DISSERTATION

ATHLETIC TRAINING INSTRUCTORS: A NEEDS ASSESSMENT OF TEACHING METHODOLOGY KNOWLEDGE AND SELF-PERCEIVED COMPETENCE

Submitted by

Debbie I. Craig

School of Education

In partial fulfillment of the requirements

for the Degree of Doctorate of Philosophy

Colorado State University

Fort Collins, Colorado

Fall 2002

UMI Number: 3075348

UMI Microform 3075348

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

COLORADO STATE UNIVERSITY

October 31, 2002

We hereby recommend that the dissertation prepared under our supervision by Debbie I. Craig entitled, *Athletic Training Instructors: A Needs Assessment of Teaching Methodology Knowledge and Self-Perceived Competence*, be accepted as fulfilling in part requirements for the degree of Doctorate of Philosophy.

Committee:

Dr. Ann Foster

Dr. Richard G. Israel

Dr. Angie Paccione

Advisor – Dr. Brian Cobb

Director, School of Education – Dr. Rick Ginsberg

ABSTRACT OF DISSERTATION

ATHLETIC TRAINING INSTRUCTORS: A NEEDS ASSESSMENT OF TEACHING METHODOLOGY KNOWLEDGE AND SELF-PERCEIVED COMPETENCE

The purpose of this research study was to assess the need for formal instruction in teaching methodology for certified athletic trainers with master's degrees who are or will be teaching in Athletic Training Education Programs (ATEP). The objectives were to assess the current status of teaching backgrounds, teaching methodology knowledge and self-perceived competence of ATEP instructors. The gap score, found between the knowledge and self-perceived competence scores, was used as the measure of need.

This was a quantitative design utilizing a discrepancy needs assessment model. A web-based survey was used to gather data. The population studied was current National Athletic Trainer's Association (NATA) certified members in the US who had their master's degree and were working in a college/university setting. The instrument further defined the study population to those who were currently teaching in an approved or accredited ATEP. The items measured were each participants' educational and instructional background, their knowledge of teaching methodology on 20 constructs, their self-perceived competence on those same 20 constructs, and any comments they had to share.

The results of the study revealed that the participants with lower gap scores generally had less previous instruction in teaching methodology, lower knowledge scores, and were less likely to pursue future instruction in teaching methodology. Those with

more instruction had more knowledge and perceived a larger gap between their knowledge and competence scores on the 20 teaching methodology constructs measured.

Neither amount of previous instruction in teaching methodology or how long the participants had been teaching significantly influenced self-perceived competence scores. Of the eight types of teaching methodology instruction presented, taking an undergraduate course in teaching methodology and the use of structured mentoring significantly predicted self-perceived competence scores.

Those with more teaching methodology knowledge having higher gap scores was a surprise from the data. Due to this finding, the need established was not simply to impart teaching methodology knowledge to those lacking, but to first impart the complexities of teaching methodology and pedagogy. Once these complexities are understood, instruction in teaching methodology could begin. The data gathered provides previously unmeasured information about ATEP instructors across the nation.

Debbie I. Craig
School of Education
Colorado State University
Fort Collins, CO 80523
Fall 2002

ACKNOWLEDGEMENTS

Dr. Brian Cobb, my advisor, and my committee, **Dr. Ann Foster, Dr. Richard G. Israel, and Dr. Angie Paccione**, who provided invaluable expertise and guidance through the entire project.

Dr. Carole Makela, who provided expertise and guidance in detail on the first three chapters.

Dr. Robert Richburg, who inspired my own teaching to reach far beyond the 20 constructs presented here!

Jay Brown, who provided the technical expertise in designing the web-based survey.

The NATA, for providing the participant list and the service of distributing the survey cover letter.

DEDICATION

This is dedicated to my parents, Ray and Ann Craig, to my sister, Michelle, and her family, and to my little brother, Big Matt, for their ever-present and immeasurable support, not only through this challenge, but throughout my entire life.

Also, to all of my friends who graciously lent an ear and a shoulder when I needed them with all of my growing pains through the length of my doctoral process. And lastly, to my dear friend Tom Cavanaugh, who was inexhaustibly there for support, encouragement, and friendship throughout our program together.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

The profession of Athletic Training has been in existence for as long as there have been sports and athletes. Athletic trainers provide for the prevention of athletic injuries, immediate care for injuries, evaluation of athletic injuries, and rehabilitation programs. They are responsible for managing their client's experience with an athletic injury from the moment of the injury to the client's return to full participation. This includes, for example, managing referrals to medical specialists, counseling through the psychological aspects of injury, and communicating with all involved parties, such as parents, administrators, coaches, and physicians.

The national governing body for the profession is the National Athletic Trainer's Association (NATA). It has been in existence for over 50 years and is responsible for advancing the profession from water-boy and taping specialist to an Allied Health Profession with international recognition. The mission of the NATA is:

> ...to enhance the quality of health care for athletes and those engaged in physical activity, and to advance the profession of athletic training through education and research in the prevention, evaluation, management and rehabilitation of injuries (NATA, 2002).

The NATA is the only nationally recognized professional organization for athletic trainers. It has been extremely proactive in getting legislation passed and creating professional alliances for the profession to gain more recognition in the medical community.

The NATA is responsible for all athletic training educational programs and formal certification of athletic trainers in the nation. It approves the educational

programs, both undergraduate and graduate, by authenticating their having met the requirements set forth by the NATA for athletic training educational programs.

For a person to become an athletic trainer, s/he must meet three criteria and pass the NATA national certification examination. The three criteria are to:

1. complete coursework in 14 subject areas
2. complete 1,500 hours of clinical work in an athletic training setting, and
3. have or be in the last semester of obtaining a bachelor's degree.

S/he may achieve the criteria through one of two routes: the internship route, which provides all of the necessary criteria but is not recognized by the NATA as an official program; or the curriculum/accredited route, which provides all of the necessary criteria and is approved by the NATA. Once these criteria have been documented by the individual and approved by the NATA, the individual is allowed to take the national certification exam. Upon the successful completion of this exam, the individual becomes an Athletic Trainer - Certified (ATC) and is employable as a professional athletic trainer. This certification is recognized internationally. To keep this certified status, the ATC must complete 80 continuing education units (CEUs) every three years.

As with many other health professions, the norm in the past two decades has been that entry-level positions were awarded to those with a specific certification–in this case, the ATC. More recently, however, it has become common for entry-level positions to be awarded to ATCs who also hold a master's degree. Concurrently, the NATA has changed the educational criteria for undergraduates to become eligible to take the certification exam. As of January 2004, the only route to certification will be through a Commission for Accreditation of Allied Health Education Programs (CAAHEP)

accredited undergraduate program in athletic training. Programs must apply for accreditation through CAAHEP, an outside agency associated with the American Medical Association, which the NATA commissioned for this purpose. Thus, the NATA will have one standardized route to certification.

There are currently 167 accredited undergraduate programs nationally. Some states may have only one such program. Completion of an accredited program will replace the three criteria listed earlier (coursework, hours, bachelor's degree) as the means for qualifying a student to take the national certification exam. Upon completion of an accredited program, the students will be qualified to take the NATA certification exam.

To become accredited by CAAHEP, a program must complete a two-year application process, including a self-study and site visits by an accreditation team. CAAHEP provides the *Standards and Guidelines for Accreditation* that each program must meet. These guidelines delineate curriculum, faculty, facility and budget requirements. Addressed in the curriculum requirements are 12 competencies developed by the NATA that must be included in each program (Table 1). Once accredited, a program must submit an annual report to CAAHEP. The program is then re-accredited every five years.

As the NATA has increased the requirements for their undergraduate programs, they have made fewer changes to their graduate programs. Each of the 13 graduate programs in the nation create their own curriculum with a high degree of flexibility allowed by the NATA. These programs are not accredited by an outside agency, but rather are approved by the NATA Graduate Programs Committee (GPC). They are

approved by the GPC upon meeting the recently established *Standards and Guidelines for Post-Certification Graduate Athletic Training Programs* (April, 2000; Appendix A). A number of graduates from these programs take jobs as athletic training instructors and clinicians in undergraduate athletic training education programs.

Table 1

NATA Educational Competencies for Undergraduate Athletic Training Programs

1. Risk Management and Injury Prevention
2. Pathology of Injuries and Illnesses
3. Assessment and Evaluation
4. Acute Care of Injury and Illness
5. Pharmacology
6. Therapeutic Modalities
7. Therapeutic Exercise
8. General Medical Conditions and Disabilities
9. Nutritional Aspects of Injury and Illness
10. Psychosocial Intervention and Referral
11. Health Care Administration
12. Professional Development and Responsibilities

Note. National Athletic Trainer's Association (1999).

Due to the NATA change requiring all undergraduate programs to be accredited by January 2004, many new programs are applying for accreditation. In 1998, there were 82 accredited undergraduate programs (Delforge & Behnke, 1999). As of April 2002, four years later, there were 165 accredited undergraduate programs (NATA, 2002). Each of these programs employs ATC-MSs with teaching responsibilities. Thus, there is and will continue to be an increasing demand for athletic training instructors. It follows that an increased emphasis on teaching methodology knowledge be included in graduate curriculums to prepare students for this increasing job responsibility demand. Yet, at the

time of this study, only one of the 13 graduate programs listed a teaching methodology course as an elective in their curriculum.

Purpose of the Study

Clearly, the NATA is producing master's degree students with a wealth of athletic training knowledge, but with perhaps little to no formal training in how to teach most effectively. With teaching knowledge and experience becoming more in demand, one must ask the question of are we preparing our graduate level ATCs well enough to excel within this job responsibility? The purpose of this study is to assess the need for formal instruction in teaching methodology for ATCs with master's degrees who are or will be teaching in Athletic Training Educational Programs (ATEPs).

Research Questions

To assess this need, research questions to be addressed are:

1. What is the relationship between the scores of knowledge of teaching methodology and self-perceived competence that Athletic Training instructors have?
2. How do ATC-MSs that have had instruction in teaching methodology and those who have not compare on self-perceived competence?
3. How do ATC-MSs that have had instruction in teaching methodology and those who have not compare on knowledge of teaching methodology?
4. What is the relationship between the number of years teaching and self-perceived competence?
5. What is the relationship between when ATC-MSs had their first formal teaching assignment and their self-perceived competence?

6. What is the relationship between when ATC-MSs had their first formal teaching assignment and their knowledge of teaching methodology?
7. What is the relationship between how beneficial ATC-MSs feel it would be to take a professional development course in teaching methodology in the future and their self-perceived competence?
8. How do ATC-MSs that have received none, some and much instruction in teaching methodology compare on the gap score created by their knowledge of methodology and their self-perceived competence?
9. How do the three levels of ATC-MSs that currently have teaching responsibilities in accredited or NATA approved ATEPs compare on gap scores?
10. How do ATC-MSs' feelings of how beneficial additional instruction in teaching methodology would be compare on gap scores.
11. How do ATC-MSs' likelihood of taking a teaching methodology seminar compare on gap scores?
12. Is there a combination of the eight types of instruction in teaching methodology. that ATC-MSs may have gained their competency in (course in undergraduate program, course in graduate program, GTA, professional development seminar, structured mentoring, athletic training content knowledge, experience on the job, observing others) that predicts their self-perceived competence level better than any one type of instruction alone?

Need for the Study

With the NATA recently increasing its emphasis on improving both the quality of educational experiences and the number of CAAHEP accredited programs for undergraduate students, it follows that the demand for qualified instructors will increase. Thus, an emphasis should also be placed on the quality of education current and future ATEP instructors receive. Not only do ATEP instructors need to be knowledge experts in the field of athletic training, they must also be able to efficiently and effectively teach that knowledge. With the wealth of knowledge exploding around learning styles, brain-based learning, and teacher effectiveness, it would be prudent for instructors of undergraduate students to possess a basic understanding of the latest knowledge concerning these issues. It is my understanding that few graduates of athletic training master's degree programs have received instruction in teaching methodology. This issue is explored within this study.

Just as it is necessary for athletic training research to be carried out effectively to improve clinical practice, so is it necessary for teaching to be carried out effectively to improve clinical practice. Though an athletic trainer may be exceptional in one of the three constructs of practice, research, or teaching, it does not necessarily follow that they are exceptional in the other two.

A relationship to the field of medicine can be drawn, as illustrated by Stanford University's Lee Shulman, President of the Carnegie Foundation for the Advancement of Teaching, in an article by Lazerson, Wagener, & Shumanis (2000).

> The scholarship of teaching is not synonymous with 'excellent teaching'... nor will it be done by every professor-just as most medical doctors, however excellent they may be, are not expected to undertake research into their practice. A scholarship of teaching plays a role similar to that of clinical research, which

allows medical practice to improve (p. 18).

The minimal requirement for athletic training instructors currently is to have a minimum of one year of experience post-NATA certification. Some programs prefer those with a master's degree. It is commonly preferred for the curriculum director to possess a Ph.D. or Ed.D. ATEPs across the country differ greatly in the number and educational degrees of their faculty. Some programs employ only two instructors with master's degrees, while other programs employ four full-time Ph.D. faculty among others.

Currently, there have been no documented research efforts to assess the state of teaching knowledge held by ATCs with master's degrees. This study will delineate the state of teaching knowledge held and assess the need for more formal teaching methods instruction. Upon completion of this study, it is hoped that the NATA may use the results to either:

1. commend their member ATEP instructors,
2. implement a new guideline advising all graduate degree programs to provide for teaching methodology instruction in their curriculums, and/or,
3. encourage ATEP instructors to pursue further instruction in teaching methodology as necessary.

This study is performed in an effort to improve the educational experiences of all students in athletic training educational programs at all levels.

Definition of Terms

1. ATC – Athletic trainer, certified; denotes the individual has met the criteria to take the NATA national certification exam, has passed that exam, and has maintained certification.

2. ATC-MS – A certified athletic trainer with a master's degree.

3. NATA – National Athletic Trainer's Association.

4. CAAHEP – Commission for Accreditation of Allied Health Education Programs; formerly a division of the American Medical Association; now an independent accrediting agency.

5. Clinical Instructor – An instructor in an athletic training undergraduate program who educates students in the athletic training room, clinic, or laboratory setting.

6. Classroom Instructor – An instructor in an athletic training undergraduate program who educates students in the classroom setting.

7. Teaching methodology course – A course on general teaching methods.

8. Teaching experience – implies formal teaching of students - whether it be children or adults, public or private institution, K-12 or higher education, classroom or clinical instruction, graduate teaching assistantship or full-time instructor.

Assumptions

There were several assumptions made in performing this study. The researcher assumed that the list of NATA members was complete and up to date; that a majority of the institutions prefer their instructors to have a master's degree; that there may not be a

common base of preparation for teaching in athletic training instructors nationally; and that the population under study has sufficient access to the internet.

Delimitations

The survey was sent to all certified members of the NATA, nationwide, who possessed a graduate degree and were working in a college/university setting. Therefore, the results were more easily generalized and included a large cross-section of demographics. Those members who did not have access to email and the internet were not able to participate in the study, as the instrument was administered via an on-line survey.

Researcher's Perspective

When I graduated from my master's degree program in athletic training, I had no teaching methodology background and no formal teaching experience. During my first job after graduation, I was assigned to teach four classes, having never previously even designed a course syllabus. I had an extremely high level of anxiety associated with this new task of teaching. I was very proficient at running an athletic training room, but the whole world of formal teaching was foreign to me. After taking several courses in education 12 years later, I realize the extreme lack of knowledge in teaching methodology that I possessed. My assumption is that my story is typical and there are others like me graduating from master's degree programs without any formal instruction in teaching methodology and experiencing a high degree of anxiety during their first formal teaching assignment. This is not an optimal situation for the students.

CHAPTER 2: LITERATURE REVIEW

This chapter includes a review of the relevant literature for the purposes of this study. To begin, a history of athletic training education and the profession of athletic training is provided. This is followed by a summary of the literature around effective teaching. Third, the educational standards that athletic training and related health care professions use, in regard to preparing future teachers for teaching, will be presented. Fourth, review of related athletic training research specifically associated with teaching is provided. And last, the methodological theory behind the study is reviewed.

History of Athletic Training Education

The histories of the profession of athletic training, of the national organization for athletic training (NATA), and of athletic training education are intimately connected. These histories will be described chronologically. This section illustrates the growth and development of athletic training education and athletic training in general.

The beginnings of athletic training. The actual beginning of the profession of athletic training is unknown. As long as sports have been played, there have been athletic injuries. It could be argued that the people who provided the initial care for those athletic injuries were the "forefathers" of the profession of athletic training. It is not known when the first position with the title of "Athletic Trainer" was established, whether as a volunteer or paid position.

History of athletic training education and the NATA. The NATA was founded in 1950, with their mission statement, "... to build and strengthen the profession of athletic

training through the exchange of ideas, knowledge and methods of athletic training" (Delforge & Behnke, 1999, p. 53). In 1956, under the direction of William Newell, the Committee on Gaining Recognition (later to become known as the NATA Professional Education Committee) focused its efforts on two challenges – to develop athletic training education and the national certification of athletic trainers. In 1959, the first curriculum framework was established and adopted by the NATA.

The next 10 years were a period of slow growth for athletic training education. It was not until 1969, that the NATA recognized the first official undergraduate athletic training education programs. Also, in 1969, the Committee on Gaining Recognition was divided into two new committees – the Professional Education Committee (PEC) and the Certification Committee. This allowed focus by separate committees on the two challenges delineated by Newell 13 years earlier. One year later (1970), the first national certification examination was administered by the NATA Certification Committee.

Through the 1970s and early 1980s, rapid growth of athletic training education programs occurred. Beginning with the initial four programs approved in 1969, the number of approved undergraduate programs grew to 62 by 1982. This period also saw NATA approval of the first graduate athletic training education program in 1972, followed by approval of eight more programs by 1982 (Delforge & Benhke, 1999). The NATA revised its approved undergraduate curriculum in the mid-1970s to reflect the specific demands of athletic training, versus the 1959 curriculum which was more parallel with physical therapy curriculums. The 1970s marked the first published *Guidelines for Development and Implementation of NATA Approved Athletic Training Education Programs* at both the undergraduate and graduate levels.

The main focus of the NATA Professional Education Committee in the 1980s was to create athletic training programs as academic majors. In 1982, the NATA-PEC approved a plan that required all approved undergraduate athletic training programs to be in the process of transforming into official athletic training academic majors by July 1, 1986. This deadline was later extended to July 1, 1990. The PEC continued to develop the components of an athletic training major, culminating in the new *Guidelines for Development and Implementation of NATA Approved Undergraduate Athletic Training Education Programs,* published in June of 1983. This publication included a revised curriculum framework.

The 1990s were a period of professional recognition of athletic training as an allied health profession. The American Medical Association (AMA) officially recognized athletic training as an allied health profession in 1990. This was a major step forward for the professionalization of athletic training. This recognition required the development of an accreditation process for the athletic training educational programs. By 1991, the *Essentials and Guidelines for an Accredited Educational Program for the Athletic Trainer* was approved by the AMA Council on Medical Education. This marked the first time in the history of the NATA that its educational programs were approved by an outside agency.

In 1994, the AMA Committee on Allied Health Education and Accreditation (CAHEA) accredited the first two undergraduate athletic training education programs. Later that year, the CAHEA was replaced by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), which is the current accrediting body of athletic training education programs. CAAHEP is no longer a division of the AMA, but an

independent accrediting agency recognized by the AMA. The number of CAAHEP accredited programs grew from two in 1994 to 82 by 1998. Also, in 1994, the Educational Task Force was formed to review all aspects of athletic training education, including undergraduate, graduate, and continuing education requirements.

