for the candidate's abilities to evaluate a situation and determine the appropriate course of action, given the information provided (NATABOC, 2000).

All three parts of the certification process are based on content derived through a role delineation study covering six content areas. Each year the NATABOC introduces two new versions of the multiple-choice test, two new versions of the written simulation test, and four new versions of the practical test. The developments of the test and validity/reliability analysis of results are all determined by the NATABOC.

Validity

Test questions for the certification examination are prepared by experts in athletic training who are trained in writing high quality examination items (NATABOC, 2001). Validity is determined by questions referencing current athletic training literature and repeated editing by

certified athletic trainers. All questions must satisfy test specifications of a role delineation study already validated by the NATABOC. Each question is then reviewed and edited by others with expertise in athletic training and further reviewed for grammar and technical adequacy by experts from the NATABOC's testing agency (Castle Worldwide, Inc.) (NATABOC, 2001).

After each examination question has undergone this validation process, each item is placed in the NATABOC computer examination bank for future use. Examination assembly then occurs with a review of an analysis of statistical performance of each item on the exam (NATABOC, 2001). For the practical examination, a determination of the training needed to qualify the judges who will score this portion of the exam is also conducted and validated at this time. Only after these validation assessments are performed will a question be use for the NATABOC examination.

Reliability

Internal consistency reliability is reported as the Kuder Richardson [KR (20)] coefficient and accounts for the degrees to which items on the test contribute consistently to candidates' scores (NATABOC, 2001). The KR (20) statistic ranges from zero to one, with coefficients above .70 meeting minimum standards. The standard error of measurement is the range within which the candidate true scores lie (NATABOC, 2001). To help

determine if test candidates are making valid and reliable decisions on the certification examination, the NATABOC also calculates decision consistency estimates using the Livingston Formulation (NATABOC, 2001).

Reliability for the practical portion of the examination is dependent upon inter-rater reliability. Examiners are required to fulfill a written home study course and a one-day workshop to qualify as a practical examiner. Candidates who successfully complete the workshop and pass the final examination are placed on a list approved by the board and submitted to the test site coordinators (NATABOC, 2001).

Data Collection

To help promote the professional appearance of the research, the project was endorsed by the National Institute of Preventive Medicine (NIPM), and all correspondence was printed on NIPM letterhead. It was felt that the return rate could be improved if the research was linked with the NIPM program. The primary researcher has been associated with the NIPM for eight years and is listed with the organization as a faculty member in the area of sports medicine. A cover letter on NIPM letterhead (Appendix I), the Mentor Relationship Questionnaire (Appendix J), and a return envelope were mailed to each of the first time examination candidates twenty-five days before the selected examination date. Follow-up letters (Appendix K) were mailed out fifteen days later.

Participants were assigned a random number at the beginning of the study, and all correspondence from the participants was identified only by the assigned numbers. All returned questionnaires were received by a secondary researcher where they were cross-matched with the master coding log and returned to the primary researcher for data collection. Seven days following the NATABOC mailing of test results to the examination candidates, the Student Athletic Trainer Test Results Release Form (SATRRF) (Appendix L) and cover letter (Appendix M) were sent to participants who indicated their desire to participate in the research study and returned the ATMQ to the researcher with a post office mark prior to June 10, 2001.

Research coding for the SATRRF corresponded with the coding used on the ATMQ to assure that matched results could be achieved. Returned SATRRF forms were again received by a secondary researcher, logged into the master-coding log and sent to the primary researcher for data collection. All data collected were disaggregated and reconfigured in a spreadsheet. The study was conducted with approval of the Committee for the Protection of Human Subjects (Appendix N) and followed university guidelines for educational research.

Data Analysis

Data collected from each questionnaire and from the corresponding test results form were compiled in an Excel spreadsheet

(Microsoft Office, 2000) and transferred to Minitab 13.1 (Minitab Inc., 2000). After questionnaires were returned to the researcher, each questionnaire was reviewed to assess answers to delimiting questions. All questionnaires determined to meet the criteria for first time candidates were hand scored. An average score per questionnaire was determined, and this score constituted the candidate's mentor relationship score (MRS). A detailed discussion of data collection is presented in Chapter 4.

A variety of statistical analyses was used to answer the research questions. For the determination of significance, Question 1 was analyzed using a pooled *t*-test to compare mentor scores to two groups: those who passed and those who failed the NATA examination. Question 2 used the same-pooled *t*-test to compare mentor scores to two groups: internships and curriculum. To study the relationship between mentor scores and raw scores, Question 3 consisted of a simple linear regression analysis of raw scores on mentor scores. Question 4 was assessed by conducting separate analyses for the oral, written, and written simulation components of the NATA examination. In each instance, an analysis of covariance was used to compare raw scores on the NATA examination for the two groups (internship and curriculum) while controlling for mentor scores. An alpha of $p \leq .05$ was used as the measure of significance for each research question.

The null hypothesis is stated below for each research question:

H1: There is no statistically significant difference between mentoring relationship and outcome success of entry-level athletic training candidates on the NATABOC certification examination.

H2: There is no statistically significant difference in mentor relationships between candidates from curriculum routes versus internship routes as they affect outcome success of entry-level athletic training candidates on the NATABOC certification examination.

H3: There is no statistical significance in the relationship between mentor scores and raw scores on the oral, written, and written simulation components of the NATABOC certification exam.

H4: There is no statistically significant difference between curriculum and internship raw scores on the oral, written, and written simulation components of the NATABOC exam when mentorship scores are controlled.

Summary

The goal of this chapter was to outline the significant work conducted to assure that a statistically sound instrument was developed to measure the mentoring relationship between athletic training students and their head athletic trainers or clinical directors. Review of validity and reliability studies conducted, as well as measures used to assure the capture of a sample population controlled in some degree against external factors, which could affect the integrity of the study, were

discussed. The development of the ATMRQ and the corresponding validity and reliability studies created a statistically sound tool for determining mentor relationships between mentor and mentee in the area of athletic training and allowed for an analysis of data to determine the relationship of mentoring on NATABOC certification examination candidates.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

Discussion within Chapter 4 consists of an overview of the process to obtain data collected and analyzed within this research. A comparison of the sample population and the national population was discussed, as well as the determination of construct validity using question responses from the ATMQ. The chapter concludes with the results of the statistical analyses conducted on each hypothesis. Each discussion of the results relative to the hypotheses is followed by a presentation of the data in table form.

Data Collection

Addresses for first time examination candidates for the June 10, 2001 test date were requested and received from the NATABOC. Seven hundred eighty-two (782) candidates were identified, and addresses were provided by the NATABOC to the researcher for a monetary fee. An introduction letter published on Texas Institute of Preventive Medicine letterhead (Appendix I), ATMQ (Appendix J), and postage paid return envelope were sent to all candidates on May 7, 2001. A follow up letter (Appendix K) was sent on May 23, 2001, to each candidate from whom a returned questionnaire was not received. Only questionnaires returned to

the researcher post marked on or before June 9, 2001 were considered for use in the study.

The study sample started with 782 participants identified as first time examination candidates. Twenty one (21) questionnaires were returned to the researcher with insufficient addresses and were removed from the study. Eleven (11) questionnaires were received with postmarks after June 9, 2001, and were removed from the sample population. This modification allowed for the possible return of 750 questionnaires. Of the 750 qualifying questionnaires, 333 were returned to the researcher within the appropriate period. These returned questionnaires constituted the study sample and represented a 44% return rate. Two hundred seventeen (217) questionnaires were returned after the first mail out, and one hundred sixteen (116) questionnaires were returned following the second mail out.

On July 9, 2001, participants who returned the mentor questionnaire were mailed a Student Athletic Trainer Test Results Release Form (SATTIRRF) (Appendix L), cover letter (Appendix M), and a postage paid return envelope by the researcher. Two hundred twenty one (221) test result forms were returned to the researcher, resulting in a 66 % return rate. Three test result forms were removed for incomplete test scores; the remaining 218 questionnaires with matched test results were used as the preliminary study sample for data analysis. The data was sorted by coded responses from delimiting questions obtained from the questionnaire. After the data

was sorted by delimiting questions, one hundred (100) participants were removed from the data sample. The final sample population for data analysis consisted of one hundred eighteen (118) participants. Table III represents the delimiting process employed within the study to control for external influences to the data being analyzed.

Table III
Delimiting Process for Sample Population

Total First Time examination candidates	782
Participants removed for insufficient addresses	21
Participants removed for postmarks after June 9, 2001	11
Total sample group	750
Total # of participants who completed questionnaires	333 (44%)
Total # of participants with returned test results form	221 (66%)
Total removed for incomplete result forms	3
Preliminary Sample data group	218
Participants removed for medical educational experience	86
Participants removed for professional experience < 2 yrs.	14
Final sample data group	118

Historical data, delimiting questions, athletic mentor questionnaire responses, and corresponding NATA examination test results were formatted, coded, and disaggregated into a spreadsheet using Microsoft Excel, 2001.

Sample Population Comparison

A comparison of examination results from the sample study group to test statistics from the 2001 test year population prepared by the NATABOC (NATABOC, 2002) is presented in Table IV. Examination results for the June 9, 2001, test date were not available from the NATABOC and only year-end statistics are prepared and published. Several concerns arose from this comparison. The sample population presents a greater passing rate for each part of the NATABOC certification examination when compared to the national population for the 2001 testing year. In addition, 43.83 % of the study population passed all three parts of the examination, compared to 33.94% from the national population.

Table IV

Comparison of Study Population vs. Nation Population

	Study Test Results	Study %	National %
Total Written	219	1.000	1.000
Total Pass Written	141	0.644	0.435
Total Fail Written	78	0.356	0.566
Total Practical	219	1.000	1.000
Total Pass Prac	167	0.763	0.637
Total Fail Prac	52	0.237	0.363
Total Simulation	219	1.000	1.000
Total Pass Sim	134	0.612	0.572
Total Fail Sim	85	0.388	0.428

When the study population is separated into routes of certification (internship vs. curriculum) and compared to the national population, additional differences are revealed (Table V). When comparing internship pass/fail rates to the national average, the study population performed better on all three parts.

Table V

Internship Sample Population Passing Rates vs. National Rates

	Study %	National %
Written Examination	62.8	27.3
Practical Examination	69.0	55.0
Simulation Examination	57.5	51.1

The sample population of participants from curriculum programs scored markedly better on the written and practical portions of the certification examination, while having the same passing rate on the written simulation examination as the national testing population (Table VI).

Table VI

Curriculum Sample Population Passing Rates vs. National Rates

	Study %	National %
Written Examination	66.0	63.9
Practical Examination	84.0	73.8
Simulation Examination	65.1	64.8

Two assumptions are presented to defend these differences in performance. An assumption can be made that the participants who passed all three sections of the certification examination were more likely to continue their participation in the study by returning the test results than individuals who failed one or more of the sections. Second, an assumption could be made that individuals with a positive mentoring experience returned the questionnaires at a greater rate than those with a less favorable relationship; and this sample population does represent, to some degree, a higher overall passing rate due to a positive mentoring relationship. Additional discussion and recommendations for further research is contained in Chapter 5.

Data Analysis

Athletic Training Mentor Questionnaire (ATMQ) responses for each question were disaggregated into a spreadsheet and an average of all responses was determined. The responses on the ATMQ were averaged, and this average was considered the mentor relationship score and used in the study to compare mentoring to the matching examination scores received from the participants. Test scores were determined as pass/fail by the cutoff point established by the NATABOC for the testing date. Candidates must pass all three certification examination parts to be considered to have successfully completed the certification examination.

Construct Validity

Due to the experimental nature of the ATMQ, statistical analysis was conducted to question responses to determine construct validity of the questionnaire. Question responses were aggregated into a spreadsheet (Microsoft Excel 2000), and a factor analysis was performed using a computer statistical package (GB stats, 2001). The twenty-six questions on the ATMRQ were standardized to have a mean of 0.0 and a standard deviation of 1.0 assuring a total variance of 26 to be explained in the factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling (KMO) and Bartlett's Test of Sphericity were performed to determine the degree of variance within the questionnaire.

A hypothesis was posed to address the question of construct validity within the questionnaire to determine if the instrument measured the mentoring relationship between the athletic training candidates preparing for the NATABOC examination and their identified mentor. The null hypothesis was:

Ho: The variables (questions) in ATMQ cannot be represented in a linear fashion and are not related by single factors.

The results of the factor analysis yielded a KMO measurement of .967 (1.00) and a Bartlett's test showing an approximate chi-square of 6585.830 with $df = 325$ and an approximated p -value of .000 indicating statistical significances and rejecting the Ho hypothesis (Table VII). The

analysis indicates that the variance associated with each question can be represented in a linear fashion and can be attributed to a limited number of factors.

Table VII

Results of Factor Analysis of ATMRQ

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		.967
Bartlett's Test of Sphericity	Approx. Chi-Square	6585.830
	df	325
	Sig. (approx. p-value)	.000

Review of the factor analysis indicates that the questions represented on the ATMRQ can be placed in three specific factors (Table VIII). Using Principle Axis Factoring, the total variance explained in three factors was 65.590% of the variance (20.784 of 24.0 degrees of variance).

Table VII

Total Variance Explained Using Principle Axis Factoring for ATMRQ

Cluster	Factor	Eigenvalues		
		Total Variance	% of Variance	Cumulative Var %
	1	17.885	56.441	56.441
	2	1.459	4.605	61.047
	3	1.440	4.544	65.590

Factor two represented 4.605 % of the accounted variance and was determined to be associated with the act of mentoring through personal preparedness. This factor is associated with the act of preparing the student in his/her advancement within the profession and consisted of content areas such as: a) career planning; b) self-esteem; c) showing appreciation for talent; and d) bringing the student's work to the attention of others. Factor two is the mentoring of the student after the formal preparation for the profession is completed.

Factor three, the act of mentoring through formal experiences, represented 4.544% of the accounted variance. This construct is difficult to narrow in content and includes both formal and informal mentoring. Construct content included: a) comparison of mentor's work with students; b) appreciation of talent and effort; c) stimulating or encouraging flexible and original thinking; and d) teaching the skills necessary to evaluate self worth through self work. Many of these factors indicate a move from logical/analytical thought to formal thought and represent a final stage of the mentoring relationship.

Through the process of factor analysis, indications are that the ATMQ is a valid instrument in determining the mentoring relationship between athletic training students and their mentors as they prepare to take the NATABOC examination. As with all experimental instruments, the ATMQ is not without certain detractors. A section in Chapter 5 will discuss

the possible improvements to the ATMQ and the need for additional research regarding the construct of the questionnaire.

Test of Hypotheses

Although varying statistical measures are used to test the hypothesis for this study, the researcher adopted the practice of setting the probability of Type I error at .05 (Kitchens, 1998). If the finding yielded a p -value $< .05$, then the null hypothesis was rejected and the results were declared statistically significant (Kitchens, 1998).

Hypothesis One

There is no statistically significant difference between mentoring relationship and outcome success of entry-level athletic training candidates on the NATABOC certification examination.

Table X shows the mean and standard deviation of mentor relationship scores among candidates testing for the first time on the NATABOC examination. These data show a mean score of 3.492 for candidates who passed, and a mean score of 3.522 for those who failed. The standard deviation for candidates who passed was 0.884 while the standard deviation was 0.762 for those who failed. Results of the two sample t -test yielded a p -value of .840, which indicates there is no statistically significant difference in mentor relationship scores among candidates who passed or failed the NATABOC examination on their first attempt.

Table X

Analysis of Mentoring Relationships and Outcome Success

Pass/Fail	N	Mean	Standard Deviation	Standard Error Mean
Failed	63	3.492	0.884	0.11
Passed	55	3.522	0.762	0.10

Mentoring relationship vs. outcome	df	t	p-value
	115	-0.20	0.84

Hypothesis Two

There is no statistically significant difference in mentor relationships between candidates from curriculum routes versus internship routes of entry-level athletic training candidates on the NATABOC certification examination.

Table XI shows the mean and standard deviation of mentor relationship scores among candidates from curriculum routes and internship routes who are taking the NATABOC examination for the first time. These data show a mean score of 3.510 for candidates from internship routes and a mean score of 3.503 for candidates from curriculum routes. The standard deviation for candidates from internships was 0.790 while the standard deviation was 0.857 for those from curriculum programs. Results of the two sample *t*-test yielded a *P*-value of 0.965, which indicates there is no statistically significant difference in

mentor relationship scores among candidates from internship routes and candidates from curriculum routes who are sitting for the NATABOC examination for the first time.

Table XI

Analysis of Mentoring Relationships and Route to Certification

Route	N	Mean	Standard Deviation	Standard Error Mean	
Internship	50	3.510	0.790	0.11	
Curriculum	68	3.503	0.857	0.10	
Mentorship vs. Route			<i>df</i>	<i>t</i>	<i>p-value</i>
			110	0.04	0.965

Hypothesis Three

There is no significant relationship between mentor scores and raw scores on the oral, written, and written simulation components of the NATABOC certification exam.

Hypothesis three consisted of a linear regression analysis of raw scores for all candidates on each of the three sections of the NATABOC examination (written, oral and written simulation) and mentor scores. Table XII shows the results of the regression analysis for raw written examination scores as predicted by mentor scores. The analysis produced an *f*-statistic of 0.56 and a *p*-value of 0.454, indicating that written examination scores do not predict mentor scores.

Table XII

Regression Analysis: Written Examination Scores vs. Mentor Scores

Predictor	Coefficients	SE Coef	t-test	p-value
Constant (Written)	105.132	4.153	25.32	0.000
Mentor Scores	0.866	1.153	0.75	0.454

Analysis of Variance

Source	df	SS	MS	f- distrib	p-value
Regression	1	59.9	59.9	0.56	0.454
Residual Error	116	12308.7	106.1		
Total	117	12368.6			

Table XIII shows the results of the regression analysis for raw oral examination scores as predicted by mentor scores. The analysis produced an *f*-statistic of 0.26 and a *p*-value of 0.614, indicating that oral examination scores do not predict mentor scores.

Table XIII

Regression Analysis: Oral Examination Scores vs. Mentor Scores

Predictor	Coefficients	SE Coef	t-test	p-value
Constant (Oral)	39.943	2.233	17.89	0.000
Mentor Scores	0.314	0.620	0.51	0.614

Analysis of Variance					
Source	df	SS	MS	f- distrib	p-value
Regression	1	7.85	7.85	0.26	0.614
Residual Error	116	3558.64	30.68		
Total	117	3566.79			

Table XIV shows the results of the regression analysis for raw oral examination scores as predicted by mentor scores. The analysis produced an f -statistic of 3.63 and a p -value of 0.059, indicating that oral examination scores may have some predictive ability on mentor scores but are still above the study level of significance set at $p < .05$.