It was encouraged, though not required, that all undergraduate athletic training education programs become accredited. Thus, there were two routes to certification for undergraduate students. Through the "curriculum" route, students attended an approved undergraduate program and automatically qualified to take the national certification exam upon graduation. Through the "internship" route, students needed to document completed coursework in 14 content areas, completion of 1,500 hours of athletic training fieldwork, and have a bachelor's degree or be in the last semester of doing so before they could qualify to take the national certification exam.

In 1996, the NATA Education Task Force recommended and gained approval from the NATA Board of Directors to make a change in athletic training educational processes that would, "...standardize athletic training education and enhance consistency with professional preparation in other allied health disciplines" (Delforge & Behnke, 1999, p. 60). This change proposed that by January 2004, the only route to athletic trainer certification would be through a CAAHEP accredited program, thus eliminating the internship route to certification. This recommendation was one of 18 recommendations made by the Task Force to the NATA, all of which were approved. Some of the recommendations included forming the Education Council to implement the recommendations made by the Task Force and to maintain approval of the graduate athletic training programs with the NATA. As a result, in 1997, the Education Council

developed and published the new *Standards and Guidelines for the Development and Implementation of NATA Accredited Graduate Athletic Training Education Programs.*

Later in 1997, the NATA created the World Federation of Athletic Training Task Force to explore what an international education system for athletic training may include. In creating this task force, the NATA effectively positioned itself in a leadership role to further progress athletic training education around the world. In 1998, the Professional Education Committee was disbanded and its responsibilities handed to the Education Council. In 1999, the revised *Competencies in Athletic Training* was published. These competencies thoroughly delineated what accredited undergraduate athletic training programs were required to include in their curriculums. The competencies were intended to prepare the student for professional employment upon passing the certification exam in any of 20 settings (Table 2). This table provides a representation of the ATC distribution among job settings currently available to ATCs (NATA, 2002).

This has been a brief summary of the history of the NATA and more specifically of athletic training education. Currently, a major focus within the NATA is to assist colleges/universities in the CAAHEP accreditation process as the January 2004 deadline draws near. With this history presented, the focus will now turn to teaching.

Effective Teaching

In this section, four constructs will be explored. First, a definition of what knowledge of teaching methodology encompasses will be presented. Secondly, a discussion of effective (quality) teaching will occur. Third is a presentation of alternatives (other than taking a course in teaching methodology) to enhancing teacher

effectiveness. Last, the question of whether one course in teaching methodology can make a difference in effective teaching is addressed.

Table 2

Distribution of NATA Certified Athletic Trainers by Job Setting (NATA, March 2002).

Job Setting	**Number of ATCs**
No job setting	229
Clinical	4330
Clinical/Industrial	193
Corporate	302
College student	2241
High school/Clinic	3102
Hospital	1034
High school	4065
Industrial	166
Junior college	344
Other professional	1311
Pro basketball	80
Pro football	147
Pro golf	15
Pro hockey	137
Pro soccer	50
Pro tennis	12
Pro baseball	275
University/College	4271
Unemployed	241
Total	**22,544**

Knowledge of teaching methodology. A working definition of pedagogical knowledge is that it is the most coherent, effective and understandable way to present information to students. The presentation of several knowledge base frameworks has resulted in efforts to define what this pedagogical knowledge base should include. "The professionalization of teaching depends on showing that teaching requires mastery of a specialized body of knowledge that is applied ethically" (Strom, 1991, p. 1).

There are several frameworks built around what is or should be included in basic pedagogical knowledge. One of the more comprehensive frameworks (Johnson, 1995) suggests nine content areas of teaching knowledge to include:

1. *determining teaching objectives* – including specificity of objectives; clarity of terminology; addressing cognitive, affective and psychomotor domains;
2. *syllabus development and textbook selection* – including a list of syllabus components; a checklist for evaluating textbooks;
3. *managing the first days of class* – including establishing class atmosphere; determining students' learning styles; selecting instructional strategies based on learning styles;
4. *effective lectures* – including preparation; establishing rapport; liveliness; delivery;
5. *alternative teaching techniques* – including discussion; cooperative learning; individualized methods;
6. *utilizing class discussions;*
7. *additional instructional approaches* – including case studies; simulations; field trips; individualized mastery learning; laboratory methods;
8. *term papers, oral reports, and use of instructional methods;* and,
9. *student evaluation* – including prerequisite testing, norm-referenced testing, criterion-referenced testing; test construction; test administration; grading.

A similar framework includes the above knowledge base and expands upon it with the addition of knowledge of technology, copyright laws and skills in motivating students (Nilson, 1998). This was the most comprehensive framework researched.

One framework of what knowledge of teaching should entail within the education of health professionals is similar to Johnson's framework, but specific to adult learners (Clymer, 1996). The content areas included are adult learning principles/needs/barriers, development of course content, student learning preferences, teaching styles, instructional alternatives, implementation plans, classroom environment, outcomes, and evaluation plans.

Finally, two frameworks that were nearly identical in their definition of what should be included in pedagogical knowledge were those of Pregent (1994) and of Miller and Miller (1999). These frameworks included the content areas suggested by Johnson (1995) with the exception of classroom management strategies and establishing classroom environment. In addition to the content areas similar to Johnson (1995), they both included knowledge and use of technology in the classroom. To aid in conceptualizing these different frameworks, a table was created (Table 3). As one can see, the knowledge areas that all five authors agree upon are determining teaching objectives, assessing student learning styles, teaching methods, alternative teaching methods, and student evaluation and grading procedures.

Effective/quality teaching. Effective teaching is difficult to measure accurately, yet effective teachers have a major effect on students' futures. In reference specifically to college teachers, Jon Travis maintains that, "Faculty need to stop viewing college teaching as 'covering the content' and start viewing it as 'helping students learn'. To help faculty achieve such an instructional transformation, numerous faculty development programs and professionals promote the development of expertise in teaching" (1996, p.

1). Thus, effective teaching is not simply possessing knowledge of teaching methods, but applying that knowledge in the most effective way to facilitate student learning.

Table 3.
Comparison of Components of Pedagogical Knowledge from 5 Frameworks.

Knowledge Area	Johnson 1995	Nilson 1998	Clymer 1996	Pregent 1994	Miller & Miller, 1999
Determine objectives	●	●	●	●	●
Syllabus development	●	●		●	●
Classroom management	●	●			
Classroom environment	●	●	●	●	
Student learning styles	●	●	●	●	●
Teaching methods	●	●	●	●	●
Cognitive, affective, and psychomotor domains	●	●		●	●
Effective lectures	●	●		●	●
Discussion techniques	●	●		●	●
Cooperative learning	●	●		●	●
Alternative teaching methods	●	●	●	●	●
Student evaluation & grading	●	●	●	●	●
Term papers/oral presentations	●	●			
Adult learning principles			●		
Teaching styles			●		
Technology tools		●		●	●
Copyright laws		●			
Motivating students		●			

Ten practices that should be attended to are suggested in a guide for novice teachers on how to be effective in their craft (Fogarty, 2001). These practices are:

1. proactively seeking a mentor;
2. creating a climate that fosters growth and pride;
3. letting common sense rule the moment of decision;
4. being consistent and flexible;
5. clustering standards (competencies) into curriculum content;
6. mapping the course, then talking with an expert;
7. teaching the students, then coaching them;
8. tapping into the talents of each learner;
9. sharing criteria for success with students before they begin the task;
10. involving parents in the teaching and learning process (K-12).

This particular framework provides a description of some skills necessary for beginning teachers to master in order to be effective in their classrooms.

An important study on defining the characteristics of teacher effectiveness was a meta-analysis summarizing 15 years of research observations and studies about techniques and characteristics of effective teachers (Demmon-Berger, 1986). The characteristics identified were that effective teachers:

1. tend to be good managers;
2. use systematic instruction techniques;
3. have high expectations of students and themselves;
4. believe in their own efficacy;
5. vary teaching strategies;

6. handle discipline through prevention;
7. are caring;
8. are democratic in their approach;
9. are task-oriented;
10. are concerned with perceptual meanings rather than facts and events;
11. are comfortable interacting with others;
12. have a strong grasp of subject matter;
13. are accessible to students outside of class;
14. tailor teaching to student needs; and,
15. are flexible and imaginative.

Though this is an earlier study, these same tenets still resonate within the current literature. Some of the commonalities are employing a diversity of teaching methodologies, focusing on perceptual/conceptual meanings rather than memorization of facts, teaching to students' needs, and being creative, to name a few.

Upon reviewing teacher effectiveness in related health occupations, Shepard and Jensen (1997), physical therapists, state that there are four principles included in effective teaching: 1) deeply comprehending the information to be taught; 2) being able to transform and present information in a way that students can comprehend; 3) engaging students in active collaborative learning experiences; and 4) teaching students how to learn by constant inquiry and reflection, which in turn leads to students acquiring their own new knowledge and comprehensions. In the field of athletic training we are quite proficient at the first principle, but the latter three are suspect and likely vary greatly

across the profession. Further, the authors state that there are three major ingredients that must be present for good teaching and learning to occur:

1. Teachers must know keenly the topics they are teaching and ceaselessly engage in learning about them.
2. Teachers must know about the students they are teaching [in reference to their learning styles, skills, communication patterns, etc.].
3. Teachers must be acquainted with a number of different tools and techniques that can facilitate learning. The more one knows about these techniques, the more innovative and flexible one can be in providing learning experiences that match the student's quest (p. xxiv).

In reference to the education that athletic trainers are required to go through before they are allowed to take the national certification exam, and certainly to those that successfully pursue a master's degree in athletic training, the first ingredient listed is achieved. Those who pursue their master's degree certainly demonstrate ceaseless engagement in learning. Athletic trainers who have teaching experience and are good communicators or are intuitive about others may do well including the second ingredient in their teaching. It is the third ingredient that is suspected to be lacking in our profession, as there is only one master's degree program of 13 in the nation that provides for teaching methodology instruction in its curriculum, albeit as an elective.

Shepard and Jensen (1997) state, "Thoughtful teacher preparation can allow even the novice teacher the freedom to focus on student understanding and growth rather than lecture notes" (p.40). A teaching methodology course would teach preparation skills and include, among other things, teaching techniques, teaching tools, learning styles, and

instruction on evaluation and grading procedures. Without this knowledge, student learning and comprehension could be compromised.

One of the difficulties in studying this construct is the NATA requires both an academic and a clinical portion of instruction in their undergraduate programs. A majority of the research around student learning styles has been related to the clinical portion of athletic training instruction, rather than the classroom setting. The graduate of a master's degree program will likely be responsible for teaching in both of these settings. It would be prudent for teachers in these two settings to understand the different methodologies available and learning styles utilized most commonly by the students in each setting.

Ways to achieve effective teaching. There are certainly other ways to achieve effective teaching than taking a teaching methodology course. Some of those avenues are mentoring, graduate teaching assistantships, and professional development seminars, to name a few. Many approaches use a combination of these. In a study conducted in Pennsylvania, 729 faculty and chairpersons of health education programs were surveyed on the educational needs of current health occupations education teachers. The findings indicated that the participants' preferences in pathways to pursue further knowledge in teaching methodology included: 1) attending a professional education program on teacher education; 2) attending a graduate degree program on teacher education; 3) attaining teacher certification; and 4) attending an undergraduate degree program, in that order (Richards, 1988).

Some colleges that offer a variety of graduate programs may offer a non-discipline specific course or seminar on college teaching. These courses may be utilized

as professional development courses for those who already possess their master's degree or who simply wish to understand and improve their teaching skills specifically in adult, college settings. In speaking with Dr. Frank Vattano, Professor of Psychology at Colorado State University, and the instructor of one such seminar, he feels it intriguing that college teaching seems to be the only profession that has no formal preparation for its practice. In the syllabus for his graduate level course, Seminar on College Teaching, Dr. Vattano states:

> Professional development as an effective college teacher is indeed a lifelong process. There are many aspects to be learned about this process which no single course or seminar can ever completely uncover. There are, however, a number of pivotal elements which are essential to becoming effective as a college teacher which are independent of academic discipline. It is to these elements this seminar is directed (Vattano, 2002, p. 1).

Courses or seminars such as this may already be established within the institutions which we teach, making them an accessible source of professional development.

Efficacy of a teaching methods course. There is question of the efficacy of taking one teaching methodology course to improve teaching performance. Can it actually improve teaching? In a study of 350 student teachers who took a pre-service training course on effective instruction, the results were compelling. Findings indicated that student teachers who utilized the recommended instructional methods not only elicited more student engagement, but were rated higher by their supervisors (Veenman, 1993).

In a related study, a group of pre-service teachers took a physical education teaching methods course. Follow-up interviews, observations and written work showed that, "...they felt the development of pedagogical content knowledge was salient in learning to teach" (Rovegno, 1992, p. 79). The students linked inadequate pedagogical knowledge to problems with observing students and teaching, among other things. These

studies indicate that taking one course in teaching methodology may, indeed, improve teaching.

Educational Standards of Athletic Training / Related Health Care Professions

Athletic training is a unique and specialized field within the health care professions. Two of the most closely related professions include physical therapy, which entails rehabilitation of injuries and illnesses, and occupational therapy, which retrains people to return to their jobs and lives after significant injuries or illnesses. Currently, the educational program structure of each of the three professions (athletic training, physical therapy, and occupational therapy) is in transition nationally, as governed by their national associations. The following is an overview of how each profession addresses the issue of educating future college/university teachers in teaching methodology.

Athletic training. Undergraduate, or entry-level, athletic trainers are not educated in nor expected to become skilled in teaching methodology. They are educated to become competent clinicians or practitioners. A majority of the teaching positions in athletic training educational programs require master's degrees. Thus, a description of the master's level athletic training education is presented here.

The 13 graduate athletic training programs in the nation are accredited by the Graduate Review Committee (GRC) of the NATA (not by an outside agency, like CAAHEP, as with the undergraduate programs). Each program must adhere to the Principles of Athletic Training Graduate Education, as delineated in the *Standards and Guidelines for Post-Certification Graduate Athletic Training Education Programs* (NATA, 2000). The general principles are mastery of subject matter, critical thinking,

theoretical understanding, proficiency in research and/or creative activities, service orientation, and diverse representation of perspectives. Each program is required to address each principle within their curriculum and provide measurable student outcomes for each principle. The principles specific to athletic training are summarized in the following:

> Instruction in advanced skills and knowledges and the preparation of certified athletic trainers for leadership roles are considered to be the distinguishing characteristics of graduate education in athletic training. Advanced educational experiences designed to enhance the certified athletic trainer's ability to function in clinical, teaching, administrative, or research environments are considered to be essential components of the graduate athletic training education program. While minimal graduate courses and resource requirements are specified, flexibility and innovation in curricular development are encouraged (p. 4).

Thus, it is clear that the NATA-GRC seeks to allow a wide variety of design, content, and focus in each program. While these principles list proficiency in research as one of the four possible focuses, it is further stated that research is a standard each program must include in depth to become accredited (p. 6). Through the Standards and Guidelines, competency in clinical and research skills are required. Competency in teaching is an option. Currently, one of the 13 graduate programs includes an elective course in teaching methodology.

Physical therapy. In a discussion with Dr. Jody Gandy, the American Physical Therapy Association (APTA) Director of Physical Therapy Education, she stated that the structure of physical therapy education programs is in transition. Currently, entry-level programs begin at the master's degree level. The transition is to make the entry-level programs into clinical doctorate (DPT) programs. She did not report a date for all programs to comply with this transition goal (personal communication, March 4, 2002).

Within the master's programs, students are provided with information about teaching and learning theory and methods, learning styles, methods of presentation and their relevance to learning preferences, factors that influence successful learning, and adult versus child learning. Different programs include this content in different areas and use different methods. However, within the curriculum, students are not required to take any specific teaching methodology courses.

To gain teaching experience, students *may* be asked to apply teaching and learning theory and methods through various learning opportunities toward teaching content to peers on a specific assigned topic in class, by providing inservices to other physical therapists during clinical education in practice, and/or by providing patient/client education during treatment. Dr. Grady was sure to state that these opportunities were at the discretion of each individual school and faculty. There is no formal teaching requirement within the programs.

When asked how physical therapy faculty are educated in teaching methodology, Dr. Grady replied that master's graduates who are interested in teaching are encouraged to pursue a doctoral degree prior to entering a teaching position. There are post-professional programs (professional development programs) in physical therapy that provide focused opportunities to improve knowledge and skills in teaching within areas of practice expertise. The intent of these programs is to produce graduates who can become active members of the teaching community within a specialized area of expertise. Thus, the formal education of physical therapists does not require a specific course or competencies in teaching methodology. However, the content of each program does include information on teaching and learning theories.

Occupational therapy. A similar conversation was conducted with Frank Gainer, the American Occupational Therapy Association Academic Affairs and Education Program Manager (personal communication, March 4, 2002). The educational structure of occupational therapy programs is also in transition. As of January 1, 2007, all occupational therapy entry-level programs must be at the post-baccalaureate level (either master's or doctorate level). Therefore, all students who are currently in bachelor programs must complete their coursework and fieldwork by that date or enter a graduate program.

There are a number of post-professional (master's or doctorate) programs. Some of the programs have a specialty in teaching, but the majority are clinical based. Occupational therapy faculty are recruited from these post-professional programs. The majority of these faculty have doctorates that are not in occupational therapy, but in a related field. Depending on the specialty of the master's degree program, some students may take a teaching methodology course. However, much like the athletic training graduate programs, there is no standard requirement for programs to include this content.

Thus, neither physical therapy nor occupational therapy, two of the most related professions to athletic training, require teaching methodology coursework in their graduate educational programs. Both Dr. Grady and Mr. Gainer expressed interest in investigating this need further. As with athletic training, the main purpose of physical therapy and occupational therapy is to produce competent clinicians. Yet, with all three professions in transition to raise the bar within their educational programs, increased expectations for faculty include knowledge of teaching methodology and require teaching

experience, neither of which are consistently provided for within their respective graduate programs.

National agencies/associations. The Council of Graduate Schools (CGS), a national organization, serves as a forum for research and discussion on issues specific to graduate education. In speaking with Dr. Marta Drake, Director of Policy, Programs and Communication for the Council of Graduate Schools, there does not seem to be a trend in graduate programs to require coursework in teaching methodology. She felt that this issue was handled on an "ad-hoc" basis by departments (personal communication, March 13, 2002). She stated that some graduate programs require all of their students to take such a course, but she had not heard of any campus-wide requirements addressing the issue.

Within CGS, a program called Preparing Future Faculty was created to provide the framework for college/universities to provide the skills that graduate students need to be successful as faculty. These programs are student driven, have a faculty program director and readily utilize mentorship. Many colleges are already represented in CGS, with Preparing Future Faculty programs established. Those who are interested in this approach to professional development may contact the CGS directly for more information.

The American Association for Health Education (AAHE - not to be confused with the American Association for Higher Education) recently developed Health Education Graduate Standards. The purpose of these standards is to, "...stimulate future development of course work guidelines for graduate programs; integrate these standards into program accreditation; improve standardization of professional preparation

programs; and, possible multiple levels of individual professional certification" (Dennison, 1997, p. 68). The following are some of the competencies related to teaching that are required by the standards:

1. determine factors that influence learning and development
2. assess individual learning styles
3. assess the learning environment
4. design educational programs consistent with specified objectives
5. match learning activities with objectives
6. formulate a wide variety of alternative educational methods
7. apply individual or group process methods as appropriate
8. assess, select and apply technologies that will contribute to learning
9. evaluate the efficacy of alternative teaching methods
10. revise program activities and objectives as necessitated by changes in learner needs (p. 69-70).