Table XIV

Regression Analysis of Written Simulation Examination Scores vs. Mentor Scores

Predictor	Coefficients	SE Coef	t -test	p -value
Constant (Written Simulation)	445.56	40.24	11.07	0.000
Mentor Scores	21.29	11.17	1.91	0.059

Analysis of Variance					
Source	df	SS	MS	f -distrib	p -value
Regression	1	36163	36163.00	3.63	0.059
Residual Error	116	1155662	30.68		
Total	117	1191825			

Clearly, the data indicate no statistically significant linear relationship between mentor scores and raw scores on the written, oral, and written simulation sections of the NATABOC examination.

Hypothesis Four

There is no statistically significant difference between curriculum and internship raw scores on the oral, written, and written simulation

components of the NATABOC exam when mentorship scores are controlled.

Hypothesis four was assessed using an analysis of covariance to compare raw scores on each section of the NATABOC examination (written, oral, and written simulation), while controlling for the effect of corresponding mentors scores.

Table XV represents the written section of the examination comparing internship and curriculum participants' scores while controlling for their corresponding mentor score. The statistical analysis produced a F-value of 0.56 for mentor scores and 0.26 for the educational route (internship or curriculum) with corresponding p-values of 0.457 and 0.610 respectively.

Table XV

Analysis of Covariance: Written Examination Scores vs. Educational Route While Controlling for Mentor Scores

Analysis of Variance for Written, Using Adjusted Standard Deviation Squared (SS) for Tests

Source	df	Seq SS	Adj SS	Adj MS	f-value	p-value
Mentor score	1	59.9	59.6	59.6	0.56	0.457
Route	1	27.9	27.9	27.9	0.26	0.610
Error	115	12280.8	12280.8	106.8		
Total	117	12368.6				

Table XVI represents the oral section of the examination comparing internship and curriculum participants' scores while controlling for their corresponding mentor scores. The statistical analysis produced an *f*-value of 0.26 for mentor scores and 1.84 for educational route (internship or curriculum) with corresponding *p*-values of 0.609 and 0.178 respectively.

Table XVI

Analysis of Covariance: Oral Examination Scores vs. Educational Route

While Controlling for Mentor Scores

Analysis of Variance for Oral, Using Adjusted Standard Deviation Squared (SS) for Tests						
Source	<i>df</i>	Seq SS	Adj SS	Adj MS	<i>f</i> -value	<i>p</i> -value
Mentor score	1	7.85	8.02	8.02	0.26	0.609
Route	1	56.03	56.03	56.03	1.84	0.178
Error	115	3502.91	3502.91	30.46		
Total	117	3566.79				

Table XVII represents the written simulation section of the examination comparing internship and curriculum participants' scores while controlling for their corresponding mentor scores. The statistical analysis produced an *f*-value of 3.60 for mentor scores and 0.05 for educational route (Internship or curriculum) with corresponding *p*-values of 0.060 and 0.829 respectively.

Table XVII

Analysis of Covariance: Written Simulation Examination Scores vs. Educational Route While Controlling for Mentor Scores

Analysis of Variance for Written Simulation, Using Adjusted Standard Deviation Squared (SS) for Tests

Source	df	Seq SS	Adj SS	Adj MS	f-value	p-value
Mentor score	1	36163	36129	36129	3.60	0.60
Route	1	473	473	473	0.05	0.829
Error	115	1155189	1155189	10045		
Total	117	1191825				

The data indicate no statistically significant differences between curriculum and internship raw scores on the written, oral, or written simulation sections of the NATABOC examination when mentor scores are controlled.

Summary

This study analyzed the effects of mentoring relationships, as measured by the mentor score presented at the beginning of the chapter, upon the successful completion of the NATABOC examination. Data were collected from first-time examination candidates sitting for the June 9, 2001 exam date and consisted of the ATMQ and final test scores for all parts of the examination (written, oral, and written simulation). Statistical tests were performed on the data to determine if mentoring affected test scores for NATABOC candidates. Additional statistical analyses was conducted on the ATMQ to determine construct validity. A

comparison of sample population to national population was also conducted. A detailed discussion of the results in this chapter are presented in Chapter 5, along with recommendations for additional research in the area of mentoring and the athletic training profession.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Study Sample versus National Population

Comparisons of examination results from the sample population and the national population raise several concerns within the study. According to the national figures published for the 2001 testing cycle (NATABOC, 2002), the sample population utilized in this research obtained a higher passing rate for each part of the NATABOC examination when compared to the national population. In addition, 43.83% of the sample population passed all three sections of the certification examination compared to the national average of 33.94%. After sorting the sample population by route of certification (internship vs. curriculum), the sample population comprised of candidates for internship programs passed at a significantly greater percentage for each section of the certification exam when compared to the national averages (see Table V, Chapter 4). Curriculum candidates were closer to the national averages than internship candidates, but still higher in each section.

Reasoning for this difference is difficult to determine. The research study utilized the total population for first time candidates sitting for the NATABOC certification examination on a randomly given test date. The use of the total population for the given test date would allow for the four

designated criteria for random sampling to be achieved and a representative sample of the population was produced. The four criteria used within this study were: a) a clear description of the population; b) a sampling procedure with sufficient detail to assure replication; c) a sampling frame which contains all the criteria determined to select the sample population; and d) the participation rate of the sample population when compared to the total number of participants selected for the study (Permut, Michel & Joseph, 1976). The study sample populations fulfilled each of the first three criteria. The return rate for the ATMQ was 44% while the return rate for the test results form was 66%. This represented an acceptable return rate for statistical analysis. Research with similar methodology and within the same sample population (first time athletic training examination candidates) had return rates of 25% (Sammalone-Turocy, et al., 1994) and 24% (Middlemas et al., 1999) respectfully. Although statistically appropriate for data analysis, the sample could be considered bias due to mitigating circumstances.

The differences of the sample population test scores and the national population test scores can lead to several assumptions. First, it could be assumed that those individuals who experienced a positive mentor relationship with their mentors would be more likely to return the questionnaire than those individuals who experienced a poor mentor relationship. Second, It could also be assumed that those individuals who

successfully passed all three sections of the NATABOC examination would be more likely to return their test results forms than those who were not successful. If these two assumptions were determined to be true, not only would the sample population have greater success than the national average, but also the mentor score associated with those test scores would be higher.

Changes to the methodology to obtain the sample population should be considered if duplication of the research is to be conducted. (These changes will be discussed in greater detail in the section on recommendations for future research). With the total number of study participants being 118, the sample population meets the criteria for minimum sampling of a given population (Gall, Borg, & Gall, 1996) and the test of the Central Limit Theorem (Kitchens, 1998).

Test of Hypotheses

Two distinct viewpoints can be derived when looking at the results of the test of hypotheses for the research questions. First is the viewpoint that mentoring, positive or negative in nature, does not influence the success or failure of first time candidates on the NATABOC examination. This view is supported by the statistical analysis conducted for each of the hypothesis in the study. Question 1 addressed the effect of the personal mentoring relationship between the head athletic trainer or clinical coordinator and the successful completion of the NATABOC certification

exam. Analysis concluded that mentoring relationships, represented as mentoring scores within the study, had no affect on the certification exam.

Question 2 addressed the differences of mentoring scores from curriculum candidates and internship candidates as they affected outcome on the NATABOC exam. Again, the analysis conducted revealed no significant difference between these two groups and the outcome on the exam. Question three looked at the relationship between mentor scores and the raw scores on each part of the certification exam. Although some reference could be given to the written simulation exam as being influenced by mentor scores, no significant differences were determined through the analysis. Question 4 addressed the differences between curriculum and internship on each section of the certification examination when the mentor score was controlled. Although the written simulation section of the examination indicated some influence, the overall results indicated no statistically significant difference existed between curriculums and internships. The lack of statistical differences in all areas indicates that the act of mentoring by the head athletic trainer or the clinical coordinator appears to have no influence on certification outcome.

Since a very limited amount of research has been conducted in the area of mentoring in athletic training, the lack of influence mentoring has

on successfully completing the NATABOC certification examination could be just as important in the development of athletic training educational programs across the nation than if mentoring did influence the successful completion of the exam. Since mentoring in athletic training does not predict or influence success on the certification examination, then the current educational models being adopted for use in the athletic training educational programs should function appropriately in preparing the future work force of athletic training candidates. The educational competences and clinical proficiency model required for CAHHEP accreditation being utilized at universities today have very little traditional mentoring in the area of athletic training when compared to the internship based educational experience. The continuation of a strong mentoring foundation within the current educational matrix may prevent the establishment of a broader educational experience needed to assure success on the certification examination today.

A second viewpoint is that the NATABOC certification examination is not affected by mentoring relationships. A better way of stating this is that the certification exam does not measure mentoring and therefore is not biased toward good or bad mentoring. When this viewpoint is taken, then Peper's (1994) ideology that mentoring is a slippery concept to define remains true. A candidate from a poor mentoring relationship will have equal success or failure on the NATABOC exam when compared

with those candidates who have a positive mentoring relationship. The fact that the certification exam is not influenced by the mentoring relationship indicates that mentoring has influences in areas that are not addressed on the certification examination. It would appear that mentoring is not the missing factor identified in previous research, which indicated that other factors accounted for a greater amount of variance than clinical hours in predicting success on the NATABOC certification exam (Middlemas et al., 2001). If Erickson and Martin (2000) are correct in their findings, which indicated that one area identified as a possible contributor to success on the certification exam was the proper use of mentoring and leadership, then this mentoring influence must be accounted for outside the educational and clinical requirements for certification.