These are only a few of the multiple competencies the framework includes as requirements for all students in health education graduate programs across the nation. This list is provided as an example of the diversity of topics that teachers confront in their classes daily and in their careers.

Review of Related Athletic Training Educational Research

The following is an overview of the most relevant literature relating athletic training and teacher effectiveness, the current status of athletic trainer job listings as to requiring teaching experience, and a concluding statement examining the scope of the research that supports a study of this nature.

Teacher effectiveness studies in athletic training. Teacher effectiveness of undergraduate athletic training clinical instructors has been studied utilizing various methodologies. One study found that athletic training clinical instruction is positively influenced by the experience level of the instructor (Stemmans, 1998).

> By comparing behaviors among these groups [novice, intermediate and advanced clinical instructors], increased experience was directly correlated with student athletic trainer use of screening evaluation techniques. The data suggests that advanced clinical instructors allow student athletic trainers the most frequent amount of hands-on screening and evaluation time, while novice clinical instructors allow the least (p. 52).

The importance of this study is that it illustrates the teaching effectiveness differences between new and more experienced athletic training instructors. Though this is not ground-breaking knowledge, it has implications to whether we should better prepare new teachers if, indeed, they are not as effective as they could or should be. This is not to say that better preparation and increased experience are the same. But rather, novice teachers who do not have experience may begin at a more competent level with better preparation.

In a presentation by Moul (1997), six domains of knowledge needed specifically by athletic training clinical instructors were identified. These domains were knowledge of:

1. athletic training,
2. athletes,
3. learners,
4. general teaching principles,
5. context, and
6. case based teaching scripts (p. 73).

Certified athletic trainers are certainly versed in the first two domains, but may be less knowledgeable about learning styles of students, teaching methodology, how to orient lessons within a context, and how to most effectively use cases within a lesson. As more research is being produced about brain-based learning (or the neuro-physiological ways that we learn at the cellular level), teaching styles and philosophies will likely change. It would be prudent to keep up with this research and how it may affect the last four domains listed above.

Another study evaluated the relationship between leadership skills and clinical teaching effectiveness of athletic training clinical instructors (Platt, 2000). Through a survey instrument administered to both students and instructors, it was found that the five leadership variables studied (professional attitudes, characteristics of effective leaders, communication skills, teaching abilities and attitudes, and personal attributes) collectively, predicted teacher effectiveness. However, when the relationship among years of clinical teaching, taking courses in teaching methodology and/or leadership studies, and the five leadership variables was studied through simple linear regression, no variables were statistically significant. This suggests that there is little if any relationship between leadership and the two constructs of years of clinical teaching and taking courses in teaching methodology and/or leadership. Two limitations of this study were a small sample size (clinical instructors, N=38) and that courses in teaching methodology and leadership were combined into one variable.

The influence of teacher preparation on clinical teaching activities and opinions of clinical instructors in the athletic training setting were studied by Foster and Leslie (1992). A survey was sent to 197 certified athletic trainers. The results indicated that

clinical educators who have teaching degrees are more effective teachers in the clinical education setting. Further, ATCs with master's degrees demonstrated broader teaching activities than did ATCs with bachelor's degrees. The conclusions of the study were that teacher preparation and post-baccalaureate education were both desirable qualities when determining who to assign as clinical instructors (Foster & Leslie, 1992).

The Foster and Leslie study suggests two points: that instruction in teaching methodology improves teacher effectiveness and that holding a master's degree creates more effective teachers. The first point appears rather obvious. The second point, however, warrants further investigation. Does holding a master's degree in a related profession create more effective athletic training instructors? Of the two, taking a teaching methodology course or holding a master's degree, which is more influential for teacher effectiveness?

It is important to note that each of these studies address only clinical instruction. While this is valuable, equally important is classroom instruction, which has rarely been studied in the athletic training setting. Many teaching methodologies and learning styles are common in both settings, but not all. The concepts and theories discussed in classroom settings lay the groundwork for developing skills and decision-making competence in the clinical setting.

Making a distinction between clinical and classroom settings is necessary, as illustrated by a study of undergraduate athletic training students' learning styles in the classroom compared to the clinical setting. The study concluded that,

> ...learning styles do indeed shift, depending on the domain through which an individual is learning. Consequently, teaching strategies incorporated in 1 setting may not be equally effective in the other setting. Each learning setting should,

> therefore, be treated separately in order to accommodate individual learning styles and maximize learning achievement (Coker, 2000, p. 441).

In a study by Mensch and Ennis (2001), the focus was to determine to what extent theories of teaching and learning and achievement motivation were reflected in CAAHEP standards and guidelines, course syllabi in the programs, and student and instructor interviews. The sample consisted of students (N=21) and instructors (N=12) from five CAAHEP accredited undergraduate athletic training programs. The results found that three pedagogical strategies – use of scenarios and case studies, authentic experiences, and establishing positive relationships - were acknowledged as positively influencing students' learning and motivation in these programs. The conclusions of the study were that both students and instructors recognize and value some specific theories of teaching and learning and achievement motivation in their programs.

Athletic trainer job listings. The NATA web site is the major source of job listings for positions in athletic training settings across the nation. Employers may post an opening with a full description of the position and contact information. NATA members may access the job listings site with a password. This site was visited once per month for three months as a means of both literature review and data collection for this study.

The job listings were treated as part of the literature review to provide a general overview of the current status of athletic training jobs requiring teaching experience. The first site visit in February 2002, revealed that 41 of the 287 postings listed under "College: staff/faculty full-time", including Graduate Assistant (GA) positions, required a master's degree. Of the 41 positions, 25 also required teaching experience. Similar numbers were found in the second site visit in March 2002: of 314 postings listed under

"College: staff/faculty full-time", including GA positions, 46 required a master's degree and 28 of those positions also required teaching experience (NATA, 2002).

The third site visit in April 2002, was more in depth. A search of "College: staff/faculty full-time" listings was performed *without* the GA positions. There were a total of 72 postings (Table 4).

Table 4

NATA Web-Site Job Postings for College Staff/Faculty Full-Time

Job Description	**Number Of Jobs**	**Percentage Of Jobs**
Require ATC only	20	27.8%
Require MS; no teaching experience; no teaching responsibilities with job	12	16.7%
Require MS; no teaching experience; teaching responsibilities with job	15	20.8%
Require MS; teaching experience; teaching responsibilities with job	18	25.0%
Require PhD	7	9.7%
Total postings	**72**	**100.0%**
Total requiring MS	**45**	**62.5%**
Total requiring teaching responsibilities with job	**33**	**45.8%**

Note. NATA, April 11, 2002.

Some interesting aspects illustrated by this table are worth pointing out. Some jobs require the employee to teach, but do not require any teaching experience. Nearly half (45.8%) of the jobs posted had teaching responsibilities associated with the job. Of the jobs requiring a master's degree, 73.3% of those (33 out of 45) had teaching responsibilities associated with the job. One-quarter of the jobs in the college setting

(where accredited undergraduate programs are housed) require an ATC-MS with both teaching experience and teaching responsibilities with the job.

This review of the NATA web site job listings illustrates the growth in demand for athletic trainers with master's degrees to fill jobs requiring teaching responsibilities. With roughly 73% of the available jobs having teaching responsibilities associated with them, this snapshot illustrates the need to assess the teaching competency of ATC-MSs who will fill these jobs.

Gap in research. A review of the literature has revealed that there has been no research undertaken to directly study the teaching methodology knowledge and competence of ATEP instructors. There have been several related studies of how learning styles of undergraduates in athletic training programs are best addressed. Yet, none of those look at the professional preparation of instructors in regard to their schooling. There have been no studies done to investigate the quality, thoroughness, and/or need for formal teaching preparation of athletic trainers with master's degrees.

Methodological Theory

The level of preparedness of ATC-MSs to teach in higher education is currently unstudied and unknown. It is the purpose of this research study to describe the level of preparedness to teach and assess the need for more substantial training in the education of ATC-MSs to increase this level of preparation. To this end, needs assessment theory, web-based survey issues, and the development of the survey instrument used for this study are now presented.

Needs assessment. Several definitions of needs assessment exist today. Glorioso (1991) presents one of the more concise definitions:

> A needs assessment is a systematic examination of identifying, documenting and justifying gaps in results of current job performance and a desired set of job skills by comparing what an employee should be doing in the assigned tasks to what actually is being done by incumbents of a position (p. 87).

Thus, a needs assessment is a systematic examination of current job performance and a desired set of job skills. It compares what an employee should be doing to what is actually being done. Stated differently, a needs assessment is the systematic search for details about the discrepancy between "optimals" and "actuals" (Rossett, 1989).

Needs assessments are performed to gather information that instructional designers desire or need to make sound decisions. The method for determining needs or problems generally has four steps (Kimpston & Stockton, 1979):

1. generate goals or determine the desired conditions;
2. determine the present status of each goal or existing conditions;
3. identify and analyze discrepancies between the goals and present status; and
4. assign priorities to the discrepancies (i.e., needs).

High priority should be assigned to what people see as most critically needed.

Gent and Dell'Omo (1989) propose a three-step model of needs assessment. First, a perceived performance discrepancy is acknowledged. Second, a determination of what is causing the performance problem is identified. Last, whether training is a plausible solution must be determined. An identified discrepancy may be due to organizational environment factors not amenable to training, such as deficits in supervision or in resources for doing a job, poor employee interaction, or ineffective communication processes. The cause of the problem should be identified and an appropriate blend of solutions recommended (Rossett, 1989).

According to Rossett (1991), the four most important issues causing gaps between what employees do and what they should do are a lack of skill or knowledge, a flawed incentive system, a flawed work environment, and insufficient motivation. Gaps may be due to a combination of any of these issues. A number of different solutions may be implemented to address the issues causing gaps and bring employees to optimal performance. "Whether it's training, job redesign or new incentives, the solution should match the problem" (Rossett, 1991, p. 4).

Gent and Dell'Omo state that one should determine exactly what is causing the problem or discrepancy. If the discrepancy is due to a skill or knowledge deficit, then training is a relevant solution. If not, then the problem may be due to other factors in the organizational environment and may require different solutions. Some changes may include modifying organizational structure, job duties, supervisory practices, performance appraisal and feedback systems, resources, or organizational climate.

"A discrepancy model of needs assessment defines what successful continuing medical education is and what it should be" (Moore, 1998, p. 133). Careful assessment of educational needs "is the first step in developing [educational] interventions that are relevant" (Queeney, 1995, p. 199). The author states that because needs assessment results are often imprecise, they rarely point with any certainty toward specific action. They can, however, provide guidance for decisions. With proper development, implementation and interpretation, the results may inform decisions in the context of the larger program planning process. "Continuing educators should plan needs assessments and review the data they collect with an eye toward matching the data to the strengths, resources, and mission of their organization" (p. 199).

Needs assessment data will provide information that points to knowledge, skill or performance ability discrepancies. Through careful interpretation, "educators can integrate the data with relevant information from other sources and translate the resultant information into a description of educational needs" (p. 201). No matter how great the need for an educational activity may be, people are not easily persuaded to participate in it "if it is not compatible with their scheduling needs, learning styles and interests" (p. 200). Thus, a concerted effort should be made to tailor the solution to the desires and needs of the population under study.

Web-based surveys. Web-based surveys are not appropriate for all studies. Researchers should be aware of the instances where its use is appropriate and where it is not. This method of survey research has some "kinks" and is still evolving (Weissbach, 1997).

The most common format, currently, for web-based surveys is to contact the participants via an e-mail message as the cover letter, include a link in the e-mail to the survey web-site that the participant may simply click on to get to the survey, and design the program so that the responses load directly into a database when the respondent clicks on the final submit button (Solomon, 2001). Other forms of on-line surveys include e-mail questionnaires and disk-by-mail surveys. The disadvantages of e-mail questionnaires are the difficulty in assuring anonymity and having to input data by hand. The disadvantages of disk-by-mail surveys are mostly the cost and time associated with this method.

There are several advantages of using web-based surveys. The most obvious is the reduced amount of time it takes from when the survey is sent to when it is received.

Also obvious is the reduced cost by avoiding the expenditures of using the US Postal Service or telephone costs. There is reduced error from data entry – which is especially helpful with larger samples (Zhang, 2000). Use of an error checking and correction feature alerts the participant to missing or incorrect data and allows them to correct the problem before submitting the survey (Solomon, Johnson, Searcy, & Lott, 2001). As the respondent answers questions, the program can adjust upcoming questions based on earlier answers (Watt, 1997). If a problem is discovered with the survey, it is easily modified at any point in time. And lastly, other multi-media may be utilized in the survey, such as video, audio, graphics, etc. (Watt, 1997).

There are also several disadvantages of using web-based surveys. The most common concern is that of a biased sample or biased return (Solomon, 2001; Solomon, et al, 2001; Watt, 1997; and Weissbach, 1997). Solomon cautions that, "This form of survey research must be used with the utmost of scrutiny in order to avoid sample bias" (2001, p. 2). This issue is concerned with the population or sample demographics of the study. A web-based survey should only be used when all participants have equal access to the internet and when those participants are representative of the total population under study. For example, if a study is concerned with the varying socioeconomic status of its participants, web-based surveying would be contraindicated, as those participants with lower SES may not have ready access to a computer or the internet. Thus, the results may be ungeneralizable and the exact amount of bias may be unknown (Weissbach, 1997). In addressing this issue, Solomon, et al (2001) and Watt (1997) suggested that studies using participants in the business sector or in higher education would be suitable populations for web-based survey research.

Other disadvantages are validity and representativeness issues, as the survey may reach unintended audiences, such as people "surfing" the web who happen upon the survey web-site. Some studies report slightly lower response rates than traditional mailed surveys and the response rate can be more difficult to assess (Solomon, 2001; Watt, 1997; and Zhang, 2000). The survey is machine dependent and may have more technology related problems. Some participants may not be comfortable with web-survey formats (i.e. – patience with loading times, scrolling, etc.). The internet format is less personal than mailed or telephone surveys. More expertise of the researcher is required if they create their own program/format. And lastly, there is some concern over anonymity and security issues (Weissbach, 1997).

Due to the seriousness of some of the above disadvantages, improvements have been sought (Solomon, et al, 2001). One of the newer innovations is the use of a password. In the initial cover letter via e-mail, a password is given to the participant before they click on the link to get to the survey web-site. Once they click on the link, they do not go directly to the survey, but to a password screen first, where they must enter the appropriate password in order to open the survey. This mechanism controls for sampling error of unintended audiences. A second innovation is the use of encryption to ensure confidentiality. And a third innovation is to program a function into the survey that does not allow the participant to respond multiple times. Once the "submit" button is clicked, the participant is essentially locked-out of returning to the survey web-site.

To help raise response rates, Solomon, et al (2001) suggest four steps:

1. use a plain survey that takes less time to download and complete;
2. pay very close attention to your first question;

3. do *not* use complex grids; and,
4. do *not* request e-mail addresses.

Each of these suggestions is easily accomplished and may help to increase response rates. The researcher should make every effort to ensure confidentiality, anonymity, and security to the participants in the cover letter and in the design of the web-based survey program.

Many of the "kinks" or disadvantages of using web-based surveys will be corrected with time, as many have already been (Solomon, et al, 2001). As more research is conducted studying this form of survey research and as technology continues to improve, web-based surveys may become the leading form of survey research for certain populations.

Instrument development. A web-based needs assessment survey was created. Since the population under study was all employed in the higher education setting, a web-based survey was appropriate and should not have led to increased sampling bias. A needs assessment survey was necessary to detect any discrepancies between the current teaching methodology knowledge base and the self-perceived competence of ATC-MSs who are teaching in undergraduate athletic training education programs.

Once the research questions were developed, survey construction began. The survey was divided into three parts. In Part 1, a series of 16 questions were developed to gather descriptive data about the participants, including their educational background and their background in teaching. Part 2 was more detailed. It included 20 teaching methodology constructs and asked the participant to rate each construct in both: a) their

knowledge of the construct; and, b) how skilled they felt they were at implementing that item in their instruction.

The 20 teaching methodology constructs used were derived from the literature review. Mallette (2000) created an instrument to measure pedagogical knowledge of students in a teacher licensure program. Some of the items she measured were used. Williams (1995) proposed ten constructs toward effective college teaching, each of which were used. And, lastly, a majority of the constructs from Table 3 were included. Thus, the 20 constructs were well supported by the literature as common teaching methodology knowledge.

Part 3 of the instrument was created to provide an area for comments and feedback regarding the survey, the researcher's contact information, last instructions for submitting the survey, and a sincere thank you to the participants. The survey was designed so that a password was used to gain access to the web-site, no identifiers were included with the responses, and the participants were prevented from regaining access to the web-site once the survey was submitted the first time.

Conclusion

This chapter has provided a review of the literature concerning the history of the NATA and athletic training education, teacher effectiveness and the efficacy of a teaching methodology course, what other health professions are doing to prepare their future educators, the findings of related athletic training educational research, and the methodological theory used for the study. From this review, it is clear that there is a gap in the research that assesses the preparation or preparedness of educators in athletic training education programs. The profession of athletic training has made great strides in

improving the education of undergraduate students. With more undergraduate programs becoming accredited, the demand for teachers with experience and/or knowledge in teaching will continue to grow. This study is necessary to assess how competent athletic training instructors feel they are and how much knowledge of teaching methodology they possess. Upon completion of this study, it is hoped that a thorough description of the current status of teaching methodology knowledge of athletic training educators will be presented and discrepancies between this knowledge and how competent they feel using this knowledge will be identified; thus, assessing the need for further education of all athletic training instructors and of graduate students who will become the next generation of teachers.

CHAPTER 3: METHODOLOGY

This chapter begins with a presentation of the rationale for choosing a needs assessment as the method of inquiry. The research design of the study will be delineated, followed by a description of the population and the participants. The data collection, instruments, and procedures will be described in detail. Lastly, the data analysis to be used for each of the 12 research questions is presented.

Methodological Rationale

A text by McKillip (1987), served useful in selecting the appropriate type of needs assessment for the purposes of this study. According to McKillip,

> Need identification is a process of describing [potential] problems of a target population and solutions to these problems. Needs assessment evaluates the importance and relevance of these [potential] problems and solutions... The role of systematic analysis of need is the reduction of uncertainty. Someone, either the person commissioning the study or some group important to this person, is uncertain about what, if any, programming should be added or reduced. Need analysis seeks to reduce this uncertainty (p. 7).

The model used in this study is a Discrepancy Model of needs assessment. As defined, this model investigates a gap in knowledge or skill and involves three phases: 1) goal setting or identification of what ought to be (we ought to have knowledgeable and competent teachers for students of athletic training); 2) performance measurement or identification of what is (how knowledgeable and competent are our teachers?); and 3) discrepancy identification or identifying the differences between what ought to be and what actually is (McKillip, 1987).

The specific type of survey used within the Discrepancy Model is a training need survey. This type of survey has three components to be assessed: 1) the competence of individuals to perform the task (in this case, teaching); 2) the relevance of the skill for the job role (teaching student athletic trainers); and 3) the individual's (teacher's) desire to undertake the training to reduce the discrepancy (Misanchuk, 1984).

Research Design

This study is a quantitative needs assessment study, using descriptive, comparative, and associational approaches. The demographics of current ATEP instructors were gathered via descriptive measures. Different groups were compared on various outcome measures. And, different constructs were associated to determine if significant relationships existed. This study describes the state of teaching knowledge held by current instructors in athletic training education programs nationally, assesses the need for further instruction in teaching methodology from the perspective of current teachers, and suggests guidelines for providing for the identified needs.

Participants and Population

This is a total population study with no sampling. All certified members of the NATA who possess a master's degree and are currently working in the college/university setting were surveyed via an electronic, web-based survey (N=2644). The NATA granted permission to use and provided the participant e-mail list for this survey, as the researcher is a NATA member conducting research of the membership. The NATA database cannot distinguish who is teaching and who is not. Therefore, the narrowest list the NATA could provide was of certified members with their master's degrees working in the college/university setting. The survey then asked who of the population identified

was currently teaching. This made calculating the response rate difficult. All responses to the survey were analyzed, whether currently teaching or not, for background data to inform the NATA membership what percentage of ATC-MSs in college settings are currently teaching.

The members of this population were surveyed to assess their background education/experience in teaching, their knowledge of teaching methodology, and their self-perceived competence level in teaching. Anonymity and confidentiality of results were assured to each participant through the design of the web-based survey, as detailed under *Procedures*, to follow. An incentive was offered and a space for their comments was provided within the survey instrument.

Data Collection, Instruments, and Procedures

This section will describe the details of the data collection process, the development and delivery of the instrument, and the procedures for the study. Included is a description of the pilot test performed and measures of reliability and validity.

Data collection. The instrument was a survey addressing the research questions and gathering demographics of the participants. It was administered via an electronic on-line site. Each participant received an electronic mail message stating the scope of the research project, inviting them to participate, and directing them to the survey web site (Appendix D). Once the participant finished and submitted the survey, it was returned as an anonymous e-mail message. Each return message address line recorded the "sent from:" as "respondent", with no other identifiers attached. The numerical message was then imported into an Excel spreadsheet. From there, it was imported directly into an

SPSS 11.0 data file. Once the data was collected from this web site and imported into the SPSS file, it was analyzed.

Survey instrument. A review of the literature revealed no one instrument that measured both knowledge of teaching methodology and perceived teaching competence. Therefore, the instrument was created and designed by the researcher and is included in an appendix (Appendix B). The literature review provided the 20 teaching methodology constructs used in Part 2 of the survey. The instrument has three sections:

Part 1: Background Information – includes 16 questions designed to address the general educational background information of each participant and information in regard to preparation to teach;

Part 2: Assessment of Teaching Knowledge and Self-Perceived Competence – measures both knowledge of teaching methodology and self-perceived teaching competence on 20 constructs with a 5-point Likert scale;

Part 3: Comments and Feedback – allows for comments the participant may have about the study to be asked and submitted to the researcher.

The format of the instrument was established per recommendations in Salant and Dillman (1994).

Pilot test. Once the instrument was on-line, a pilot test was run. "Pilot testing of all surveys is important to ensure that the questions asked are clear and the response options are comprehensive and appropriate" (Queeney, 1995, p. 146). The instrument was delivered as a link in a cover letter to a small representative sample (N=21) of ATC-MS professionals who were teaching in athletic training educational programs, as selected by the researcher. The participants were directed to the site and requested to use

the "Comments" section of the survey to evaluate the whole system, the format of the survey and of the response choices, the ease of completing the survey, the length of time it took to complete the survey, and any unclear or confusing parts. Upon return of the pilot test, measures of reliability were established (Cronbach's alpha: .87 for skill/competence measure; .95 for knowledge measure). Information gained from the pilot test was used to refine the final instrument. A rotated component matrix of the competence measure grouped the 22 teaching methodology constructs into five groups. The rotated component matrix of the knowledge measure showed five groups, also, though the groupings were different. For the final instrument, four groups were created that most closely preserved the groupings suggested by each separate factor analysis.

Two teaching methodology constructs of the original 22 were dropped from Part 2 after a factor analysis showed little correlation. The construct of *giving students feedback* had negative correlations with both the skill/competence measure (-.819) and the knowledge measure (-.191). The construct of *use of cooperative learning* had low a correlation for skill/competence (.405) and a very low correlation for knowledge (.274). Thus, both constructs were dropped from the final instrument. Comments from the participants indicated that the response choices provided were appropriate and thorough. The average time to complete the full survey ranged from 6 to 9 minutes.

Procedures. Once the instrument was developed and pilot tested, the research proposal was submitted to a Human Subjects Review process (Appendix C). Upon approval from the Human Subjects Review board, an initial contact letter announcing the study and survey was sent via e-mail to the identified participants. Five days later, the cover letter and instrument were sent via e-mail to each participant (Appendix D). The

cover letter described the study, illustrated the importance of their participation, served as informed consent, and provided a link to the survey web site.

In the cover letter, the participants were requested to use the link provided in the message to access the survey. A link was utilized and configured with "cookies" so that each participant could respond only once. When they clicked on the submit button at the end of the survey, they were no longer be able to return to the survey. This eliminated multiple responses from any one participant. To ensure anonymity of the participant responses, no names, institutions, or any other identifiers were requested. By utilizing a linked site, no return electronic addresses were included with the participants' response, thus assuring anonymity. Confidentiality of the participants' responses was ensured by having no identifiers attached to the returned surveys, other than "respondent".

The survey was on site with a requested return date of four weeks after the send date. One week before this deadline, a reminder e-mail message was sent to encourage the participants who did not respond yet to do so and to thank those that had already responded (see Appendix D). Once the deadline was reached, the numerical responses were imported into an Excel file. From there, they were cut and pasted into a prepared SPSS 11.0 data analysis file. Data analysis then began.

Data Analysis

After data were collected, they were analyzed using the SPSS 11.0 computer software program. The statistical techniques used to analyze the data initially were measures of central tendency (mean, median, mode) and variability (standard deviation) to determine if the results were approximately normally distributed. Each research question was analyzed using appropriate statistics (Gliner & Morgan, 2000).

Research question one asks, "What is the relationship between the scores of knowledge of teaching methodology and self-perceived competence that Athletic Training instructors have?" This is a basic associational question. A Pearson correlation was used. The question relates Part 2-Column A to Part 2-Column B. A gap analysis was also performed by subtracting the competence score from the knowledge score. Those gaps were then analyzed against some of the demographic data from Part 1 of the survey.

Research question two asks, "How do ATC-MSs that have had none, some, and much instruction in teaching methodology compare on self-perceived competence?" This was a basic difference question for which a one-way ANOVA was performed. The three groups were compared from Part 1-Question 10-11 index, on Part2-Column B index.

Research question three asks, "How do ATC-MSs that have had instruction in teaching methodology and those who have not compare on knowledge of teaching methodology?" This was a basic difference question, again, for which a one-way ANOVA was performed. The same three groups from Part 1-Question 10-11 index were compared, but on Part 2-Column A index.

Research question four asks, "What is the relationship between the number of years teaching and self-perceived competence?" This was a basic associational question for which a Pearson correlation was performed. The analysis related Part 1-Question 7 and Part 2-Column B index.

Research question five asks, "What is the relationship between when ATC-MSs had their first formal teaching assignment and their self-perceived competence?" This

was a basic associational question for which a Spearman (rho) was performed. Part 1-Question 9 was related to Part 2-Column B index.

Research question six asks, "What is the relationship between when ATC-MSs had their first formal teaching assignment and their knowledge of teaching methodology?" This was a basic associational question, again, for which a Spearman (rho) was performed. Part 1-Question 9 was related to Part 2-Column A index.

Research question seven asks, "What is the relationship between how beneficial ATC-MSs feel it would be to take a professional development course in teaching methodology in the future and their self-perceived competence?" This was a basic associational question for which a Pearson correlation was performed. This question related Part 1-Question 14 to Part 2-Column B index.

Research question eight asks, "How do ATC-MSs that have received none, some and much instruction in teaching methodology compare on the gap score created by their knowledge of methodology and their self-perceived competence?" This was a basic difference question for which a one-way ANOVA was performed. The three groups were compared from Part 1-Question 10-11 index, on the gap scores. Further analysis correlated those who have received much instruction (group 3) with the number of types of instruction reported.

Research question nine asks, "How do the three levels of ATC-MSs that currently have teaching responsibilities in accredited or NATA approved ATEPs (teaching in a clinical setting, in a classroom setting, or in both settings) compare on gap scores?" This is a basic difference question that compares Part 1-Question 6 on the gap scores. A one-way ANOVA was performed.

Research question 10 asks, "How do ATC-MSs' feelings of how beneficial additional instruction in teaching methodology would be compare on gap scores?" This is a basic difference question in which a one-way ANOVA was performed. The five levels (Likert scale) of Part 1-Question 14 were compared on gap scores.

Research question 11 asks, "How do ATC-MSs' likelihood of taking a teaching methodology seminar compare on gap scores?" This is, again, a basic difference question in which a one-way ANOVA was performed. The five levels (Likert scale) of Part 1-Question 15 were compared on gap scores.

Lastly, research question 12 asks, "Is there a combination of the eight types of instruction in teaching methodology that ATC-MSs may have gained their competency in (course in undergraduate program, course in graduate program, GTA, professional development seminar, structured mentoring, athletic training content knowledge, experience on the job, observing others) that predicts their self-perceived competence level better than any one type of instruction alone?" This is a complex associational question for which a multiple regression was performed. The eight types of instruction listed in Part 1-Question 16 were associated with Part 2-Column B index.

CHAPTER 4: RESULTS

This chapter will present the results of the data analysis. First, the demographic results will be presented. The results illustrating the teaching background of the participants will follow. An analysis of each research question will then be presented. This is followed by further data analysis that occurred after the research questions were analyzed. Lastly, a summary of the written comments from Part 3 of the survey is provided.

Survey and Participant Demographics

The results presented in this section correspond to the survey in general and specifically to questions one through six of the survey. The survey was sent to 2701 participants who fit the description (as registered with the NATA membership database) of being certified, possessing at least a master's degree, and working in a college/university setting. It was not possible to identify those within that population who were teaching, per the NATA database. The cover letter then indicated that the survey was intended to assess teaching background, knowledge and competence of those in that population who were teaching in NATA approved or CAAHEP accredited athletic training education programs, while still requesting that all respond.

Assessing the response rate, then, was difficult. Of the 2701 initial contact letters sent, 57 were returned as "system error" or "undeliverable" with the electronic mail addresses used. This left a total of 2644 surveys received. There were 341 responses to the survey. This yields a response rate of 12.9%, which is a dramatically low response

rate. Due to the nature of the cover letter, stating the purpose of the research was to assess teaching information of athletic trainers, those who were not teaching may not have felt compelled to respond to the survey.

Of the 341 participants, 149 reported that they were currently teaching in a NATA approved or CAAHEP accredited program. This is 43.7% of the total respondents. Those who were not teaching completed the first six questions of the survey and were then directed to the comments section at the end of the survey. Those who were teaching completed the entire survey.

The data were checked for outliers before the statistical analysis began. Case number 17 was deleted from data analysis of research question three, with a knowledge index score of 1.45 (mean=3.88). Case numbers 52, 201, and 301 were deleted from data analysis of research question eight, with respective gap scores of -.61, -1.60, and 1.24 (mean= -.10, -.10, and .23, respectively). Case numbers 52 and 201 were deleted from data analysis of research question 11, with respective gap scores of -.61 and -1.60 (mean=.08 and .15, respectively).

Participant demographics. The data gathered on job title, highest degree earned, field of that degree, whether currently conducting research, and whether currently teaching and in what setting, are presented (Tables 5-9).

Table 5
Frequencies of Job Title

Title	N
Asst. Athletic Trainer	80
Athletic Trainer	11
Head Athletic Trainer	77
Athletic Training Instructor	13
Instructor & Athletic Trainer	52
Curriculum Director	50
Other	53
Total	**336**

Table 6
Frequencies of Highest Degree Earned

Degree	N
Bachelor's	20
Master's	262
Doctorate	59
Total	**341**

Table 7
Frequencies of Field of Highest Degree Earned

Field	N
Athletic Training	88
Exercise Physiology	25
Kinesiology	38
Other	181
Total	**332**

Table 8

Frequencies of Conducting Research

Status	N	%
No	253	74.4
Yes	87	25.6
Total	**340**	**100.0**

Table 9

Frequencies of Teaching in an Approved or Accredited ATEP

			N	
Status	**N**	**%**	**Classroom**	**Clinic**
No	185	54.4	--	--
Yes	155	45.6	140	124
Total	**340**	**100.0**	--	--

Teaching Experience Background

The results presented in this section correspond to questions seven through 16 in Part 1 of the survey and all of Part 2. Only the participants who were teaching in approved or accredited ATEP programs completed this section of the survey (N=149). The mean number of years teaching in an ATEP program was 7.98 years. The mean of percent of job responsibilities dedicated to teaching was 47.02%. Further descriptive statistics follow (Tables 10-14).

Table 10

Frequencies of Time in Career of First Formal Teaching Assignment

Time in Career	N
During undergraduate program	7
During graduate program	54
Immediately following graduate program	39
Within 2 years after graduate program	25
More than 2 years after graduate program	21
Total	**146**

Table 11

Frequencies of Time in Career of Receiving Instruction in Teaching Methodology

	N		
Time in Career	**No**	**Yes**	**Total**
Before receiving master's degree	44	105	**149**
After receiving master's degree	49	97	**146**

Table 12

Frequencies of Self-Perceived Teaching Attributes

		N				
Attribute	**Mean**	**Extremely High**	**Very High**	**Average**	**Low**	**None**
Teaching competency immediately after completion of master's degree	3.29	11	46	69	17	4
Level of anxiety with first teaching assignment	2.65	11	19	53	34	29
Level of benefit of future instruction in teaching methodology	3.22	21	37	49	34	6
How likely to pursue future instruction in teaching methodology	3.05	21	32	46	31	18

Note. Mean scores were based on a scale of: 5=extremely high, 4=very high, 3=average, 2=low, 1=none. N=149.

Table 13

Frequencies of Types of Instruction in Teaching Methodology Before and After Completion of Master's Degree

	N	
Types of Instruction	**Before Completion**	**After Completion**
Course in undergraduate program	70	--
Course in graduate program	36	--
Teaching certificate	62	6
GTA	35	--
Professional development seminar	19	39
Structured mentoring	25	21
CIE training	13	40
ACI training	18	61
CI training	6	11
Other	8	15

Note. Participants were instructed to respond to as many activities as applicable.

Table 14

Frequencies of Types of Activities that Contributed to Teaching Competency

Activity	N
Course in undergraduate program	56
Course in graduate program	37
GTA	38
Professional development seminar	23
Structured mentoring	50
Knowledge of athletic training	129
Experience on the job	130
Observing others teach	106
Other	19

Note. Participants were instructed to respond to as many activities as applicable.

Survey – Part 2 Descriptives

Part 2 of the survey consisted of participants rating themselves on 20 teaching methodology constructs for both their knowledge of the construct and their self-perceived skill level/competence. Measurement reliability was assessed for both the knowledge scale and the self-perceived skill level/competence scale. Reliability was high for both scales using Cronbach's alpha (knowledge = .923; competence = .913), indicating a high level of internal consistency and interitem reliability. The highest and lowest mean scores of the 20 teaching methodology constructs are presented (Table 15).

Table 15

High and Low Mean Scores of 20 Teaching Methodology Constructs on Both Knowledge and Self-Perceived Competence

	Highest		Lowest	
Measure	**Construct**	**M**	**Construct**	**M**
Knowledge	Developing a syllabus	4.43	Match instruction to LS	3.43
	Stud. use of AT skills	4.39	Indiv. mastery learning	3.48
	Determine objectives	4.23	Determine stud. LS	3.51
Competence	Stud. use of AT skills	4.37	Determine stud. LS	3.11
	Developing a syllabus	4.35	Match instruction to LS	3.12
	Determine objectives	4.06	Collaborative/grp work	3.18

Note. Stud.=student; AT=athletic training; LS=learning style.
Scale: 1=poor, 2=fair, 3=good, 4=very good, 5=excellent.

There were four indices created to assist in data reduction and analysis. A knowledge index was created from the scores in Part 2, Column A of the survey. A self-perceived skill level/competence index was created from the scores in Part 2, Column B of the survey. A gap index score was created by subtracting the self-perceived skill/competence index score from the knowledge index score. And, lastly, an index was created by combining the dicotomous answers from questions 10 and 11 on the survey (Have you received instruction in teaching methodology before completing your graduate degree? Have you received instruction in teaching methodology after completing your graduate degree?) For this index, those participants who answered "no" to both questions were coded as a 2 (no instruction); those who answered "yes" on one question and "no"

on another were coded as a 3 (some instruction); and those who answered "yes" on both questions were coded as a 4 (much instruction). Descriptive statistics were run on all four indices (Table 16).

Table 16

Means and Standard Deviations of Indices of Knowledge Scores, Self-Perceived Competence Scores, Gap Scores, and Amount of Instruction in Teaching Methodology Scores

Index	N	M	SD
Knowledge[a]	149	3.91	0.59
Competence[a]	149	3.74	0.57
Gap[a]	149	0.17	0.29
Amount of Instruction[b]	146	3.37	0.69

[a] based on scale of: 1=poor, 2=fair, 3=good, 4=very good, 5=excellent
[b] based on scale of: 2=no instruction, 3=some instruction, 4=much instruction

Research Questions

The results presented in this section correspond to the 12 research questions of the study. Each question is addressed in order, with the appropriate statistical results presented. A discussion of the results takes place in the following chapter.

Research question one. This question asks, "What is the relationship between the scores of knowledge of teaching methodology and self-perceived competence that Athletic Training instructors have?" This is a basic associational question. A Pearson correlation was used. The question relates Part 2-Column A to Part 2-Column B.

The results of the Pearson correlation were statistically significant, $r(149)=.875$, $p<.001$. This indicates that generally, participants who scored themselves highly on

knowledge of teaching methodology constructs also scored themselves highly on self-perceived skill level/competence of those teaching methodology constructs. The effect size, r^2=.77, is a large effect size (Cohen, 1988).

Research question two. This question asks, "How do ATC-MSs that have had instruction in teaching methodology and those who have not compare on self-perceived competence?" This was a basic difference question for which a one-way ANOVA was performed. The three groups were compared from Part 1-Question 10-11 index, on Part2-Column B index.

The results of the one-way ANOVA were not statistically significant, $F(2,143)=1.492$, $p=.228$. This indicates that there are no statistically significant differences between the three levels of amount of instruction in teaching methodology participants had when compared on their self-perceived skill level/competence of teaching methodology.

Research question three. This question asks, "How do ATC-MSs that have had instruction in teaching methodology and those who have not compare on knowledge of teaching methodology?" This was a basic difference question, again, for which a one-way ANOVA was performed. The same three groups from Part 1-Question 10-11 index were compared, but on Part 2-Column A index.

The results of the one-way ANOVA were statistically significant, $F(2,140)=4.621$, $p=.011$ (Table 17). However, the Levene statistic (8.480) was also significant, $p<.001$, indicating the assumption of equal variances had been violated. Due to the large sample size and the robust nature of the one-way ANOVA test, it remained the test statistic of choice.