How to identify this influence and test for its significance are areas for discussion to be addressed later in this chapter under recommendations. A possible starting point could be a review of the question content addressed by the written simulation section of the certification examination. The written simulation produced a *p*-value of .590 for those candidates who passed that section of the NATABOC examination. Although not considered significant for this research, the content and structure of this section may yield information on how mentoring could influence to some degree the student athletic trainers'

taking the written simulation section for the first time. If, for example, the written simulation section required a greater degree of formal thinking for successful completion, then those candidates with a mentoring relationship based on formal analysis of injury management could be influenced in a positive way. Additional research would be needed to determine if this line of thought is beneficial to the mentoring debate.

Recommendations

Several areas within the study could be improved for further research. This section will discuss the need for further research and address the changes needed in the future to enhance the research contained in this dissertation. The section is broken into three parts: Methodology, Questionnaire Content and Construct, and Additional Research Questions.

Methodology

Since the population sample and study sample were statistically different in their passing rates, a review of the methodology use within this study should be discussed. To receive a higher rate of return and to obtain a sample population that models the national population, the way in which the questionnaire and test results are distributed and received must be changed. A more appropriate methodology would be one in which the NATABOC took a more active role in the study. Each candidate taking the NATABOC examination is currently assigned a test identification

number when he/she receives the examination packet and exam ticket for the candidates selected test site. Arrangements could be made with the NATABOC to distribute the Athletic Training Mentor Questionnaire with its test packets before the certification examination date. The questionnaires would then be returned to the Board of Certification before the test date with the candidate's assigned test identification number on the questionnaire. The NATABOC could then send the returned questionnaires and the test results to the researcher for analysis using the candidate's assigned test identification number.

The process would be completely confidential, and the total population would be accounted for during sampling. If a candidate did not wish to participate in the study, the questionnaire could be returned to the NATABOC indicating non-participation. As a result, the candidate's name would be removed from the study. This methodology was originally chosen as the desired methodology by the researcher; however, after contact with the NATABOC, the cost (\$10,000.00) of having this methodology prohibited its use. A second study, with funding from the NATABOC and other sources to defer the cost, should be performed to address differences in the sample population when compared to the national population.

Athletic Training Mentor Questionnaire (ATMQ)

After exhaustive research to determine that the ATMQ was both valid and reliable, data analysis revealed the need for slight modifications. Although the content and construct of the questionnaire are statistically sound, two changes are in order. First, the question factor analysis indicated that two questions did not fall into any of the three predominate constructs identified. These questions should be removed from the study or rewritten in such a way that they would fit into one of the three constructs. This would substantiate that the test is only measuring the desired factors associated with mentoring in the athletic training profession.

Second, questions involving historical data should be reviewed for ease of completion. Several participants incorrectly completed the demographic questions on the questionnaire and this prevented their participation in the study. A simpler matrix of question data may be necessary to verify this important information is completed correctly.

Additionally, consideration should be made to the necessity of the delimiting questions used in the study. A follow-up study should be conducted to determine if the practice of athletic training in the professional setting or the enrollment of participants in medical education classes affected mentor scores and examination results. A review of this area is needed to assure that questionnaires are indeed influenced by

one or more of the delimiting responses. Overall, the ATMQ proved to be a valid and reliable statistical tool and can be used in further research to ascertain the mentor relationship between the athletic training student and his/her identified mentor.

Further Research

With the very limited amount of research conducted in the area of mentoring in athletic training, additional research should be considered.

Possible areas of research are:

1. Do mentoring relationships effect NATABOC examination success when populations are controlled?

This research would represent a duplication of the study at hand, though with a critical change in methodology. The methodology should be changed to facilitate a more accurate sample population when compared to the national population. This could assure that those who are unsuccessful on the examination or who have had a negative mentor relationship are also included in analysis.

2. Do mentoring relationships affect professional preparation and job satisfaction on entry-level athletic trainers?

This research involves a follow-up survey to those individuals who completed the ATMQ and have worked 2-4 years in the profession. The ATMQ would be completed again, and comparisons of mentor scores would be analyzed against previous scores. Additional qualitative

questions would be included to ascertain the importance of their mentoring relationship to their success or lack thereof in the profession. The study would look at the impact the mentoring relationship on professional preparation. Since we have determined that this relationship did not affect the participant's outcome on the NATABOC certification examination, it would be important to analysis the significance place on the mentoring relationship when compared to professional success.

3. Do mentoring relationships affect scores on the written simulation section of the NATABOC examination?

A question factor analysis would be performed on the written simulation examination, followed by a comparison of the factor analysis performed on the ATMQ to determine if factors or constructs appear replicable. If they have like constructs, then additional analysis could be performed to determine what areas of mentoring would best influence success on the written simulation section.

Additionally, a question analysis should be performed to determine if subsets of questions from the ATMQ predicted outcome on the certification exam. An appropriate start for this area could be the analysis of each construct determined during factor analysis for construct validity. The ATMQ could be divided by the three factors previously identified and each established hypothesis could be retested using only those questions within the chosen factor.

4. Does mentor scores predict outcome in the NATABOC certification examination when data is separated by gender?

With this information already available to the researcher, this analysis could be easily achieved. The information could provide valuable insight into the mentoring relationship of men and women and their outcome on the examination. The same research questions could be addressed for each sub-group (men and women) and a determination could be reached as to the affect of the mentor relationship on examination scores.

5. Does the natural attrition of student athletic trainers during a four-year academic program produce higher mentor relationship scores?

This would require analysis of those individuals who voluntarily removed themselves from the athletic training program before its completion and therefore eliminated their ability to meet the requirements for certification. The ATMQ would be given to anyone who withdraws from the educational program prior to the certification requirements being met. If those individuals who do not complete the requirements have a lower mentor relationship score, then weight could be given that most have the student athletic trainers who have a negative mentoring relationships never sit for the certification examination. This could help determine if the lack of negative mentoring

scores is associated with the sampling technique or the nature attrition of the candidates.

Summary

The effect of mentoring on athletic training is an area that deserves significant research. Since the influences of mentoring are difficult to measure quantitatively, many of the questions remaining would be better addressed qualitatively. A need to determine if mentoring is an important tool in the preparation of athletic trainers within the profession still exists. The research presented here hopefully begins a long line of research in the mentoring of student athletic trainers.

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Appendix A

Committee on Professional Education Minimal Requirements for Approved Athletic Training Programs (June 1969)

- I. Teacher certificate in the area of choice
- II. Specific required courses:
 - a. Anatomy
 - b. Physiology
 - c. Physiology of Exercise
 - d. Applied Anatomy and Kinesiology
 - e. Psychology (two course)
 - f. First Aid and Safety
 - g. Nutrition
 - h. Remedial Exercise
 - i. Personal, Community, and School Health
 - j. Techniques of Athletic Training
 - k. Advanced Techniques of Athletic Training
 - l. Laboratory Practice (six semester hours or 600 clock hours)
- III. Recommended but not required:
 - a. Physics
 - b. Pharmacology
 - c. Histology
 - d. Pathology
 - e. Organization and Administration of Health and Physical Education
 - f. Psychology
 - g. Coaching Techniques
 - h. Chemistry

O'Shea, 1980, p. 13.

Appendix B

National Athletic Trainers Association Guidelines
for Internship/ApprenticeshipNational Athletic Trainers Association Guidelines for
internship/apprenticeship 1973

1. College graduate with teaching license.
 2. Work under a NATA certified trainer within an apprentice program for two years.
 3. One year NATA membership prior to examination
 4. Pass the certification examination
- The following educational requirements were instituted for the certification of internships in 1979. The requirements were:

1. Academic courses
 - a. Human anatomy
 - b. Human Physiology
 - c. Exercise physiology
 - d. Kinesiology
 - e. Health (Nutrition, drug use, etc.)
 - f. First aid / CPR
 - g. Basic athletic training
 - h. Advanced athletic training

Clinical

1. 1500 hours of supervised work under the direction of a certified athletic trainer.
2. Hours must be at the University of Enrollment.

(O'Shea, 1980)

Appendix C

Commission on Accreditation of Allied Health Education Programs
Essentials and Guidelines for Accreditation of Athletic Training
Education Programs

Section I: General Requirements for Accreditation

A. Sponsorship

1. The sponsoring institution and affiliates, if any, must be accredited by recognized agencies or meet equivalent standards.
2. In programs in which academic and clinical didactic and supervised practice are provided by two or more institutions, responsibilities for program administration, instruction, and supervision of each affiliate must be clearly documented as a formal affiliation agreement or memorandum of understanding.
3. Accredited educational programs may be established in senior colleges and universities, and in other institutions or consortia which meet comparable standards for education in Athletic Training.
4. The sponsoring institution assumes primary responsibility for student admission, curriculum planning, appointment of faculty, receiving and processing applications for admission, and granting the certificate or degree documenting satisfactory completion of the educational program. The sponsoring institution shall also be responsible for providing assurance that the practice activities assigned to students in a clinical setting are appropriate to the program.
5. Sponsoring institutions must be authorized under applicable law or other acceptable authority to provide a program of post-secondary education.

B. Resources

1. Personnel

a. Administrative Personal

The program must have adequate leadership and management. These officials shall possess the necessary qualifications to perform the function identified in documented job descriptions.

(1) Program Director

(a) Responsibilities

The Program Director shall be responsible for the day-to-day operation, coordination, supervision, and evaluation of all aspects of the athletic training educational program.