Table 17

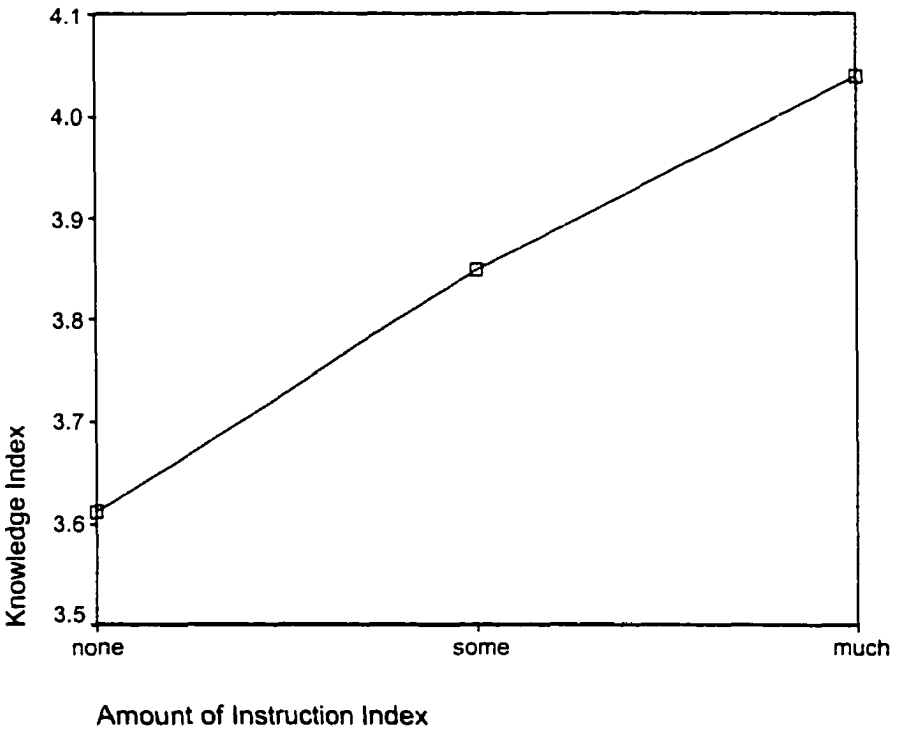
One-Way ANOVA of Amount of Instruction Index and Knowledge Index

Source	df	SS	MS	F	*p*
Between groups	2	2.711	1.355	4.621	.011
Within groups	140	41.060	.293		
Total	142	43.771			

To discern where the difference was, a Tukey Honestly Significant Difference (HSD) post-hoc test was performed (Figure 1). The results revealed only one significantly different pair of means (p=.011), between the group with no instruction in teaching methodology (M=3.610) and the group with much instruction in teaching methodology (M=4.039). The effect size (d=.309) is a low to medium effect size (Cohen, 1988). This indicates that the participants with more instruction in teaching methodology perceived themselves to have significantly more knowledge of teaching methodology than those with no previous instruction in teaching methodology. Conversely, those with no previous instruction perceived themselves as having less knowledge.

Research question four. This question asks, "What is the relationship between the number of years teaching and self-perceived competence?" This was a basic associational question for which a Pearson correlation was performed. The analysis related Part 1-Question 7 and Part 2-Column B index.

The results of the Pearson correlation were not statistically significant, $r(149)$=.107, p=.196. This indicates that there is no statistically significant relationship between the number of years the participants had been teaching and their self-perceived competence in teaching methodology.



Note. Simple effect between means of *none* and *much* groups.

Figure 1. Means Plot of Amount of Instruction and Knowledge Index.

Research question five. This question asks, "What is the relationship between when ATC-MSs had their first formal teaching assignment and their self-perceived competence?" This was a basic associational question for which a Spearman (*rho*) was performed. This test was chosen due to the ordinal nature of the independent variable. Part 1-Question 9 was related to Part 2-Column B index.

The results of the Spearman (*rho*) were not statistically significant, $r(149)=-.019$, $p=.818$. This indicates that there is no statistically significant relationship between how soon after graduating with their master's degree the participants had their first teaching assignment and their self-perceived skill level/competence of teaching methodology.

Research question six. This question asks, "What is the relationship between when ATC-MSs had their first formal teaching assignment and their knowledge of teaching methodology?" This was a basic associational question, again, for which a Spearman (*rho*) was performed, due to the ordinal independent variable. Part 1-Question 9 was related to Part 2-Column A index.

The results of the Spearman (rho) were not statistically significant, $r(149)=-.086$, $p=.306$. This indicates that, once again, there is no statistically significant relationship between how soon after graduating with their master's degree the participants had their first teaching assignment and their knowledge of teaching methodology.

Research question seven. This question asks, "What is the relationship between how beneficial ATC-MSs feel it would be to take a professional development course in teaching methodology in the future and their self-perceived competence?" This was also a basic associational question for which a Pearson correlation was performed. This question related Part 1-Question 14 to Part 2-Column B index.

The results of the Pearson correlation were not statistically significant, $r(149)=.145$, $p=.079$. This indicates that there is no statistically significant relationship between how beneficial the participants felt it would be to take a professional development seminar in teaching methodology and their current level of self-perceived skill level/competence in teaching methodology. Thus, those that felt less competent did not feel it would be more or less beneficial to take such a seminar in the future.

Research question eight. This question asks, "How do ATC-MSs that have received none, some and much instruction in teaching methodology compare on the gap score created by their knowledge of methodology and their self-perceived competence?"

This was a basic difference question for which a one-way ANOVA was performed. The three groups were compared from Part 1-Question 10-11 index (none, some, and much instruction in teaching methodology), on the gap scores. Further analysis correlated those who have received much instruction (group 3) with the number of types of instruction reported.

The results of the one-way ANOVA were statistically significant, $F(2,138)=9.224$, $p<.001$ (Table 18). The Levene statistic was not significant, indicating the assumption of equal variances was not violated. The results indicated that there was a difference somewhere between the mean gap scores for the three levels of how much instruction in teaching methodology the participants had. To discern where the differences were, a Tukey HSD post-hoc test was performed.

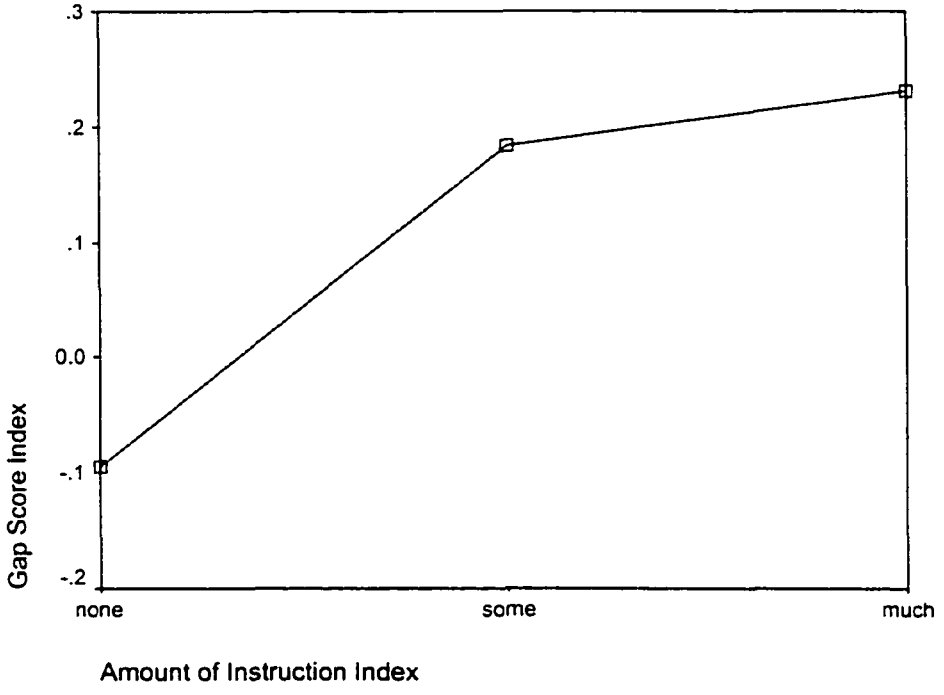
Table 18

One-Way ANOVA of Amount of Instruction by Gap Score

Source	df	SS	MS	F	p
Between groups	2	1.470	.735	9.224	.000
Within groups	138	10.997	.080		
Total	140	12.497			

The results of the post-hoc test revealed that there were two significant differences (Figure 2). The first significant difference ($p=.001$) was between those who had no instruction in teaching methodology (M=-.095) and those who had some instruction in teaching methodology (M=.189). This had a low to medium effect size (d=.396), according to Cohen (1988). The second significant difference ($p<.001$) was between those who had no instruction in teaching methodology and those who had much instruction in teaching methodology (M=.231). This had a medium effect size (d=.466),

according to Cohen (1988). The lower mean of the "none" level suggests that those who had no instruction in teaching methodology had significantly *lower* gap scores than those in the other two groups (Table 19).



Note: Simple effects between means of *none* and *some* & *none* and *much* groups.

Figure 2. Means Plot of Amount of Instruction and Gap Score.

Table 19
Means of Knowledge, Competence, and Gap Indices by Amount of Instruction

	Mean		
Measure	**Knowledge**	**Competence**	**Gap**
None	3.61	3.71	-.10
Some	3.85	3.66	.19
Much	4.04	3.81	.23

Further analysis of the "much" instruction in teaching methodology group proved not statistically significant. With this group selected from the q10-11 index, a Spearman (*rho*) test was used to correlate the number of types of teaching methodology instruction received/taken with the gap score. The results were not statistically significant (r=.113, p=.349). These results indicate that the number of different types of instruction taken did not have a significant relationship with the participants' gap scores.

Research question nine. This question asks, "How do the three levels of ATC-MSs that currently have teaching responsibilities in accredited or NATA approved ATEPs (not teaching, teaching in classroom or clinic, teaching in classroom and clinic) compare on gap scores?" This is a basic difference question that compares Part 1-Question 6 on the gap scores. A one-way ANOVA was performed.

The results of the one-way ANOVA were not statistically significant, $F(2,147)=.908$, p=.406. This indicates that there are no statistically significant differences between those that are not teaching, those teaching in the classroom or clinic, and those teaching in the classroom and clinic, when their gap scores are compared.

Research question ten. This question asks, "How do ATC-MSs' feelings of how beneficial additional instruction in teaching methodology would be compare on gap scores?" This is a basic difference question in which a one-way ANOVA was performed. The five levels of Part 1-Question 14 were compared on gap scores.

The results of the one-way ANOVA were not statistically significant, $F(4,142)=.614$, p=.653. This indicates that those who felt further instruction in teaching methodology would or would not be beneficial did not significantly differ on gap scores.

Research question eleven. This question asks, "How do ATC-MSs' likelihood of taking a teaching methodology seminar compare on gap scores?" This is, again, a basic difference question in which a one-way ANOVA was performed. The five levels of Part 1-Question 15 were compared on gap scores.

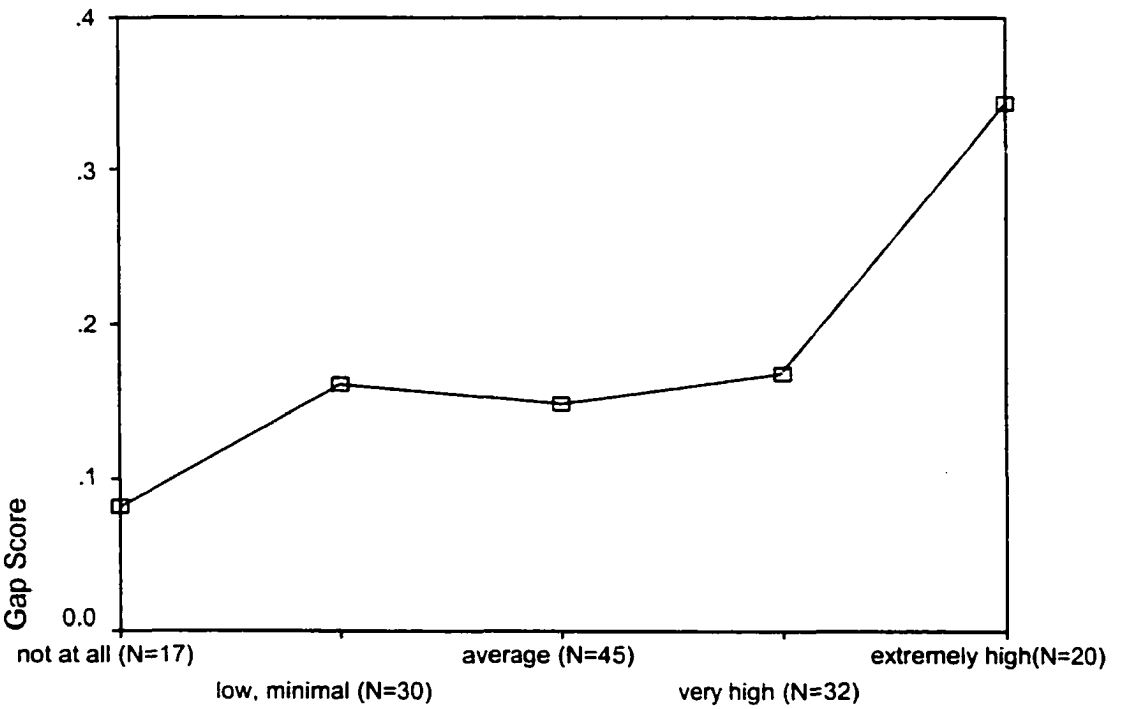
The results of the one-way ANOVA were statistically significant, $F(4,139)=2.528$, $p=.043$ (Table 20). This indicates that there was a statistically significant difference somewhere between the mean gap scores for the levels of how likely the participants would be to take a teaching methodology seminar. The Levene statistic was not significant, indicating the assumption of equal variances was not violated.

To investigate where those differences were, a Tukey HSD post-hoc test was performed (Figure 3). The only significant difference between pairs of means ($p=.050$) was between those who were extremely likely to take a teaching methodology seminar (M=.344) and those who were not at all likely to take such a seminar (M=.081). The effect size was medium (d=.405), according to Cohen (1988). This suggests that those with a lower gap score were *less likely* to take a seminar in teaching methodology, while those with a higher gap score were more likely. In combination with the results of research question eight, this suggests that generally, those with lower gap scores have had less past instruction in teaching methodology and would be less likely to pursue such instruction in the future.

Table 20

One-Way ANOVA of How Likely to Take Future Instruction in Teaching Methodology and Gap Score

Source	df	SS	MS	F	*p*
Between groups	4	.584	.146	2.528	.043
Within groups	139	8.025	.058		
Total	143	8.609			



Note. Simple effect between means of *not at all* and *extremely high* groups.

Figure 3. Means Plot of How Likely To Pursue Future Instruction in Teaching Methodology and Gap Score.

Research question twelve. Lastly, this question asks, "Is there a combination of the eight types of instruction in teaching methodology that ATC-MSs may have gained their competency in (course in undergraduate program, course in graduate program, GTA, professional development seminar, structured mentoring, athletic training content knowledge, experience on the job, observing others) that predicts their self-perceived competence level better than any one type of instruction alone?" This is a complex associational question for which a multiple regression was performed. The eight types of instruction listed in Part 1-Question 16 were associated with Part 2-Column B index.

The results of the multiple regression indicate that two of the eight factors significantly contribute to the prediction of self-perceived skill level/competence (R=.372; adjusted R^2=.089), over and above the contribution of all other factors (Tables 21 & 22). The two factors are competence from structured mentoring (beta=.172, p=.008) and from taking a teaching methodology course in an undergraduate program (beta=.120, p=.045). The adjusted R^2 value indicates that 9% of the variance in self-perceived skill level/competence can be predicted by the combination of all 8 types of instruction. The effect size, r^2=.089, is a medium effect size (Cohen, 1988).

Table 21

Multiple Regression of Types of Instruction in Teaching Methodology and Self-Perceived Competence Index

Measure	R	R^2	Adjusted R^2	*r*
All 8 types of instruction	.372	.138	.089	.298

Table 22

Multiple Regression Coefficients Matrix of Types of Instruction in Teaching Methodology and Self-Perceived Competence Index

Factor	Unstandardized Beta	Standardized Beta	t	*p*
Course in undergraduate program	.120	.175	2.023	.045*
Course in graduate program	.080	.061	.730	.467
GTA	.068	.085	1.020	.309
Professional development seminar	.099	.106	1.254	.212
Structured mentoring	.172	.229	2.675	.008*
Athletic training content knowledge	.041	.051	.529	.598
Experience on the job	-.054	-.067	-.705	.482
Observing others teach	-.047	-.066	-.728	.468

*. Difference is significant at the .05 level.

Further Data Exploration

When the data analysis was conducted, more questions arose about relationships between variables. Further data exploration revealed statistically significant results between the gap score index and both the knowledge index and the self-perceived skill level/competence index scores. A Pearson correlation was used for both analyses (Table 23). The relationship between the gap score index and the knowledge index is a positive correlation with a medium effect size (r^2=.099) (Cohen, 1988). However, this indicates that generally, the higher the gap score, the higher the knowledge score. Thus, those who had more knowledge generally perceived a larger gap between their knowledge of

teaching and their self-perceived competence in teaching. Correspondingly, those with lower gap scores generally had less teaching knowledge. These results correspond with the results from research question eight.

The statistically significant results of the gap score to the self-perceived skill level/competence index reveals a negative correlation with a low effect size (r^2=-.011)(Cohen, 1988). This indicates that generally, the higher the gap score, the lower the self-perceived competence.

Table 23

Pearson Correlation of Knowledge Index and Self-Perceived Competence Index with the Gap Score Index

Measure	**1**	**2**	**3**
1. Gap Score Index	--		
2. Knowledge Index	.315*	--	
3. Competency Index	-.184**	.875*	--

Note. Listwise N=149.
* p<.001, two-tailed.
** p=.024, two-tailed.

Summary of Written Comments

Of the 341 survey responses, 71 participants submitted written comments in Part 3 of the survey. Some of those comments were personal messages from friends and colleagues or other messages not relevant to the survey analysis (N=31). Four themes emerged from the written comments:

1. support for the concept/study (N=26);
2. a need to have included those currently teaching in programs that are in

candidacy and not approved or accredited yet (N=23);

3. the belief that entry-level education for ATCs should move to the master's or doctorate level (N=3); and,
4. there are other ways previous to or in place of pursuing a master's degree to obtain teaching methodology knowledge and/or competence (N=6).

Examples of support for the concept/study are:

> "I do see a void in the athletic training field in the area of education preparation... In my experience, many ATC's are teaching based on a solid content knowledge background and 'instinct' or by modeling past teachers, rather than having any formal training in effective teaching."
>
> "The current emphasis on medical rather than educational training is important, but as you point out, the educational aspect should not be ignored."
>
> "Graduate AT programs seem to be a very appropriate place to acquire classroom teaching experience."
>
> "I think ATC's can definitely benefit from more exposure to teaching methodology if they are to be efficient at the college setting."
>
> "I teach in a candidacy program and feel that my undergraduate teaching degree has helped me in the classroom. I think that it would be beneficial to have some type of formal training in teaching. I just picked things up along the way, but would like other strategies to be more effective for all students learning styles."
>
> "I believe we have many program directors and faculty that are well trained in such things as experimental design and the content of AT, but fall far short of a full and authentic understanding of the teaching and learning process."

The large number of comments suggesting that those programs currently in candidacy should have been specifically included in the study population was an important finding. There are apparently many programs in candidacy. Some of these participants filled out the whole survey, while others filled out only the first six questions, as they were not sure if their status of not teaching in an official approved or accredited program fit the requested population.

The three comments suggesting that entry-level education begin at the master's level or possibly the doctoral level are significant, as the related health care fields of occupational therapy and physical therapy have already implemented those standards. Examples of these comments are:

> "I also believe strongly that the baseline entry level for Athletic Trainers should be upgraded to a Master's degree."
>
> "I forsee a most optimal situation in which Athletic Training Educators at the university level will be required to obtain the terminal degree, that of Doctorate. Within doctorate programs the student should be given opportunities to teach and conduct research...if entrance into higher education is desired."

Examples of other ways to obtain teaching methodology knowledge and/or competence previous to or in place of pursuing a master's degree are:

> "I taught 5 years in HS prior to receiving my graduate degree. I feel that was where my strength in teaching came from along with my undergraduate preparation, not necessarily my graduate degree."
>
> "I had 27 years of experience teaching swimming and lifeguarding, and 15 years teaching Sunday school before I became and instructor of Athletic Training. This experience helped me to step into the classroom rather easily."
>
> "As a graduate student and beginning ATC in a teaching program, I received most of my information/instruction on effective teaching from the American Red Cross when I became a first aid instructor. When I accepted my current position, I could see I needed more background in teaching theory/pedagogy, thus the emphasis of my doctoral program."

Some of these comments/themes are addressed in the *Limitations* and/or the *Recommendations* section of the following chapter. A discussion of the implications of the results presented in this chapter follows.

CHAPTER 5: DISCUSSION

A discussion of the findings from the data analysis is presented in this final chapter. To begin with, the most significant findings and the interpretations of those findings will be discussed. Secondly, how these findings relate to the literature is presented. This is followed by recommendations from the study and future research directions that this study may point toward.

Findings and Interpretations

This section is divided into two parts. First, data analysis results that are related to the gap score and the knowledge indices are discussed. This is followed by a discussion of the self-perceived skill level/competency index and the associated findings.

The gap score. The knowledge index and the self-perceived skill level/competency index, not surprisingly, were highly correlated (r=.88, p<.001) and had a very large effect size (r^2=.77). These two indices comprised the formula for creating the gap score index. Thus, not surprisingly again, the correlations of the knowledge index to the gap score and the self-perceived skill level/competence index to the gap score were both statistically significant (Table 23), with medium (r^2=.10) and low (r^2=.01) effect sizes, respectively.

Interestingly, however, the knowledge index to the gap score was a positive correlation (r=.32), indicating that the higher the knowledge score, the *higher* the gap score between that knowledge and their self-perceived competence. Common sense would assume that the more knowledge one has, the *lower* the gap score would be. A

reasoning for this result may be that those who have more teaching methodology knowledge are more aware of what they *do not* know about the complexities of each of the 20 teaching methodology constructs, and thus, perceive themselves to be less competent at implementing those constructs.

Conversely, the self-perceived skill level/competency index to the gap score was a negative correlation (r= -.18), indicating that the higher the competency score, the lower the gap score between their knowledge and competence. This makes intuitive sense.

The gap score was investigated further when compared with the amount of past instruction in teaching methodology of the participants. The statistically significant main effect results (F=3.52, p=.03) yielded a simple effect between those who had no previous instruction in teaching methodology and those who had much instruction in teaching methodology. This significant mean difference (p=.02) had a medium effect size (d=.45). The lower gap score mean of the "none" level suggests that those who had no instruction in teaching methodology had *lower* gap scores than those in the other two groups. This is counterintuitive and reinforces the results mentioned above. It appears that those participants who had no previous instruction in teaching methodology and those who had lower scores on the knowledge index, had lower gap scores. Practically speaking, this suggests that those with less instruction and/or less knowledge perceived less disconnect between what they know about teaching and how competent they are to teach.

Research question three completed this emerging three-way relationship (Figure 4). The statistically significant main effect (F=4.62, p=.01) required a post-hoc analysis. The results revealed only one significantly different pair of knowledge index score means (p=.011), again between the group with no instruction in teaching methodology and the

group with much instruction in teaching methodology. This implies that those with less instruction in teaching methodology had lower knowledge index scores, which makes sense. Thus far, then, the findings indicate that the participants with lower gap scores had both significantly less instruction in teaching methodology and significantly less knowledge of teaching methodology.

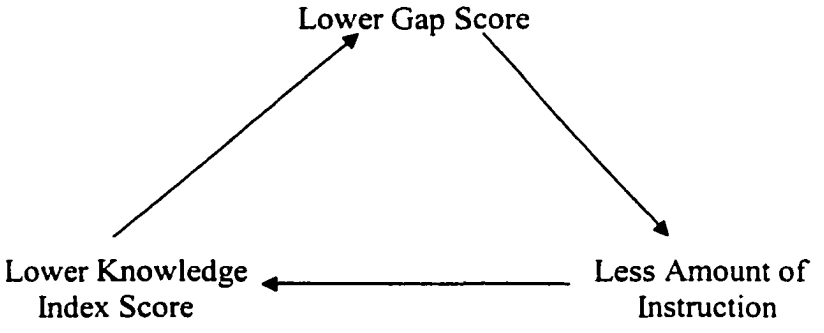


Figure 4. Relationship Between Amount of Instruction, Knowledge Index, and Gap Score.

The last significant result concerned with the gap score indicated that those who were more likely to take a teaching methodology seminar in the future were those with *higher* gap scores (Table 20). This makes sense on the surface, but recall that those with the higher gap scores were already those with more knowledge of teaching methodology (Table 23). Those with a lower gap score were less likely to take a seminar in teaching methodology, while those with a higher gap score were more likely. Thus, conceptually, in combination with the previously mentioned results, this suggests a more detrimental relationship between variables. Generally, those with lower gap scores have had less past instruction in teaching methodology, have less knowledge of teaching methodology, and would be less likely to pursue such instruction in the future (Figure 5). This is of concern

to the profession, if indeed, this was a representative population of those who are currently teaching in ATEP programs.

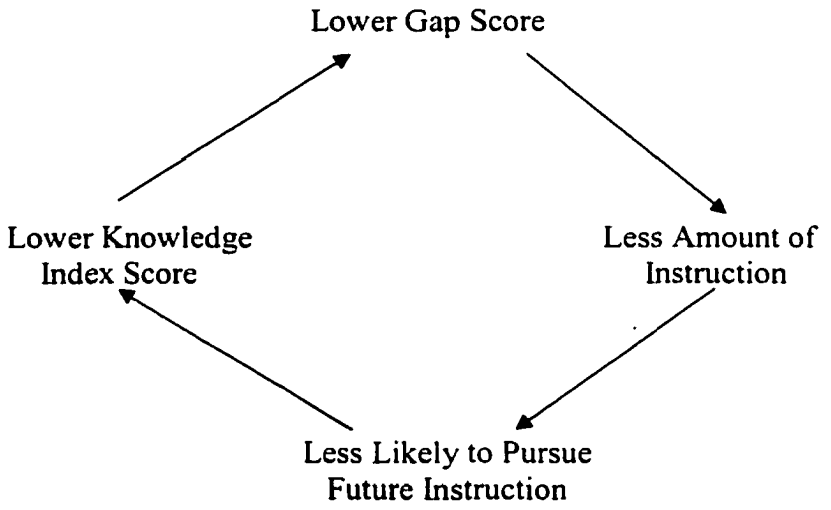


Figure 5. Relationship Between How Likely to Pursue Future Instruction in Teaching Methodology, Amount of Instruction, Knowledge Index, and Gap Score.

Self-perceived skill level/competency. Research questions two and four were found to be not statistically significant. These findings indicate that neither the amount of instruction in teaching methodology nor how long the participants had been teaching had a significant relationship to the self-perceived skill level/competency index scores. These results were surprising. One might assume that the more instruction one had, the more competent one might feel. Or, the longer one teaches, the more competent one might feel. An explanation for this is that perhaps the more instruction one gains in teaching methodology, the more new concepts one learns and attempts to implement in their classes. In turn, they may not feel so competent until they use the new concept for awhile.

Interestingly, of the eight types of instruction in teaching methodology that the participants were asked to check any or all of if they felt it contributed to their teaching competency, the only two types that significantly predicted the self-perceived skill level/competence index scores were taking a teaching methodology course in their undergraduate studies and the use of structured mentoring. Taking a course in their undergraduate program could have likely been a part of a teacher licensure program. Structured mentoring requires working with a more experienced teacher as a pair to learn and grow in the teaching profession.

The implications to our profession of these findings suggest that the undergraduate ATEP programs that include a pathway to teacher licensure are an important part of our profession, as are relationships between those just entering the teaching profession and possible mentors. A further finding revealed that even though there were large numbers of participants who marked the three factors of athletic training knowledge, experience on the job, and observing others teach, as contributing to their teaching competence, these types of instruction in teaching methodology were not significant predictors of their self-perceived competence index scores (Tables 14 & 22).

Relevance to Literature

This section relates the results of this study to the literature previously presented in Chapter Two. The two areas of literature discussed are the athletic training literature and the needs assessment literature.

Athletic training literature. To begin with, it must be restated that there is a gap in the research around assessing the current teaching methodology knowledge and skill level of ATC-MSs who are teaching in ATEPs. Therefore, there are no other studies in

the literature with which to directly compare this study. There are, however, several studies that measure similar facets of teaching in athletic training education programs.

The study by Foster and Leslie (1992) measured the effectiveness of clinical educators who had teaching degrees versus those who did not. Their results indicated that clinical educators who had teaching degrees were, indeed, more effective teachers in the clinical education setting. Further, ATCs with master's degrees demonstrated broader teaching activities than did ATCs with bachelor's degrees. The conclusions of their study were that teacher preparation and post-baccalaureate education were both desirable qualities when determining who to assign as clinical instructors.

The results of this study support the Foster and Leslie (1992) findings. Specifically, those in the "much" group of amount of instruction in teaching methodology perceived themselves to have significantly more knowledge of teaching methodology when compared with those in the "none" group. A difference must be pointed out, however, that having knowledge of teaching methodology does not transfer directly into being an effective teacher. Both of these studies reveal the efficacy of having teaching methodology instruction if one intends to teach. The Foster and Leslie study, which found that clinical educators with teaching degrees were more effective teachers in clinical settings, specifically confirms the importance having ATEP programs with teaching certificate or licensure options.

Can taking one course in teaching methodology improve one's teaching skills? Studies by Veenman (1993) and Rovegno (1992), support the efficacy of taking one teaching methodology course to improve teaching skills. This study, however, provides less supportive evidence. When the groups of "none", "some", and "much" past

instruction in teaching methodology were created, the "none" group had no instruction, the "some" group had instruction *either* before or after their master's degree, and the "much" group had instruction *both* before and after their master's degree. It can be assumed, then, that those in the "some" group possibly had only one course or type of instruction in teaching methodology. The "some" group was not significantly different than the other two groups. Thus, in this study, taking one course in teaching methodology (the "some" group) did not significantly increase the participant's knowledge index score. To confirm this statement, more detailed questioning of those in the "some" group would be necessary to confirm the assumption that they had taken only one course versus many courses.

However, another part of this study does support the efficacy of taking one course in teaching methodology to improve one's teaching skills. Recall that the multiple regression revealed two types of instruction that significantly predicted the participants' self-perceived skill level/competence scores. Those two types of instruction were an undergraduate teaching methodology course and structured mentoring. Thus, in the least, taking one course in teaching methodology may improve one's perception of their teaching skills, if not truly improving those skills.

The study by Stemmans (1998), found that athletic training clinical instruction was positively influenced by the experience level of the clinical instructor. Again, the results of this study do not support the Stemmans study results. If experience level can be measured by how many years one has been teaching, this study found that experience level was not significantly correlated with the participants' self-perceived competence. Again, these results must be interpreted with caution, as "experience positively

influencing instruction" is a different measure than "experience positively influencing self-perceived competence". Regardless, the results of this study, finding that the number of years teaching was not significantly correlated to self-perceived competence, was a surprise from the data. Perhaps general self-perceived competence scores would be higher if not measured on 20 separate and specific teaching methodology constructs.

Some other surprising findings from this study revolve around learning styles of students. In the past several years, there have been many studies published in the Journal of Athletic Training, a peer reviewed journal, about learning styles of athletic training students and/or students in general (Brower, et al, 2001; Coker, 2000; Everitt & Carifio, 2001; Franek, et al, 2002; Hansen, 2001; Harrelson, et al, 2000; Jurges, et al, 2001; Kahanov, et al, 2002; Taylor & Felstehausen, 2002; Vela, 2001). Of all the constructs of pedagogy and education, studies of this nature have been one of the most abundant in our profession. However, of the 20 constructs measured in this study, the two constructs with the lowest means for self-perceived competence were assessing students' learning styles and matching instruction to students' learning styles. The means of these same two constructs were within the lowest three for knowledge score means (Table 15). Perhaps this is illustrative of the phenomena described earlier, in which once you learn more about a topic, you realize how much you really do *not* know about that topic.

Recall from the observation of the NATA job posting web-site, that roughly 73% of the available jobs that required a master's degree had teaching responsibilities associated with the job (Table 4). When we consider the results of the Foster and Leslie study (1992), (clinical educators with teaching degrees were more effective in the clinical setting that those without teaching degrees) and the results of this study (those with

"much" previous instruction in teaching methodology had significantly higher knowledge index scores than those with "none"), a concern arises about how well we are preparing our graduate students to teach.

Since nearly three-quarters of the available jobs require some teaching, shouldn't graduate students receive instruction and/or experience in how to teach before entering the job market? All athletic training graduate students are required to take research courses. Yet, only 26% of the participants in this study reported that they are currently conducting research (Table 8). Knowledge of research is important not only to conduct research, but to be a wise consumer of research. Similarly, knowledge of teaching methodology is important not only to those with formal teaching responsibilities, but for all ATCs who work with student athletic trainers in any setting, regardless of the program's approved, accredited, or internship status. Certainly, with 73% of the available jobs for this population (ATC-MSs) requiring teaching responsibilities, the importance of this preparation should be re-evaluated.

In the past, our profession had primarily and necessarily focused on the practical skills of being an athletic trainer. Currently, however, the job market is changing. We are heading into a new era of a very different type of ATC becoming in demand – the academic ATC. This is a job market that is rapidly growing. There are different job descriptions, different job responsibilities, and different job skills needed than the traditional ATC – the practitioner. It would behoove the profession to provide for these new skills rapidly becoming in demand by employers across the nation.

Needs assessment literature. A review of the needs assessment literature reveals several different frameworks for conducting a needs assessment. Queeney (1995), suggests the following steps in a needs assessment:

1. set the standard or the minimum level below which a "need" exists,
2. identify the extent of the need,
3. identify reasons for the discrepancies,
4. provide remedies or educational interventions for the discrepancies,
5. discuss the implications of the findings to the profession or organization,
6. propose an action plan (p. 207).

Determining the standard below which a need exists is a very difficult matter when working with teaching methodology knowledge. In reviewing the literature while creating the instrument for this study, not only was there no one universally accepted measure of teaching methodology knowledge, but there was certainly no authors who offered such a standard to which educators of all specialties could be measured. For instance, the teaching methodology knowledge necessary to improve instruction for athletic training instructors and those in other health care professions may not be the same knowledge necessary to receive a teaching certificate or license. Determining the standard level of knowledge that athletic training educators should possess, specifically, is a daunting concept. Therefore, in place of the standard and current measures, knowledge and competence measures were used.

The second step, identifying the extent of the need, was what the instrument was designed for. The gap score was used as the measure of need. The results yielded a counterintuitive finding, as those participants with *more* knowledge generally had *more*

instruction in teaching methodology and a *higher* gap score. Practically speaking, those with less knowledge and less instruction in teaching methodology *should have* shown the higher gap score.

Identifying reasons for the discrepancies, step three, was provided earlier in the chapter, as was step five – discussing implications to the profession. Steps four and six (providing remedies and an action plan) are discussed in the *Recommendations* section to follow.

Misanchuk (1984), however, proposes a different series of steps when conducting a needs assessment using the discrepancy model:

1. assess the competence of the individuals to perform the task,
2. determine the relevance of the skill for the job role, and
3. assess the individual's desire to undertake the training to reduce the discrepancy.

Under this model, the competence of the individuals in teaching methodology was measured, although it was a subjective measure using self-assessment. The relevance of the skills of teaching methodology is only high to those athletic trainers who are teaching, obviously. With this survey, all of those who rated their self-perceived skill level/competence were currently teaching. Thus, the skills in question were all highly relevant to the participants. Lastly, the individual's desire to pursue further training to reduce the discrepancy was assessed. Unfortunately, those with less instruction in teaching methodology and lower knowledge index scores also were the least likely to pursue further instruction in teaching methodology. This is an issue that the NATA may choose to address within the membership, should they feel compelled to do so.

The findings of the study point toward a need. When those with more previous instruction and more knowledge of teaching methodology have *higher* gap scores than those with less previous instruction and less knowledge, the gap score illustrates the phenomenon of "you don't know what you don't know". As mentioned earlier, this phenomenon may be due to those having less instruction really not knowing the complexities of the teaching methodology constructs, thus perceiving their level of competence with those constructs to be high. At the same time, those with more instruction may have been more aware of those complexities, and thus, of their lack of thorough competence with the constructs. Therefore, the need established is not simply to provide more teaching methodology knowledge to those lacking, but to first provide an understanding of the complexities of teaching methodology and pedagogy in general. This would be done in an effort to have them understand what they do *not* know. Without this understanding, those lacking knowledge may believe that they *do* know all that they need to about teaching methodology. Once these complexities are understood, instruction in teaching methodology could begin.

The findings of this study, then, support some of the previous athletic training literature and did not support other athletic training studies. Again, comparing the results of this study with the results of other studies must be done with caution, as there are no other studies that are similar enough to directly compare. Constructs measured were similar, but not the same or were not measured using the same methods. Data gathered provided useful and important findings never before measured in several areas concerned with those teaching in ATEPs.

Recommendations and Conclusions

This section includes a discussion of five recommendations offered as solutions to meet the teaching methodology needs of ATC-MSs who are teaching in ATEPs. These recommendations are presented to stimulate discussion within the NATA membership around the issue. Following the recommendations is a brief conclusion.

Recommendations. Keeping up with all of the latest educational trends can be exhaustive, but gaining a working knowledge of basic pedagogical skills is not. However, just as reading about knee injury evaluation skills is very different than mastering the skill of actually doing it, it is not enough to just read about teaching methodology. One must learn and practice different strategies and skills to find what best helps their students learn. To this end, following is a set of five recommendations to consider as a result of the findings of this study.

One of the most important and possibly most efficient ways to increase teaching methodology knowledge and competence in ATC-MSs is to include this in their graduate programs. This may be accomplished two ways within a program. First, it would be beneficial for all graduate athletic training programs to provide for formal teaching experience for their students. This could be accomplished with a GTA program or work-study program, where they are responsible for organizing and teaching an undergraduate level course of some nature or co-teaching any course. Secondly, requiring all graduate students to take a teaching methodology course would be beneficial. Ideally, a graduate program could include both of these suggestions to provide both knowledge and experience for their graduates in teaching methodology. Upon graduation, ATC-MSs could then include both on their resume.

The second recommendation for those who are done with their schooling is to take a college course in teaching methodology over a semester. There is ample incentive already provided by the NATA to pursue this, as every credit hour of college instruction after ATC certification counts toward continuing education unit (CEU) requirements. Specifically, every credit hour of a course taken counts for 10 CEUs. Thus, a three-unit class could earn 30 CEUs, with a total of 80 CEUs being required every three years to maintain certification. Often times, the institution at which an athletic trainer works may pay for the course, or offer one course at no charge per semester. A difficulty with this recommendation may be access to an institution that offers a teaching methodology course.