(b) Qualifications

The program Director shall be a full-time employee of the sponsoring institution and must be a member of the teaching faculty as defined by school policy. The Program Director shall also have current NATA recognition as a certified athletic trainer or possess equivalent qualification and have appropriate experience, as such, in the clinical supervision of student athletic trainers.

b. Instructional Staff

(1) Clinical Instructor

(a) Responsibilities

A clinical instructor is a faculty or staff member who provides direct supervision and instruction of students in the clinical aspect of the athletic training educational program

(b) Qualifications

A clinical instructor shall have current NATA recognition as a certified athletic trainer or possess equivalent qualifications and have appropriate experience, as such, in the clinical supervision of student athletic trainers.

(2) Other Instructional Staff

(a) Responsibilities

The teaching faculty of the athletic training educational program shall be identified as those faculty members responsible for teaching in the required subject matter areas specified in Section II and other course work included in the athletic training curriculum as identified by the institution.

(b) Qualification

Faculty members responsible for teaching required subject matter must be qualified through professional preparation and experience in their respective academic areas.

(c) Numbers

There shall be sufficient faculty to provide students with adequate attention, instruction, and supervised practice to acquire the knowledge and competence needed for entry into the occupation.

c. Medical and Allied Health Personnel

The athletic training education program must assure adequate opportunity for athletic training students to become familiar with the roles and responsibilities of various medical and allied health personnel comprising the sports medicine team.

(1) Team Physician

The team physician must be involved in the athletic training educational program.

(2) Additional Medical and Allied Health Personnel

There must be involvement of a variety of medical specialists and allied health personnel as full time or part-time classroom instructors, guest lecturers, or clinical instructors.

d. Clerical and Support Staff

Adequate clerical and other support staff shall be available

e. Professional Development

Programs shall encourage program staff and faculty to pursue continuing professional growth to assure that program faculty and officials can fulfill their responsibilities.

2. Financial Resources

Resources to operate an educational program shall be ensure to fulfill obligations to matriculating and enrolled students

3. Physical Resources

a. Facilities

Adequate classroom, laboratories, clinical and other facilities shall be provided for students, program staff, and faculty.

The athletic training room provides the primary facility in which the clinical aspect of the athletic educational program is conducted. Athletic training rooms must provide adequate space for effective learning experiences for all athletic training students enrolled in the clinical aspect of the program.

b. Equipment and Supplies

Appropriate and sufficient equipment, supplies, and storage space shall be provided for student use and for teaching the didactic and supervised clinical practice components of the curriculum. Instructional aids such as clinical specimens, documents and related materials, reference materials, equipment, and demonstration aids must be provided when required by the types of learning experiences delineated for either the didactic or supervised clinical education components of the curriculum.

(1) Therapeutic Modalities and Rehabilitation

A wide range of contemporary therapeutic modalities and rehabilitation equipment must be available for instructional purposes.

(2) First Aid and Emergency Care Equipment

Equipment and supplies necessary for the appropriate initial management of acute athletic injuries/illnesses must be available in order to provide the athletic training student with instruction in first aid and emergency care procedures.

c. Equipment and Supplies

(1) Library

Students shall have ready access in time and location to an adequate supply of current books, journals, periodicals, and reference materials related to the curriculum.

(2) Instructional Aids

Adequate audio-visual and other appropriate instructional aids must be available for use by athletic training educational program personnel.

C. Students

1. Admission Policies and Procedures

Admission of students, including advanced placement, shall be made in accordance with clearly defined and published practices of the institution. Any specific academic and technical standards required for admission to the program shall also be clearly defined and published, and readily accessible to prospective students and the public. If a program admits any students on the basis of ability to benefit, then it must employ appropriate methods, such as a pre-admission test or evaluation, for determining that such students are in fact capable of benefiting from the training or education offered.

Policies regarding advanced placement, transfer of credit and credit for experimental learning shall be readily accessible to prospective students. Requirements for previous education or work experience shall be provided and readily accessible.

2. Evaluation of Students

Criteria for successful completion of each segment of the curriculum and for graduation shall be given in advance to each student. Evaluation methods (systems) shall include content related to the objectives and competencies described in the curriculum for both didactic and supervised clinical educational components. They shall be employed frequently enough to provide students and program officials with timely indications of the students' progress and academic standing and to serve as a reliable indicator of the effectiveness of course design and instruction.

3. Health

The program officials shall establish a procedure for applicants' or students' health that will permit them to meet the established written technical standards of the program. Students must be informed of and have access to the health care services provided to other students of the institution.

4. Guidance

Guidance shall be available to assist students in understanding course content and in observing program policies and practices and to provide counseling or referral for problems that may interfere with the students' progress through the program.

D. Operating Policies

1. Fair Practices

- a. Announcements and advertising must accurately reflect the program offered.
- b. Student and faculty recruitment and student admission and faculty employment practices shall be non-discriminatory with respect to race, color, creed, sex, age, disabling conditions (handicaps), and national origin.
- c. Academic credit and costs to the student shall be accurately stated, published and made known to all applicants.
- d. The program or sponsoring institution shall have a defined and published policy and procedure for processing student and faculty grievances.
- e. Policies and process for student withdrawal and for refunds of tuition and fees shall be published and made known to all applicants.
- f. Policies and processes by which students may perform service work while enrolled in the program must be published and made known to all concerned in order to avoid practices in which students are substituted for regular staff. Students may not take the responsibility or the place of qualified staff. However, after demonstrating proficiency, supervision and direction. Students may be employed in the field of study outside regular educational hours, provided the work does not interfere with regular academic responsibilities. The work must be non-compulsory, subject to standard employee policies.
- g. The health and safety of patients, students, and faculty associated with the educational activities of the students must be adequately safeguarded.
- h. A program admitting students on the basis of ability to benefit must publicize its objectives, assessment measures, and means of evaluating ability to benefit.

2. Student Records

Satisfactory records shall be maintained for student admission, attendance, and evaluation. Grades and credit for courses shall be recorded on the student transcript.

and permanently maintained by the sponsoring institution in safe and accessible location.

E. Program Evaluation

1. The program must continually obtain and provide substantial and accurate information on its educational effectiveness as measured by student achievement.
2. The program must maintain clearly specified educational objectives consistent with its mission and appropriate in light of the degree it awards.
3. The program must verify that satisfaction of degree requirements by all students is reasonably documented and conforms with commonly accepted standards for the degree involved: also, that the program confers a degree on the basis of educational achievement assessed and documented through appropriate measures.
4. A program must document that the educational achievements of its students are verifiable and assessed in consistent ways.

Appendix D

Athletic Training Curriculum Course Requirement Mid-1970's

Anatomy (1 course)
Physiology (1 course)
Physiology of exercise (1 course)
Applied anatomy and kinesiology (1 course)
Psychology (2 courses)
First aid and safety (1 course)
Nutrition (1 course)
Remedial exercise (1 course)
Personal, community and school health (1 course)
Basic athletic training (1 course)
Advanced athletic training (1 course)

Laboratory or practical experience in athletic training to include a minimum of 600 total clock hours under the direct supervision of a NATA-certified athletic trainer.

(Delforge & Behnke, 1999)

Appendix E

Internship requirement for NATA Certification

At the time of application, each internship applicant must present documentation of obtaining at least 1500 hours of athletic training experience under the direct supervision of an NATABOC certified athletic trainer. The applicant must show that the athletic training experience was gained over a period of at least two calendar years. Of these 1500 hours, at least 1000 hours must be attained in a traditional athletic setting.

Each internship applicant applying for candidacy must submit an official transcript that verifies successful completion of at least one formal, single course in each of the following areas:

Health (i.e. Nutrition, Drug/Substance Abuse, Health Education, Personal Health and Wellness; a course in Pathology is considered an acceptable substitution.

Human Anatomy;

Kinesiology / Biomechanics;

Human Physiology;

Physiology of Exercise;

Basic Athletic Training; and

Advanced Athletic Training

Proof of current certification in CPR.

Endorsement of the certification application by an NATABOC certified athletic trainer

Reference: National Athletic Trainers Board of Certification: Certification Standards. NATABOC On-line Documents, www.nataboc.org/standards.html.

Referenced 1/03/2000.

Appendix F

Athletic Trainer Mentor Questionnaire

Instructions:

This questionnaire is designed to determine the influence your Head Athletic Trainer or Clinical Supervisor had on your professional preparation for the field of athletic training. We consider this influence to be a form of "mentoring" and hope to show a relationship with mentoring and scores on the NATA certification exam. Please select one individual with whom you have worked, and think about them when responding to the items below. Often these items describe your "work", your "career or your "area". These terms refer to your career, your major in college, or your present or future employment in the athletic training profession.

YOUR ANSWERS ARE COMPLETELY CONFIDENTIAL

Note that all of the questions ask, "To WHAT DEGREE, or HOW OFTEN, DOES (OR DID) YOUR MENTOR..." Please answer each question using the following numerical scale.

1. Rarely
2. Slightly
3. Moderately
4. Considerably
5. Extremely

TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
1. Provide direction and/or support for career planning?	1	2	3	4	5
2. Help you make contact with influential people in your area of interest?	1	2	3	4	5
3. Increase the prestige or status of your work, for others to see?	1	2	3	4	5
4. Create the opportunity for research, or other work in your area?	1	2	3	4	5
5. Bring your work to the attention of others?	1	2	3	4	5
6. Generally, help advance your career?	1	2	3	4	5
7. Increase your interest in your area?	1	2	3	4	5
8. Provide realistic insight in your area?	1	2	3	4	5
9. Generally, help increase your career skills?	1	2	3	4	5
10. Generally, help increase your career knowledge?	1	2	3	4	5
11. Explicitly suggest what information you need to know?	1	2	3	4	5
12. Demonstrate how to go about your work?	1	2	3	4	5
13. Demonstrate or suggest how to analyze a problem	1	2	3	4	5
14. Demonstrate or suggest how to find important problems in your area?	1	2	3	4	5
15. Act as a role model for interpersonal skills?	1	2	3	4	5

Remember:

1 = Rarely	2 = Slightly	3 = Moderately	4 = Considerably	5 = Extremely
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TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
16. Acts as a role model for interpersonal skills?	1	2	3	4	5
17. Demonstrate specific skills for working in your area?	1	2	3	4	5
18. Demonstrate or suggest how to obtain information or data in your area?	1	2	3	4	5
19. Present different views or options about problems in your area?	1	2	3	4	5
20. Attempt to awaken or exercise your talents?	1	2	3	4	5
21. Test or evaluate your talents?	1	2	3	4	5
22. Enhance your self-esteem?	1	2	3	4	5
23. Express appreciation of your talents or efforts?	1	2	3	4	5
24. Help develop standards for your work	1	2	3	4	5
25. Compare your standards for work with his or her own?	1	2	3	4	5
26. Act as a role model for professional behavior?	1	2	3	4	5
27. Help you learn to evaluate your own work?	1	2	3	4	5
28. Stimulate or encourage your creativity?	1	2	3	4	5
29. Stimulate or encourage flexible thinking?	1	2	3	4	5
30. Stimulate or encourage original thinking?	1	2	3	4	5
31. Encourage you to only work on important problems?	1	2	3	4	5
32. Help you to learn from your mistakes?	1	2	3	4	5
33. Encourage you to be persistent in problem solving?	1	2	3	4	5
34. Act as a role model for creativity?	1	2	3	4	5
35. Act as a role model for originality?	1	2	3	4	5
36. Act as a role model for question asking and curiosity?	1	2	3	4	5
37. Act as a role model for persistence and motivation?	1	2	3	4	5
38. Act as a personal friend?	1	2	3	4	5
39. Generally, help with your career?	1	2	3	4	5
40. Generally, help with the development of your interest?	1	2	3	4	5
41. Generally, help increase your knowledge?	1	2	3	4	5
42. Generally, help improve your skills?	1	2	3	4	5
43. Generally, help enhance your self-confidence?	1	2	3	4	5

Historical Data

Please complete the following Questions. YOUR ANSWERS ARE CONFIDENTIAL.

1. Gender Male Female
2. Education Level Bachelors Graduate Doctorate
2. Approximate Age 18 - 21 22 - 24 25 - 27 28 or older
3. Athletic Training Apprenticeship Curriculum
- Educational experience Other (explain):

4. Professional Experience
 prior to the NATA exam: None 1 - 2 years 3 - 4 years 5 or more years

Do you have educational or professional experience in any of the following areas:

	Y E S	N O		Y E S	N O
5. Physical Therapy	<input type="checkbox"/>	<input type="checkbox"/>	8. Occupational Therapy	<input type="checkbox"/>	<input type="checkbox"/>
6. Nursing	<input type="checkbox"/>	<input type="checkbox"/>	9. Physicians Assistant	<input type="checkbox"/>	<input type="checkbox"/>
7. Medical School	<input type="checkbox"/>	<input type="checkbox"/>	10. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>

NUMBER OF TIME YOU HAVE TAKEN THE NATA EXAM (CHECK ONE)

- FIRST TIME SECOND TIME MORE THAN TWO TIMES

TEST SCORES ON **FIRST** NATA EXAM

- ORAL WRITTEN WRITTEN ASSIMILATION

THANK YOU FOR YOUR TIME IN THIS RESEARCH

OPTIONAL INFORMATION

If you would like the results of this research sent to you, please fill out the information below

NAME _____

ADDRESS _____

CITY, STATE, ZIP _____

Appendix G

Athletic Trainer Mentor Questionnaire

Instructions:

This questionnaire is designed to determine the influence your Head Athletic Trainer or Clinical Supervisor had on your professional preparation for the field of athletic training. We consider this influence to be a form of "mentoring" and hope to show a relationship with mentoring and scores on the NATA certification exam. Please select one individual with whom you have worked, and think about them when responding to the items below. Often these items describe your "work", your "career" or your "area". These terms refer to your career, your major in college, or your present or future employment in the athletic training profession.

YOUR ANSWERS ARE COMPLETELY CONFIDENTIAL

Note that all of the questions ask, "To WHAT DEGREE, or HOW OFTEN, DOES (OR DID) YOUR MENTOR..." Please answer each question using the following numerical scale.

1. Rarely
2. Minimally
3. Moderately
4. Considerably
5. Maximally

TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
1. Provide direction and/or support for career planning?	1	2	3	4	5
2. Help you make contact with influential people in your area of interest?	1	2	3	4	5
3. Create the opportunity for other work in your profession?	1	2	3	4	5
4. Bring your work to the attention of others?	1	2	3	4	5
5. Generally, help advance your career?	1	2	3	4	5
6. Increase your interest in your area?	1	2	3	4	5
7. Provide realistic insight in your area?	1	2	3	4	5
8. Generally, help increase your career skills?	1	2	3	4	5
9. Generally, help increase your career knowledge?	1	2	3	4	5
10. Explicitly suggest what information you need to know?	1	2	3	4	5
11. Demonstrate how to go about your work?	1	2	3	4	5
12. Demonstrate or suggest how to analyze a problem?	1	2	3	4	5
13. Demonstrate or suggest how to find important problems in your area?	1	2	3	4	5
14. Act as a role model for interpersonal skills?	1	2	3	4	5

1 = Rarely	2 = Minimally	3 = Moderately	4 = Considerably	5 = Maximally
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TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
15. Demonstrate specific skills for working in your area?	1	2	3	4	5
16. Demonstrate or suggest how to obtain information or data in your area?	1	2	3	4	5
17. Attempt to awaken or exercise your talents?	1	2	3	4	5
18. Test or evaluate your talents?	1	2	3	4	5
19. Enhance your self-esteem?	1	2	3	4	5
20. Express appreciation of your talents or efforts?	1	2	3	4	5
21. Help develop standards for your work?	1	2	3	4	5
22. Compares your standard of work with his or her own?	1	2	3	4	5
23. Act as a role model for professional behavior?	1	2	3	4	5
24. Help you learn to evaluate your own work?	1	2	3	4	5
25. Stimulate or encourage your creativity?	1	2	3	4	5
26. Stimulate or encourage flexible thinking?	1	2	3	4	5
27. Stimulate or encourage original thinking?	1	2	3	4	5
28. Encourages you to work only on important problems?	1	2	3	4	5
29. Help you to learn from your mistakes?	1	2	3	4	5
30. Encourage you to be persistent in problem solving?	1	2	3	4	5
31. Act as a role model for creativity?	1	2	3	4	5
32. Act as a role model for originality?	1	2	3	4	5
33. Act as a role model for persistence and motivation?	1	2	3	4	5
34. Act as a personal friend?	1	2	3	4	5

Historical Data

Please complete the following Questions. YOUR ANSWERS ARE CONFIDENTIAL.

1. Gender Male Female
2. Education Level Bachelors Graduate Doctorate
3. Approximate Age 18 - 21 22 - 24 25 - 27 28 or older
4. Athletic Training
Educational experience Apprenticeship Curriculum
Other (explain): _____
5. Professional Experience
prior to the NATA exam: None 1 - 2 years 3 - 4 years 5 or more years

Do you have educational or professional experience in any of the following areas:

- | | YES | NO | | YES | NO |
|---------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| 6. Physical Therapy | <input type="checkbox"/> | <input type="checkbox"/> | 9. Occupational Therapy | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Nursing | <input type="checkbox"/> | <input type="checkbox"/> | 10. Physician's Assistant | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Medical School | <input type="checkbox"/> | <input type="checkbox"/> | 11. Other: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

NUMBER OF TIMES YOU HAVE TAKEN THE NATA EXAM (CHECK ONE)

- FIRST TIME SECOND TIME MORE THAN TWO TIMES

TEST DATE FOR FIRST NATA EXAM

TEST SCORES ON FIRST NATA EXAM

- ORAL WRITTEN WRITTEN ASSIMILATION

THANK YOU FOR YOUR TIME IN THIS RESEARCH

Appendix H

**SAM HOUSTON STATE UNIVERSITY
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS**

Jurg Gerber, Chair

M E M O R A N D U M

DATE: May 19, 2000

TO: Jerry Vance Pickard

FROM: Jurg Gerber, Chair
Committee for the Protection of Human Subjects

RE: Proposal #20000503-1
(Athletic Trainer Mentor Questionnaire: A Pilot Study to Determine Reliability)

Your proposed research has been APPROVED by the Sam Houston State University Institutional Review Board, Committee for the Protection of Human Subjects.

FULL COMMITTEE REVIEW _____

EXPEDITED REVIEW _____

EXEMPTED REVIEW _____ *X*

If you have any questions, please contact me at 294-1640.



Appendix I
**National Institute of Preventive
 Medicine**

Directors

Gary Oden, Ph.D.
 Physiology/Exercise RX

Matthew Wagner, Ph.D.
 Special Populations

Faculty

Dalton Heath, M.D.
 Orthopedics/Rehabilitation

Thomas Leeper, J.D.
 Legal Aspect

Vance Pickard, ATC
 Injury Prevention

David Prier, M.D.
 Pediatric/Internal Medicine

Judy Reed, Ph.D.
 Anatomy/Physiology

Mike Sandlin, Ph.D.
 Exercise Adherence

Stacy Wagner, R.D.,
 L.D., C.D.E.
 Nutrition

May 7, 2001

«FirstName» «LastName»
 «Address1»
 «City», «State» «Zip»

Dear «FirstName»:

You have been selected to participate in an exciting study through the National Institute of Preventive Medicine and the NATABOC. This study will examine the relationship of mentoring and its correlation to the certification exam of the National Athletic Trainers' Association. The study will help determine if a positive or negative mentoring relationship with your head athletic trainer or clinical director relates to a higher or lower passing rate on the NATA exam.