In an effort to provide convenient access to further instruction in teaching methodology, the third recommendation is for the NATA to offer professional development seminars in teaching methodology at district and/or national conventions. This recommendation is proposed with caution, as "one-shot" seminars have proven to create little long-lasting change (Fullan, 1993). Thus, these seminars would need to be broken down into specific skills, such as group or collaborative learning or how to assess the learning styles of students. They would need to be much more than a lecture from a guest speaker, but run as a lab course where the attendees learn the new strategies and have the opportunity to implement and practice them. This format would be an ideal situation to present the complexities of teaching methodology in general, before taking seminars devoted to specific skills, for those who do not already understand the complexities.

A recommendation tailored more for individual instruction is the use of structured mentoring. There would be no costs, CEUs, or signing up for this option. It would require great individual motivation, however, to implement. Structured mentoring would require the ATC to actively seek out a teaching mentor, whether that person was in athletic training or in some other field, such as education. This would be a formal relationship with specific guidelines, goals, and expectations set in advance. Those who choose to pursue this type of instruction should have a good understanding of the process before implementing it. This study found structured mentoring to significantly predict the self-perceived skill level/competence of the participants. Thus, it would be an effective type of instruction to pursue for those not willing to attend courses or seminars.

Recommendation five comes from the comments that the participants of the study submitted in Part 3 of the survey. A few respondents felt that the entry-level ATC should be raised to completing a master's degree, rather than the current completion of a baccalaureate degree. Concurrently, those who intend to teach in the master's degree programs should possess a doctorate degree. Though these recommendations seem rather bold at the moment, recall that the occupational therapy profession has moved toward this structure recently and the physical therapy profession is moving toward entry-level doctorate degrees. Thus, it may be not practical to pursue currently, but creating entry-level ATC graduate programs as the norm may be prudent in the future.

These five recommendations are not meant to be an exclusive list of the only possible solutions to the new job market dilemma facing our profession. They are meant to stimulate discussion within the profession on finding ways to provide for experience

and knowledge in teaching for our membership. This is a skill that has not been emphasized nor as widely required in the past as it is today.

Conclusions. The purpose of this research study was to provide the profession of athletic training with information about the status of teaching methodology knowledge and competence that those who are teaching in ATEP programs possess, to determine if a need exists for further instruction in teaching methodology. To this end, the study was a success. The relevance of this study is that it is a national population study that provides specific information never gathered before about instructors of athletic training. This information should prove valuable to the profession and hopefully provide momentum for future research studies investigating the specialty of teaching in our profession.

Limitations

Before discussing future research directions from this study, some limitations of the study first need to be aired. The most important limitation, as communicated by numerous participants in the comments section at the end of the survey, was the choice of population parameters. This study asked for only those who are currently teaching in NATA approved or CAAHEP accredited ATEPs to respond to the whole survey. This left out an important and significantly large number of ATC-MSs who are teaching in programs that are currently in CAAHEP accreditation *candidacy*. Those in candidacy, in all practical ways, have all of the pieces of an accredited program in place and are taking it through a test run. Thus, their input would have been just as applicable and valuable as the selected population.

A further limitation is that not all excellent teachers have any teaching methodology background and many poor teachers have a wealth of teaching

methodology background. Thus, provision of this background alone, will not necessarily provide for a good or better teacher. Personalities, intellectual capabilities, life stress, and a myriad of other variables may contribute to the creation of effective or ineffective teaching.

One of the limitations of using a web-based survey is getting a poor response rate. Though it was difficult to accurately assess (due to the survey cover letter itself having to narrow the population), the 13% response rate was quite low. Future research will hopefully be able to remedy this issue either by ATCs who are teaching registering themselves as such in the NATA membership database, or by sending surveys directly to accredited program directors and having them distribute the survey to their teaching staff.

The use of self-perceived measures was too subjective to establish a baseline or a standard. If a standard is desirable, more objective measures need to be created. This may be an area for future research. And, lastly, perhaps the items on the survey were not appropriate in content or format for this population

Directions for Future Research

Future research directions suggested by the results of this study are many. The most compelling are presented here. Most obviously, determining a baseline of teaching methodology knowledge for athletic training instructors should be done using objective measures. Creating the baseline or standard below which a need is determined, however, will be difficult. Once the standard is established, an objective needs assessment should be conducted and any discrepancies noted. The value of this research to the profession of athletic training and other health care professions would be great.

Secondly, an experimental study should be conducted, using a pre/post test design with the treatment being a course in teaching methodology. This would address the question of whether taking one course in teaching methodology truly improves teaching skills or not. Either student evaluations or the self-perceived measures used in this study could be used as the pre and post-test.

Third, the phenomenon found to be apparent in this study, namely "you don't know what you don't know", should be investigated further. A brief review of the literature revealed few empirical findings on the topic. Around 1994, there was a surge in the educational literature about teaching knowledge and the lack thereof in university professors. However, the specific phenomenon mentioned above was not found to have any empirical data to support it as a theory nor to disprove it.

Lastly, future studies need to include those teaching in the classroom setting, rather than just the clinical setting, where a vast majority of the current athletic training educational studies have taken place.

REFERENCES

Brower, K., Stemmans, C., Ingersoll, C., & Langley, D. (2001). An investigation of undergraduate athletic training students learning styles and program admission success. *Journal of Athletic Training, 36*(2), 130-135.

Clymer, E. (1996, October). *A master of science in education for health professions educators. A model.* Paper presented at the Annual Meeting of the American Association for Adult and Continuing Education in Charlotte, NC.

Cohen, J. (1988). *Statistical power and analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Coker, C. (2000). Consistency of learning styles of undergraduate athletic training students in the traditional classroom versus the clinical setting. *Journal of Athletic Training, 35*(4), 441-444.

Delforge, G. & Behnke, R. (1999). The history and evolution of athletic training education in the United States. *Journal of Athletic Training, 34*(1), 53-61.

Demmon-Berger, D. (1986). *Effective teaching: Observations from research.* Arlington, VA: American Association of School Administrators.

Dennison, D. (1997). Health education graduate standards: Expansion of the framework. *Journal of Health Education, 28*(2), 68-73.

Everitt, A. & Carifio, J. (2001). The effects of learning & teaching style interactions on student success in athletic training clinical education. *Journal of Athletic Training, 36*(2S), S46.

Fogarty, R. (2001). *Ten things new teachers need to succeed. A skylight guide.* Arlington Heights, IL: Skylight Professional Development.

Foster, D. & Leslie, D. (1992). Clinical teaching roles of athletic trainers. *Journal of Athletic Training, 27*, 298-302.

Franek, T., Stemmans, C., Ingersoll, C., & O'Conner, T. (2002). Learning mode effects skill acquisition of an athletic training competency. *Journal of Athletic Training, 37*(2S), S80.

Fullan, M. (1993). *Change forces: Probing the depths of educational reform.* Bristol, PA: Falmer Press.

Gent, M. & Dell'Omo, G. (1989, July). The needs assessment solution. *Personnel Administrator, 7*, 82-84.

Gliner, J. & Morgan, G. (2000). *Research methods in applied settings: An integrated approach to design and analysis*. Mahwah, NJ: Lawrence Erlbaum Associates.

Glorioso, J. Sr. (1991, January). Assessing your training needs. *Training, 1*, 87-90.

Hansen, P. (2001). The preferred learning styles of student athletic trainers and certified athletic trainers in NATA District IV and District V. *Journal of Athletic Training, 36*(2S), S45.

Harrelson, G., Leaver-Dunn, D., & Martin, M. (2000). Learning styles of athletic training educators. *Journal of Athletic Training, 35*(2S), S56.

Johnson, G. (1995). *First steps to excellence in college teaching*. Madison, WI: Magna Publications.

Jurges, S., Horodyski, M., Fleming, D., Stopka, D., & Gearhart, T. (2001). Effect of quality of undergraduate athletic training clinical education on students' self-efficacy: A survey study. *Journal of Athletic Training, 36*(2S), S45.

Kahanov, L., Wilkinson, S., & Wughalter E. (2002). Learning temperaments and instructional strategies of athletic training students and educators. *Journal of Athletic Training, 37*(2S), S79.

Kimpston, R. & Stockton, W. (1979). Needs assessment: A problem of priorities. *Educational Technology, 19*, 16-21.

Lazerson, M., Wagener, U. & Shumanis, N. (2000). Teaching and learning in higher education, 1980-2000. *Change, 32*(3), 13-19.

Mallette, D. (2000). An examination of predictive validity of the professional knowledge PLACE examination. *Dissertation*: Colorado State University.

McKillip, J. (1987). *Need analysis: Tools for the human services and education.* Newbury Park, CA: Sage.

Mensch, J. & Ennis, C. (2001). *Students' educational experiences in CAAHEP-accredited athletic training programs*. Poster presentation at the National Athletic Trainer's Association Annual Meeting and Clinical Symposia, Los Angeles, CA.

Miller, W. & Miller, M. (1999). *Handbook for college teaching.* Sautee-Nacoochee, GA: PinecCrest Publications.

Misanchuk, E. (1984). Analysis of multi-component educational and training needs. *Journal of Instructional Development, 7,* 28-33.

Moore, D., Jr. (1998). Needs assessment in the new health care environment: combining discrepancy analysis and outcomes to create more effective continuing medical education. *Journal of Continuing Education in the Health Professions, 18*(3), 133-141.

Moul, J. (1997). *Effective clinical instruction.* Paper presented at the National Athletic Trainer's Association 48th Annual Meeting and Clinical Symposia, Salt Lake City, UT.

National Athletic Trainer's Association (1999). *Athletic training educational competencies, 3rd ed.* Dallas, TX: NATA.

National Athletic Trainer's Association (2000). *Standards and guidelines for post-certification graduate athletic training education programs.* Retrieved December 2001, from: http://www.cewl.com/pcge/gradstd10.doc

National Athletic Trainer's Association (2002). *Job placement listings.* Retrieved February-April 2002, from: http://www.nata.org

Nilson, L. (1998). *Teaching at its best: A research-based resource for college instructors.* Bolton, MA: Anker Publishing Co.

Platt, L. (2000). Leadership skills and abilities, professional attributes, and teaching effectiveness in athletic training clinical instructors. *Dissertation Abstracts International, 61*(10B). (University Microfilms No. AAI9989437).

Pregent, R. (1994). *Charting your course: How to prepare to teach more effectively.* Madison, WI: Magna.

Queeney, D. (1995). *Assessing needs in continuing education: An essential tool for quality improvement.* San Francisco, CA: Jossey-Bass.

Richards, B. (1988). *Educational needs assessment of health occupations education teachers. Final report.* Philadelphia, PA: Clearinghouse. (ERIC Document Reproduction Service No. ED296115).

Rossett, A. (1989). Assess for success. *Training and Development Journal, 43*(5), 55-59.

Rossett, A. (1991). The challenge of needs assessment. *Supervisory Management, 36*(5), 4.

Rovegno, I. (1992). Learning to teach in a field-based methods course: The development of pedagogical content knowledge. *Teaching and Teacher Education, 8*(1), 69-82.

Salant, P. & Dillman, D. (1994). *How to conduct your own survey.* New York: John Wiley & Sons.

Shepard, K. & Jensen, G. (1997). *Handbook of teaching for physical therapists.* Boston: Butterworth-Heinemann.

Solomon, D. (2001). Conducting web-based surveys. *Practical Assessment, Research & Evaluation, 7*(19), 1-5.

Solomon, D., Johnson, T., Searcy, S., & Lott, A. (2001). Using electronic surveys: Advice from survey professionals. *Practical Assessment, Research & Evaluation, 8*(1), 1-15.

Stemmans, C. (1998). An interactional analysis of experienced and inexperienced athletic trainers' behavior in clinical instruction settings. *Dissertation Abstracts International, 59*(08B). (University Microfilms No. AAG9901350).

Strom, S. (1991). *The knowledge base for teaching. ERIC digest.* (Report No. EDO-SP-88-8). Washington, DC: US Dept. of Education. (ERIC Document Reproduction Service No. ED330677).

Travis, J. (1996). *Models for improving college teaching: A faculty resource. ERIC digest.* (Report No. EDO-HE-95-6). Washington, DC: US Dept. of Education. (ERIC Document Reproduction Service No. ED403810).

Taylor, L. & Felstehausen, V. (2002). Learning style preferences of athletic training students and athletic training educators: Similarities, differences, and impact on academic performance. *Journal of Athletic Training, 37*(2S), S77.

Vattano, F. (2002). *Syllabus: Seminar in college teaching.* Unpublished manuscript, Colorado State University.

Veenman, S. (1993). Effects of a pre-service teacher preparation programme on effective instruction. *Educational Studies, 19*(1), 3-18.

Vela, L. (2001). The effects of learning style based instruction on achievement and its relationship to measures of self-efficacy. *Journal of Athletic Training, 36*(2S), S47.

Watt, J. (1997). Using the internet for quantitative survey research. *Quirk's Marketing Research Review*. Retrieved at: www.quirks.com

Weissbach, S. (1997). Internet research: Still a few hurdles to clear. *Quirk's Marketing Research Review*. Retrieved at: www.quirks.com

Williams, J. (1995). *Teaching in the community college. ERIC digest.* (Report No. RIEFEB1996). Overland Park, KS: Johnson County Community College. (ERIC Document Reproduction Service No. ED387179).

APPENDIX A: NATA Graduate Programs Standards

Standards and Guidelines for Post-Certification Graduate Athletic Training Education Programs
February 2002

PREFACE

Since 1969, the National Athletic Trainers' Association (NATA) Professional Education Committee has provided assistance and guidance in curriculum development and officially approved both undergraduate and graduate athletic training education programs in colleges and universities throughout the United States. In 1997, the Graduate Education Committee of the NATA Education Council was charged with evaluating and revising the graduate standards and guidelines. Then, in 1998, the NATA Graduate Review Committee was organized and charged with the responsibility for evaluating and recommending accreditation status of post-certification graduate athletic training education programs to the NATA Board of Directors.

This manual has been prepared as a guide for college and university personnel interested in developing and/or maintaining an NATA accredited post-certification graduate athletic training education program. Institutions interested in developing a post-certification graduate athletic training education program should contact the Chair, NATA Graduate Review Committee, 5142 South Andes Street, Centennial, CO 80015, Tel: (303) 627-6229, Fax: (303) 632-5915, e-mail: DLcaruthers@attbi.com.

This manual is subject to periodic revision by the Graduate Education Committee. While every effort will be made to inform appropriate institution personnel of significant revisions, it is the responsibility of the sponsoring institution to keep abreast of current standards and criteria that may affect accreditation of their program. Questions regarding standards and guidelines interpretation or other matters pertaining to development and implementation of an NATA accredited post-certification graduate athletic training education program should be directed to the chair of the Graduate Review Committee (see www.cewl.com)

I. About this Document

A. Information in this document is presented in six sections. The first three sections are philosophical in nature. They build the foundation upon which post-certification graduate athletic training education is based. Section IV contains all the standards and guidelines that programs must address. Accreditation policies and a glossary make up the last two sections.

1. Section I, About this Document – overview of the entire document.
2. Section II, Principles and Philosophy of Post-certification Graduate Athletic Training Education – statement of philosophy of post-certification graduate athletic training education programs with related goals and objectives.
3. Section III, Program Development and Implementation – overview of developing and implementing a post-certification graduate athletic training education program. Standards Draft #13, Feb 2002 Page 2
4. Section IV, Program Standards and Guidelines – essential elements of NATA-accredited post-certification graduate athletic training education programs. All standards and guidelines are contained in this section.
5. Section V, Accreditation - information necessary for submission of self-study materials, application fee, on-site visitation, approval and appeal processes.
6. Section VI, Glossary – definition and interpretation of key terms used in this manual.

B. An Advocacy Document

These standards and guidelines are aimed at encouraging thought and empowering institutions and program directors so they can develop programs around their unique strengths or points of distinctiveness. Thus it is expected that there will be much greater variety in program design, content, and foci among graduate programs than among undergraduate and entry-level graduate programs.

Institutions will have increased freedom to innovate, to experiment with new ideas and approaches, to venture into the unknown. Not every attempt at innovation will meet with the same level of success. As educators counsel together, successful innovations will be retained and shared with colleagues and will therefore lead to stronger graduate education programs, stronger graduates, and a stronger profession.

II. Principles and Philosophy of Post-Certification Graduate Athletic Training Education

A. General Principles of Graduate Education

1. Mastery of subject matter. Graduate education facilitates mastery over the content and skills of the discipline at a level appropriate to the degree sought.
2. Critical thinking. Graduate education develops and refines critical thinking skills including a thorough knowledge of the assumptions of the discipline and an understanding of viable alternative assumptions.
3. Theoretical understanding. Graduate education provides an understanding of the theoretical bases of the field of study by grounding application and performance in theory.
4. Proficiency in research and/or creative activities. Graduate education develops proficiencies that advance the knowledge and activities of the discipline. These proficiencies include good writing skills as well as the ability to present original insights and creative expressions.
5. Service orientation. Graduate education instills responsibility to return the special benefits of graduate study to the larger community.
6. Diverse representation of perspectives. Graduate education provides for intellectually-Standards Draft #13, Feb 2002 Page 3and culturally-rich encounters within the discipline. Study and inquiry are conducted in acontext sensitive to ethnic and cultural diversity.

B. Philosophy of Post-Certification Graduate Athletic Training Education Programs

Graduate Education Programs are different from entry-level programs in purpose, design and content. The mission of a post-certification graduate athletic training education program is to expand the depth and breadth of the applied, experiential, and propositional knowledge and skills of entry-level certified athletic trainers, expand the athletic training body of knowledge, and disseminate new knowledge in the discipline. Graduate education is characterized by advanced systematic study and experience—advanced in knowledge, understanding, scholarly competence, inquiry, and discovery.

C. Principles of Post-certification Graduate Athletic Training Education

Instruction in advanced skills and knowledges, the preparation of certified athletic trainers for leadership roles, and a research experience are considered to be the distinguishing characteristics of graduate education in athletic training. Advanced educational experiences designed to enhance the certified athletic trainer's ability to function in clinical, teaching, administrative, or research environments are considered to be essential components of the post-certification graduate athletic training education program. While minimal graduate courses and resource requirements are specified in this document, flexibility and innovation in curricular development are encouraged. However, the program must demonstrate its contribution to advanced education of athletic training practitioners.

The NATA Education Council has developed a comprehensive list of athletic training educational competencies and clinical proficiencies in order to provide guidance and direction in the professional preparation of entry-level athletic training students (see www.cewl.com). Thus, they represent important guidelines for curriculum design, development of individual course content, and structuring of clinical experiences for the entry-level programs. Development of an effective post-certification graduate athletic training education program depends on a thorough assessment of those education experiences typically offered at the entry-level. Post-certification graduate athletic training education programs include new and advanced, in-depth educational experiences designed to enhance the athletic trainer's professional practice.

III. Program Development and Implementation

A. Appointment of Program Director

The program director is essential in the initial stages of planning and developing a post-certification graduate athletic training program. This appointment also provides a contact person or liaison between the Graduate Review Committee and the sponsoring college or university. Criteria for the selection of a program director are outlined in Section IV.F.2. The program director should be involved in identifying other program faculty and staff.

B. Program Sponsorship

The administrative organization of the program must be compatible with the administrative structure of the department, school, or college in which it is housed. Locating the program in a Department of Athletic Training is desirable. Although the program director manages the program, ultimate administrative responsibility lies with the head of the academic unit sponsoring the program. The administrative structure must be such that the program director fits within the reporting structure on par with other allied health or similar programs within the institution.

C. Mission, Goals, Objectives, and Points of Distinctiveness

Mission, goals and objectives guide the program, and should be consistent with the missions of the university, college, and department in which the program is housed. A program's mission, goals and objectives should also reflect the points of distinctiveness of the institution, its faculty, resources, or students. Thus, a wide variety in program design, content, and foci are expected between institutions.