There are three reasons why this study is important to the profession and to you. It is the first study of its kind that looks directly at mentoring in athletic training, and, although we use the word frequently within the profession, no research has been completed that would help determine the importance of mentoring. Secondly, only first time test candidates can participate in the study, so your one time to be involved is now. Lastly, you will be able to receive the results of the study for your review and comment.

The research consists of a Mentor Relationship Questionnaire and a Test Results Release Form. It will take you about 10 minutes to complete the questionnaire. The questionnaire is coded to assure confidentiality and will be re-coded by a secondary researcher. I will never know which questionnaire belongs to you. About a week after the test results are sent to you, you will receive a Test Results Release Form. Simply fill out the necessary information and return the form to the secondary researcher. It's that easy.

Please do not delay. Your questionnaire must be post marked by June 9, 2001. All questionnaires received after June 9 will be destroyed. I realize you are busy preparing for the test, and I appreciate you taking the time to provide the data for this study.

Sincerely,

Vance Pickard, ATC. LAT.
 Primary Researcher

P.O. Box 7345

Huntsville, TX

77342-7345

Appendix J

Mailing Code
 To Be Removed
 By Secondary Researcher ONLY

Athletic Trainer Mentor Questionnaire Informed Consent Information

Please read carefully the following information regarding your rights as a participant in this study.

The purpose of this study is to determine if a correlation exists between mentoring and the successful completion of the certification examination for entry-level athletic trainers. The questionnaire is designed to produce an average score, which will be compared with your test score on each part of the National Athletic Trainers' Association Board of Certification (NATABOC) examination. The information will be the first true look at the outcome of the NATABOC exam and mentoring. In addition to your consent in completing the mentor questionnaire, you will also be asked to complete a Test Result Release Form (TRRF) in the weeks following the NATABOC Exam. You will be asked to give your test results to the researcher for comparison to your responses on the Mentor Relationship Questionnaire.

To assure complete confidentiality of the information you provide, a system of coding will be used for the study. A code has been placed on your questionnaire that will correspond with an identical code placed on the TRRF form. A secondary researcher will receive the results of the questionnaires and the completed TRRFs in the mail. The secondary researcher will then assign new identifying codes to both forms before forwarding them to the primary researcher. The primary researcher will never see the completed mailing codes or addresses of the candidates. The secondary researcher will then destroy all coding sheets.

You will not be asked to provide any identifying information for this study.

Information concerning the study and answers to any questions regarding the study can be obtained from:

Vance Pickard, ATC., LAT.
 Director of Sports Medicine
 National Institute of Preventive Medicine
 P.O. Box 7345
 Huntsville, TX 77345
 (936) 294-1710
ath_ivp@shsu.edu

As a voluntary participant in this study, you have the following rights:

- the right to exercise free power in deciding whether or not to participate in the study
- the right to withdraw your consent at any time during the study without prejudice
- the right to have any questions concerning the study answered by the researcher
- the right to view completed data as available from the researcher

At this time, you are asked to choose one of the following responses by placing an X in the space provided:

_____ I voluntarily give consent to participate in this study and provide my test results to the researcher on the TRRF.

_____ I decline to participate in this study.

If you choose to participate in this study,
 please continue with the questionnaire by breaking the seal on the right
 and completing all three pages.

**Mailing Code
To Be Removed
By Secondary researcher
ONLY**

Athletic Trainer Mentor Questionnaire

Instructions:

This questionnaire is designed to determine the influence your Head Athletic Trainer or Clinical Supervisor had on your professional preparation for the field of athletic training. We consider this influence to be a form of "mentoring" and hope to show a relationship with mentoring and scores on the NATA certification exam. Please select one individual with whom you have worked, and think about them when responding to the items below. Often these items describe your "work", your "career" or your "area". These terms refer to your career, your major in college, or your present or future employment in the athletic training profession.

YOUR ANSWERS ARE COMPLETELY CONFIDENTIAL

Note that all of the questions ask, "To WHAT DEGREE, or HOW OFTEN, DOES (OR DID) YOUR MENTOR..." Please answer each question using the following numerical scale.

1. Rarely
2. Minimally
3. Moderately
4. Considerably
5. Maximally

TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
1. Provide direction and/or support for career planning?	1	2	3	4	5
2. Create the opportunity for other work in your profession?	1	2	3	4	5
3. Bring your work to the attention of others?	1	2	3	4	5
4. Generally, help advance your career?	1	2	3	4	5
5. Increase your interest in your area?	1	2	3	4	5
6. Provide realistic insight in your area?	1	2	3	4	5
7. Generally, help increase your career knowledge?	1	2	3	4	5
8. Demonstrate how to go about your work?	1	2	3	4	5
9. Demonstrate or suggest how to find important problems in your area?	1	2	3	4	5
10. Act as a role model for interpersonal skills?	1	2	3	4	5
11. Demonstrate specific skills for working in your area?	1	2	3	4	5
12. Demonstrate or suggest how to obtain information or data in your area?	1	2	3	4	5
13. Attempt to awaken or exercise your talents?	1	2	3	4	5

Remember:

1 = Rarely	2 = Minimally	3 = Moderately	4 = Considerably	5 = Maximally
------------	---------------	----------------	------------------	---------------

TO WHAT DEGREE or HOW OFTEN, DOES (OR DID) YOUR MENTOR...

	1	2	3	4	5
14. Test or evaluate your talents?	1	2	3	4	5
15. Enhance your self-esteem?	1	2	3	4	5
16. Express appreciation of your talents or efforts?	1	2	3	4	5
17. Help develop standards for your work?	1	2	3	4	5
18. Compares your standard of work with his or her own?	1	2	3	4	5
19. Act as a role model for professional behavior?	1	2	3	4	5
20. Help you learn to evaluate your own work?	1	2	3	4	5
21. Stimulate or encourage your creativity?	1	2	3	4	5
22. Stimulate or encourage flexible thinking?	1	2	3	4	5
23. Stimulate or encourage original thinking?	1	2	3	4	5
24. Encourages you to work only on important problems?	1	2	3	4	5
25. Encourage you to be persistent in problem solving?	1	2	3	4	5
26. Act as a role model for persistence and motivation?	1	2	3	4	5

PLEASE COMPLETE THE HISTORICAL INFORMATION

ON BACK PAGE

Historical Data

Please complete the following Questions. YOUR ANSWERS ARE CONFIDENTIAL.

1. Gender Male Female
2. Education Level Bachelors Graduate Doctorate
2. Approximate Age 18 - 21 22 - 24 25 - 27 28 or older
3. Athletic Training Apprenticeship Curriculum
Educational experience
Other (explain): _____
4. Professional Experience prior to the NATA exam: None 1 - 2 years 3 - 4 years 5 or more years

Do you have educational or professional experience in any of the following areas:

- | | YES | NO | | YES | NO |
|---------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|
| 5. Physical Therapy | <input type="checkbox"/> | <input type="checkbox"/> | 8. Occupational Therapy | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Nursing | <input type="checkbox"/> | <input type="checkbox"/> | 9. Physicians Assistant | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Medical School | <input type="checkbox"/> | <input type="checkbox"/> | 10. Other: _____ | <input type="checkbox"/> | <input type="checkbox"/> |

NUMBER OF TIME YOU HAVE TAKEN THE NATA EXAM (CHECK ONE)

- FIRST TIME SECOND TIME MORE THAN TWO TIMES

TEST SCORES ON FIRST NATA EXAM

- ORAL WRITTEN WRITTEN ASSIMILATION

THANK YOU FOR YOUR TIME IN THIS RESEARCH

OPTIONAL INFORMATION

If you would like the results of this research sent to you, please fill out the information below

NAME _____

ADDRESS _____

CITY, STATE, ZIP _____

Appendix K



National Institute of Preventive Medicine

Directors

Gary Oden, Ph.D.
Physiology/Exercise RX

Matthew Wagner, Ph.D.
Special Populations

Faculty

Dalton Heath, M.D.
Orthopedics/Rehabilitation

Thomas Leeper, J.D.
Legal Aspect

Vance Pickard, ATC
Injury Prevention

David Prier, M.D.
Pediatric/Internal Medicine

Judy Reed, Ph.D.
Anatomy/Physiology

Mike Sandlin, Ph.D.
Exercise Adherence

Stacy Wagner, R.D.,
L.D., C.D.E.
Nutrition

June 1, 2001

«FirstName» «MiddleInitial» «LastName»
«Address1», «Address2»
«City», «State» «Zip»

Dear «FirstName»:

Time is running out on your opportunity to participate in the research study sent to you last month. With the anticipated date of graduation for my doctoral program just down the road, I know how things can be set aside for a later date. However, you must have your Mentor Questionnaire post marked by June 9, 2001 or your information can not be used. Please complete the questionnaire today and return it in the postmarked envelope provided.

If you did not receive your questionnaire and would, still like to participate in the study, please e-mail me today at ath_jvp@shsu.edu and I will e-mail you one. We have received over 200 questionnaire in the mail to date, but need an additional 200 to make this study statistically valid. YOUR QUESTIONNAIRE IS IMPORTANT TO THIS STUDY AND TO ME. Please return it today.

Great success for you on the test this weekend and thank you again for your time.

Sincerely,

Vance Pickard
Primary Researcher

P.O. Box 7345

Huntsville, TX

77342-7345

Appendix L

Athletic Trainer Mentor Questionnaire

STUDENT ATHLETIC TRAINER
TEST RESULTS RELEASE FORM

Thank you for completing your Athletic Trainer Mentor Questionnaire and returning it to the researcher in a timely manner. Please complete the following information and return it to the researcher in the envelope provided. The coding at the top of this form is to be used by the secondary researcher to match your questionnaire results. The coding will be removed and a second code will be used in conjunction with your questionnaire. All information collected will remain confidential and will be coded; identifying information will be destroyed by a secondary researcher before coded results are released to the primary researcher. At no time will the researcher have access mailing codes or the names of the participants. Test scores are collected solely for the purpose of this study. The research is conducted for education research only and will not be used for other purposes.

PLEASE COMPLETE THE FOLLOWING INFORMATION:

NATA TEST DATE: JUNE 10, 2001 Yes No

NATA TEST SITES: (choose from the following)

Atlanta, GA		Elmira, NY		Orange, CA	
Birmingham, AL		Hempstead, NY		Orlando, FL	
Charleston, SC		Honolulu, HI		Sacramento, CA	
Chester, PA		Houston, TX		Salem, OR	
Chicago, IL		Indianapolis, IN		Salt Lake City, UT	
Crestview Hills, KY		Lafayette, LA		Slippery Rock, PA	
Dallas, TX		Madison, WI		Spokane, WA	
Dayton, OH		Nashville, TN		St. Louis, MO	
Denver, CO		New Britain, CT		St. Paul, MN	
E. Lansing, MI		Omaha, NE		Towson, MD	
Westfield, MA		Winston-Salem, NC			

PLEASE USE NUMERICAL VALUES FOR SCORES WHERE POSSIBLE

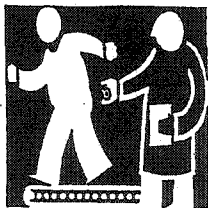
Written Test Score: _____ Passing: Y N

Oral Test Score: _____ Passing: Y N

Written Simulation: _____ Passing: Y N

THANK YOU FOR YOUR TIME

Appendix M



National Institute of Preventive Medicine

Directors

Gary Oden, Ph.D.
Physiology/Exercise RX

Matthew Wagner, Ph.D.
Special Populations

July 1, 2001

«FirstName» «LastName»
«Address1»
«Address2»
«City», «State» «Zip»

Faculty

Dalton Heath, M.D.
Orthopedics/Rehabilitation

Thomas Leeper, J.D.
Legal Aspect

Vance Pickard, ATC
Injury Prevention

David Prier, M.D.
Pediatric/Internal Medicine

Judy Reed, Ph.D.
Anatomy/Physiology

Mike Sandlin, Ph.D.
Exercise Adherence

Stacy Wagner, R.D.,
L.D., C.D.E.
Nutrition

Dear «FirstName»:

I want to start by thanking you for participating in the mentor questionnaire survey and for returning your questionnaire in the appropriate time frame. We received 342 surveys before June 10 and that represents an astounding return rate of 43%. Now it is time to finish our work.

You should have received your test information from the NATABOC, and I now need you to fill out the test result form and return it in the envelope provided. We are currently determining your mentor score from your questionnaire so that it can be compared with your results for each part of the test. This comparison will determine two things. 1) Does a mentoring score predict NATABOC examination results? and 2) Does a positive relationship exist between mentoring and the success or failure on the NATABOC exam?

I realize that not everyone passed the examination. If you did not, I know exactly how you feel as it took me more than one time to pass all three parts. Nevertheless, your information is just as important to the study as those who were successful on all three. Please take a moment to complete the form and be completely honest with your answers. I think we have a good study and without your effort, it will be meaningless. You will also find a space to be completed if you would like the results of the study to be sent to you. Just check it, and the secondary researcher will place your name on the results' mailing list.

Thank you again for your dedication to this research. If I can be of service to you in the future, please feel free to contact me at afh_jvp@shsu.edu or by phone at (936) 294-1710.

Sincerely,

Vance Pickard
Primary Researcher

P.O. Box 7345

Huntsville, TX

77342-7345

Appendix N

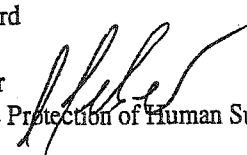
**SAM HOUSTON STATE UNIVERSITY
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS**

Jurg Gerber, Chair

M E M O R A N D U M

DATE: May 19, 2000

TO: Jerry Vance Pickard

FROM: Jurg Gerber, Chair
Committee for the Protection of Human Subjects 

RE: Proposal #20000503-2
(An Examination of the Relationship between the Mentorship of Student Athletic Trainers and their Outcome on the National Athletic Trainers' Association Certification Examination)

Your proposed research has been APPROVED by the Sam Houston State University Institutional Review Board, Committee for the Protection of Human Subjects.

FULL COMMITTEE REVIEW _____

EXPEDITED REVIEW _____

EXEMPTED REVIEW _____ *b*

If you have any questions, please contact me at 294-1640.

P.O. BOX 1953 • HUNTSVILLE, TX 77342-1953
PHONE (936) 294-1710 • FAX (936) 295-1323 • E-MAIL ATH_JVP@SHSU.EDU

VANCE PICKARD

OBJECTIVE

Director of Athletic Training Education at a NCAA college or university.

SUMMARY OF QUALIFICATIONS

Comprehensive experience in prevention, assessment, treatment, and rehabilitation of athletic injuries at the collegiate level. Committed to needs of university and athletic department. Design and implement programs to enhance athletic performance and injury prevention. Dedicated to working with administration, faculty, staff, coaches, students and athletes in a professional and dignified manner. Recognized for relating to each athlete and student in an honest and personal manner and ensuring equality in all areas. Proven ability to maintain fiscal budget requirements.

EDUCATION

Ed.D. - Sam Houston State University, May, 2002

M.A.T. - Western New Mexico University, Silver City, NM, 1988

B.S. - University of Texas at El Paso, El Paso, TX, 1986

PROFESSIONAL EXPERIENCE

1991 - present Sam Houston State University Huntsville, TX
Head Athletic Trainer / Instructor

Administrate all areas of athletic training for 14 NCAA Division I intercollegiate sports (IAA football). Compile accurate medical and treatment records and administrate athletic insurance policy. Designed and continue to implement team physicians' program to enhance the medical care of student athletes, as well as, cost

containment for athletic- related medical. Program raises in excess of \$25,000.00 per year in donated medical services. Currently supported by ten team physicians specializing in all areas of medical practice, as well as, physical therapy and rehabilitation services. Supervise athletic drug abuse program and testing. Prepare and maintain yearly fiscal budget and inventory. Instructor of undergraduate studies within the Kinesiology Department for student-athletic trainers. Administer all aspects of the student athletic trainers apprenticeship program.

1989-1991 Houston Baptist University Houston, TX
Director of Sports Medicine / Instructor

Administered all areas of conditioning and training for eight intercollegiate sports. Compiled accurate medical records and administered athletic insurance policy. Designed and implemented 5th-year senior work-study program to enhance supervision of recreational facilities. Coordinated facility usage between Human Kinetics Department and athletes. As NCAA Compliance Officer advised and determined athletic eligibility for both NCAA and NAIA programs. Participated in ongoing injury evaluation for NCAA. Established pre-season conditioning protocol for Women's Gymnastics, which reduced major injuries by 60%. Supervised Athletic Substance Abuse Program and drug testing. Prepared yearly fiscal budget and inventory. Instructed all levels of undergraduate studies within the Human Kinetics Department. Enhanced adaptive physical education program for physically impaired students. Instructed sports medicine and student athletic trainers' apprenticeship program. Coordinated and arranged health services with 8 specialized team physicians.

1988-1989 Channelview High School Channelview, TX
Head Athletic Trainer/ Instructor

Coordinated all areas of athletic training for both men's and women's interscholastic athletics programs.

1986-1988 Western New Mexico University Silver City, NM
Head Athletic Trainer

Administered athletic training program for eight NAIA

intercollegiate programs. Developed student trainers' apprenticeship program. Developed, designed and implemented one of the first substance abuse educational programs in the Rocky Mountain Athletic Conference. Computerized training facility to ensure quality medical records. Developed computer program to determine injury rate, time loss, and severity of injury in football, which helped to determine needed changes in post-, pre- and off-season conditioning. Worked to establish a general student health program with local medical clinic. Created an expanded contrast and exercise program for baseball pitchers. Assisted in research grant to determine statistical differences in V02/CG2 consumption with varying treadmill protocols. Prepared annual fiscal budgets and administered athletic insurance claims. Also served as Assistant Baseball Coach.

ADDITIONAL PROFESSIONAL ACTIVITIES

National Institute of Preventive Medicine, Faculty Member (1997-present)
Lecturer for Sports Medicine Issues

Presenter, University-Wide Graduate Research Exchange, SHSU, April 29, 1998

Topic: "Mentoring in Athletic Training: An exploratory study"

Presenter, Interunibersidad Conferencia para Lideres, Puebla, Mexico, June 1998

Topic: "Mentoring in Athletic Training: An exploratory study"

PROFESSIONAL MEMBERSHIPS

National Athletic Trainers' Association

Texas State Athletic Trainers' Society
Southwest Athletic Trainers' Association

ACCREDITATIONS

Athletic Trainer, Certified (1990)

Texas State License (1986)

REFERENCES

Available Upon Request