D. Assessment of Available and Needed Resources

Appropriate personnel, classroom, laboratory space, and equipment are necessary components for the administrative, instructional, clinical, and research components of the program. A thorough assessment of these resources early in the process will allow time to rectify deficiencies, and ongoing assessment throughout development and implementation is necessary to keep the program viable.

E. Curriculum

The curriculum should be designed around the program's philosophy, mission, goals, and points of distinctiveness. The subject matter areas offered by the program should be based on faculty expertise and institutional resources, and should expand upon NATA entry level education.

1. Clinical experience is optional, but will be part of most graduate programs. Such experiences, if used, must be integrated into the curriculum so that students enhance their knowledge and refine their clinical skills.
2. A hands-on research experience, and the knowledge and skills necessary to complete such, are required curricular components. The experience should be designed so that students deepen their theoretical understanding of the profession, enhance their critical thinking ability, increase their writing and speaking skills, and advance the knowledge of the discipline.

F. Finances

Adequate financial support for development, ongoing operation, and improvement of the program must be provided by normal institutional budgeting processes.

G. Accreditation

Accreditation is a collegial process of self-review and peer review, involving three major activities

1. A self-evaluation (self-study) by an institution or program using the Standards and Guidelines contained in this document and culminating in submission of a self study report to the NATA Graduate Review Committee.
2. A peer review of the self study and the institution during an on site visit to confirm the accuracy of the self study and gather additional evidence of quality
3. A decision or judgement by the Graduate Review Committee and the NATA Board of Directors to accredit, accredit with conditions, or not accredit the institution/program.

H. Self-Study

Self-study by a program is the cornerstone of the voluntary peer review system of accreditation. It is both a process and a product, performed, as a cooperative effort, by individuals with varied interests in program improvement (ie. institutional administration, program faculty, students, clinical staff, and the employers or supervisors of program graduates). The process of self-study requires the detailed analysis of all aspects of the program, so it should be an ongoing process. The self-study critically examines the program in structure and substance, judges the program's overall effectiveness relative to its mission, identifies specific strengths and deficiencies, and indicates a plan for necessary modifications and improvements.

I. Initiating Accreditation Review

Pursuit of post-certification graduate athletic training education program accreditation represents a voluntary decision on the part of institution administrative personnel. NATA accreditation review and evaluation of a program (proposed or established) can be initiated only on written request by the chief academic officer (e.g. president, provost, academic vice president) of the institution submitting the proposal. Receipt of this written request and accreditation fee is considered to be official notice of the institution's intent to pursue NATA accreditation of its post-certification graduate athletic training education program.

J. Program Implementation

All aspects of the proposed program must be fully implemented and operational before accreditation can be granted. At least one student must complete the program prior to the site visit.

IV. Program Standards and Guidelines

A. Definitions of Accreditation Standards and Guidelines

1. Standards are mandatory components of the program and are denoted by the verb "**must.**"
2. Guidelines are recommended components of the program and are denoted by the verb "*should.*" *Should* is used to express obligation, allowing freedom to suggest an alternative for meeting the intent of the guideline. Written explanations are required if an alternative to a guideline is used, or if the program is unable to adhere to a guideline. Strategies used in attempting to meet the guideline must be part of the written explanation.
3. Verbs specific to Standards are **bolded** while verbs specific to Guidelines are *italicized.* Note: all Standards and Guidelines are contained in this section of the document. The use of these verbs in other sections of the document do not constitute Standards or Guidelines.

B. Mission Statement

The program's written mission statement **must** be congruent with the missions of the university, college, and department in which the program is housed, and consistent with the principles and philosophy outlined earlier in this document (see Section II).

C. Goals and Objectives

Programs will differ as they develop around unique institutional philosophies, resources, and faculty strengths. Programs **must**:

1. Identify specific points of distinctiveness related to the faculty; academic courses; and the program's clinical, administrative, teaching, and/or research components.
2. State specific long and short-term goals and objectives related to the program's points of distinctiveness or uniqueness. Goals and objectives **must** also address the following issues:
    a. Increase students' depth and breadth of understanding of athletic training subject matter areas and skills beyond those required of the entry-level certified athletic trainer, and/or develop areas new to athletic training. The following documents can be consulted to define the education and practice of an entry-level athletic trainer.
        i. *Athletic Training Educational Competencies (see www.cewl.com)*
        ii. *Athletic Training Clinical Proficiencies (see www.cewl.com)*
        iii. *NATABOC Role Delineation (see www.nataboc.org)*
    b. Enhance students' critical thinking so that they have a thorough knowledge of the assumptions of the discipline and an understanding of viable alternative assumptions.
    c. Develop students' understanding of the theoretical bases of athletic training knowledge and skills.
    d. Expand students' ability to discover and develop new knowledge and to enhance their desire to continue scholarly growth.
    e. Provide students' with advanced knowledge and skills to prepare them for leadership roles in athletic training.
    f. Instill responsibility within students to serve the profession and their communities.
3. Provide a plan for meeting program goals and objectives.
4. Provide evidence that the programs stated goals and objectives have been and/or are being met.

D. Degree Designation

Athletic training has a unique body of knowledge and, therefore, *should* be treated as a discipline. The institution is strongly encouraged to grant a Masters degree (e.g. MS, MA, MEd) in Athletic Training; however, degrees in related disciplines approved by the institution will be accepted.

E. Transcript Recognition

The name "Athletic Training" *should* appear on the transcript as the major, specialization, concentration, emphasis, or track.

F. Personnel

1. Administrative Personnel
    a. The dean and department/division head **must** accept the administrative responsibility of providing appropriate resources for the program.
    b. Due to the interdisciplinary nature of the athletic training curriculum, there *should* be cooperation between the dean or department/division head and administrators in related academic units.
2. Program Director
    a. Position
        i. The program director **must** be appointed at least 1 year prior to program implementation and 2 years prior to site visitation. Thus, the minimum time from hiring a program director to program accreditation is 2½ years for a one-year program and 3½ years for a two-year program.
        ii. The program director **must** be a full-time employee of the college or university sponsoring the post-certification graduate athletic training education program
        iii. The program director **must** be a member of the graduate faculty as defined by institutional policy.
        iv. The program director *should* be in a tenure track position.
    b. Responsibilities
        i. The program director **must** oversee the day-to-day operation, coordination, supervision, and evaluation of all aspects of the program. Close cooperation between the program director and all associated personnel (e.g. faculty, athletic training staff, research lab directors) will be necessary for effective planning and implementation of student clinical and research experiences.
        ii. The program director **must** ensure that accurate, up-to-date records are kept and analyzed.
        iii. The program director's administrative and supervisory responsibilities **must** be recognized in terms of released/(re)assigned time from other departmental responsibilities. The amount of released/(re)assigned time *should* be consistent with departmental or institutional policy and appropriate for the administrative responsibilities of the program director.
    c. Qualifications
        i. The program director **must** possess a terminal degree (e.g. PhD, EdD) from an institution that the institution sponsoring the education program accepts credit from.
        ii. The program director **must** be a certified athletic trainer (NATABOC), with three years' teaching and research experience as a full-time faculty member.
        iii. The program director **must** have a strong academic orientation, including a demonstrated interest in the professional preparation of students.
        iv. The program director **must** have an ongoing involvement in athletic training research as evidenced by scholarly publications/presentations and involvement in related professional organizations.
        v. The Program director should have prior experience in the clinical practice of athletic training.

vi. Experience in the clinical supervision of athletic training students by the program director is desirable.

3. Program Faculty

a. The institution **must** provide appropriate faculty to deliver the program, comparable in number and preparation to other nationally accredited programs within the institution, and at other comparable institutions.

b. Each faculty member **must** be qualified, through professional preparation and experience, in his or her respective academic area.

c. The majority of the program *should* be taught/directed by faculty who are NATABOC certified athletic trainers.

d. All program faculty and adjunct personnel **must** be familiar with the goals and objectives of the program relevant to their respective instructional/clinical/ research areas, and *should* demonstrate a sincere interest in assisting students in attaining their personal and the programs goals.

4. Clerical Staff

There **must** be appropriate clerical staff to support the program director and other faculty in their instructional, clinical, administrative, and research responsibilities.

5. Graduate Assistants

Administration of graduate assistantships **must** be in compliance with institutional and Council for Graduation School (see www.cgsnet.org) policies.

G. Curriculum

1. The curriculum **must** be designed to accomplish the established goals and objectives of the program outlined in Section IV.C.2 of this document.

2. The subject matter areas offered by the program *should* be based on faculty expertise and institutional resources.

3. The majority of course work *should* relate to athletic training knowledge.

4. Specific courses and experiences that lead to, and involve, a research experience **must** be included.

a. The research experiences **must** be designed to expand the body of knowledge in athletic training through quantitative or qualitative research.

b. The athletic training faculty *should* be actively involved in student research to provide mentorship and to serve as role models.

c. Sufficient time and opportunity **must** be provided within the curriculum for students to complete a quality research experience that includes a hands-on experience with an established systematic method of inquiry (i.e. thesis, research projects, participation as a co-investigator in faculty research, or similar activity).

d. Course work and professional experiences *should* be scheduled so as to facilitate the research experience. For example, offer research methods and statistics courses early in the program to facilitate students' hands-on research experience

H. Clinical Experience

1. Clinical experiences are a strongly recommended, but not required, part of the program. If the program elects to use clinical experiences, they **must** provide the opportunity to develop skills beyond entry-level competencies. The purpose of the clinical experience is educational and not just to provide a work force for the institution or affiliate sites.

2. If the institution elects to offer a clinical education component, the sponsoring institution **must** have a formal plan for organizing and structuring the clinical experiences that will insure effective learning opportunities for all students in the clinical aspect of the program.

3. Plans for clinical experiences *should* reflect provisions for progressive development of professional skills and knowledge, and a system for evaluating and recording student achievement.

4. Advanced clinical experiences at the graduate level **must** allow for a level of responsibility compatible with the credentials and expertise possessed by the student, and do not necessitate daily, personal supervision. Students who, by virtue of their previous clinical experience, have

progressed to an appropriate level of competence *should* be provided with opportunities to develop their administrative and decision-making skills during their clinical experience.
5. The number of work hours performed during clinical experiences and graduate assistantship experiences **must** be in compliance with institution, state, or federal laws and regulations
6. The number of hours spent in clinical education experiences *should* not be so time intensive that they interfere with classroom and research experiences.
7. Clinical experiences *should* be enhanced through regularly scheduled in-service training sessions, staff meetings, injury evaluation clinics, and individual consultations.

I. Affiliated Settings

In certain instances, the college or university sponsoring the program may establish affiliation with other units within the institution or at other institutions, to provide instruction, research, clinical, or administrative experiences. If such affiliations are made:

1. There **must** be formal administrative arrangements for use of all affiliated settings. Written documentation of official approval by appropriate administrators in all cooperating institutions **must** be forwarded with other specified materials at the time the program proposal is submitted for NATA accreditation consideration.
2. Regular communication between the program director and all affiliated setting supervisors **must** be maintained with respect to scheduling of affiliated experiences, evaluation of student progress, and other matters affecting the student's learning experiences.

J. Student Recruitment and Selection

1. College or university materials disseminated for the purposes of program publication and/or student recruitment **must** accurately describe the post-certification athletic training education program.
2. Recruitment materials **must** not intentionally misrepresent the field of athletic training with respect to career opportunities, financial rewards or other benefits.
3. Full financial responsibilities and benefits (e.g. tuition and fees, tuition wavers, financial aid, graduate assistantships) **must** be provided to the student, in writing, prior to the student committing to attend the institution.
4. Criteria for acceptance of students into a program:
    a. **must** have received appropriate institution administrative approval.
    b. **must** be in written form and
    c. *should* include specific prerequisites regarding academic background, previous experience, recommendations, or other appropriate factors.
    d. **must** include NATABOC certification, eligibility for NATABOC certification or an equivalent athletic training credential (e.g. Canadian Certified Athletic Therapist).
    e. **must** include at least a baccalaureate degree from an accredited college or university.
5. The total number of students accepted into the program, as well as the number enrolled in each class or laboratory, **must** be consistent with learning experiences at the sponsoring or peer institutions.

K. Facilities and Resources

1. Adequate resources **must** be provided so the program can meet its goals and objectives. These include:
    a. faculty and staff
    b. administrative support
    c. classroom and laboratory space
    d. research facilities and equipment
    e. finances
    f. clinical opportunities, facilities, and equipment
    g. medical and allied health personnel, where appropriate
    h. library materials, education materials and learning aids (computers, multimedia, etc.)
2. Appropriate line items for the development and ongoing operation of the program *should* be identified and discussed in the proposal stage. Provisions *should* be made for funding of any

additional resources for program improvements necessary to meet current NATA accreditation requirements.

L. Equal Opportunity (Diversity)

1. Student, faculty recruitment, student admission, and faculty employment practices **must** be non-discriminatory with respect to race, color, creed, sex, age, disability, and national origin.

2. Post-certification graduate athletic training education programs **must** assure equal opportunity for classroom instruction, clinical experience, and other educational activities for all students in the program.

M. Program Evaluation

1. The cornerstone of success for any education program is ongoing program evaluation. The educational unit in which the program is housed **must** have a formal plan for ongoing evaluation of all aspects of the program including:
   a. attainment of program goals
   b. instructional curricular effectiveness
   c. student achievement
   d. all information required for the Annual Report to the Graduate Review Committee
2. Instructional curricular effectiveness
3. Examples of program and student effectiveness records include:
   a. student learning
   b. student performance in classes
   c. student outcomes
   d. graduation rates
   e. publication of student works (e.g. abstracts, manuscripts)
   f. presentations by students
   g. student, alumni, and employer surveys
   h. accomplishments of program alumni
   i. job placement report
4. Results of these evaluations **must** be analyzed and used to revise and strengthen the program. A satisfactory system of evaluating student performance in both the classroom and other components (e.g. teaching, administrative, clinical, and/or research) of the program **must** be established.
5. Program evaluation **must** be completed on a regular, ongoing basis and results *should* be shared with students.

V. Accreditation

A. The accreditation process is established by the Graduate Review Committee, based on the principles, philosophy, policies, Standards and Guidelines outlined in this document.

B. Accreditation is voluntary and is granted:

1. to programs that are in compliance with the standards and guidelines outlined in Section IV of this document.
2. following an extensive review of the program by the institution seeking accreditation (self study) and by peer representatives of the Graduate Review Committee (including an on site visit).
3. by the NATA Board of Directors upon the recommendation of the Graduate Review Committee

C. The maximum duration of accreditation will be five years.

D. Decisions of the Graduate Review Committee may be appealed if an institution feels due process was violated or if there is a question concerning the interpretation of the Standards and Guidelines contained in this document. Appeals will be heard by the Graduate Education Committee

E. The Graduate Education Committee will be the arbitrator of all Standards and Guidelines interpretations.

VI. Glossary

• **Accrediting Body**: The NATA for post-certification graduate athletic training educational programs and CAAHEP for entry level athletic training educational programs..
• **Adjunct Personnel**: This term refers to persons who teach in the program but who are not university faculty (e.g. physicians, allied health personnel, and certified athletic trainers from clinics and hospitals.
• **CAAHEP:** Commission on Accreditation of Allied Health Education Programs
• **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**: A body that accredits programs representing 18 allied health professions recognizing over 1900 allied health education programs in more than 1300 institutions (see www.caahep.org). CAAHEP grants accreditation to educational programs for the athletic trainer upon the recommendation of the Joint Review Committee on Educational Programs in Athletic Training (JRC-AT).
• **Desirable**: A term used to designate aspects of a post-certification graduate athletic training program that are not absolutely essential but are considered to be very significant.
• **Entry Level Athletic Training Graduate Education Program** : A program whose goal is to prepare students for taking the NATABOC Certification examination. These programs are accredited by the Commission on the Accreditation of Allied Health Education Programs (CAAHEP).
• **Essential**: A term that equates with indispensable. It identifies an absolute requirement.
• **Graduate Education Committee**: A standing committee of the NATA Education Council, charged with promoting graduate athletic training education, including establishing and interpreting Post-Certification Graduate Athletic Training Programs.
• **Graduate Review Committee**: A standing committee of the NATA Education Council, charged with reviewing post-certification graduate athletic training education programs and making accreditation recommendations to the NATA Board of Directors
• **Guidelines**: Recommended components of the program and are denoted by the verb "*should.*" *Should* is used to express obligation, allowing freedom to suggest an alternative for meeting the intent of the guideline. Written explanations are required if an alternative to a guideline is used, or if the program is unable to adhere to a guideline. Strategies used in attempting to meet the guideline must be part of the written explanation.
• **Joint Review Committee on Educational Programs in Athletic Training (JRC-AT).**
Reviews institutions for compliance the Standards and Guidelines for Entry-level Athletic Training Educational Programs and recommends accreditation decisions to CAAHEP. Also writes and interprets the Standards and Guidelines for Entry-level Athletic Training Educational Programs (see www.cewl.com).
• **Knowledge, Applied**: Application of existing knowledge gleaned from the literature or other sources.
• **Knowledge, Experiential**: Knowledge gained from doing.
• **Knowledge, Propositional**: New knowledge gained from research and expanding scholarship in the discipline.
• **Must** : Term used to indicate that something is required, compelled, mandatory or should be done without fail. It connotes an absolute requirement. A standard.
• **NATA**: The National Athletic Trainers Association (see www.nata.org)
• **NATA Board of Certification (NATABOC):** The body that certifies athletic trainers and identifies for the public, quality healthcare professionals through a system of certification, adjudication, standards of practice and continuing competency programs. The NATABOC is Accredited by the National Commission for Certifying Agencies (see http://www.nataboc.org).
• **Post-Certification Graduate Athletic Training Education Program**: a program whose goal is to expand the depth and breadth of knowledge and skills beyond those required of entry-level athletic trainers. Students admitted to these programs must have passed, or be eligible to take, the NATABOC examination or hold an equivalent certification. These programs are accredited by the NATA.
• **The Program**: This term refers to a post-certification graduate athletic training education program.
• **Should**: A term used to designate requirements that are so important that their absence must be justified. A program or institution is at risk if it is not in compliance with a "should." A guideline.
• **Standard**: Mandatory components of the program. Denoted by the verb "**must.**"

APPENDIX B: Instrument

ATHLETIC TRAINING EDUCATORS: BACKGROUND, KNOWLEDGE & COMPETENCE

Thank you for agreeing to participate in this study! The following survey should take no more than 6-10 minutes of your time. It is divided into three parts: background information, an assessment of teaching knowledge and self-perceived competence, and a closing page for comments. Please read each question carefully before giving your thoughtful response.

Part 1: Background Information

1. What is your current position/title? *(click only one that most closely applies)*
   - ☐ Assistant athletic trainer
   - ☐ Athletic trainer
   - ☐ Head athletic trainer
   - ☐ Instructor of athletic training
   - ☐ Athletic trainer/Instructor
   - ☐ Curriculum director of athletic training educational program (ATEP)
   - ☐ Other - _____

2. What is your highest degree earned?
   - ☐ Bachelor's
   - ☐ Master's
   - ☐ Doctorate

3. In what field did you earn your highest degree? *(click only one that most closely applies)*
   - ☐ Athletic training
   - ☐ Exercise physiology
   - ☐ Kinesiology
   - ☐ Other - _____

4. In what year did you graduate with your Master's degree?
   (scroll down window from 2002 to 1960, including "before 1960" as the last choice)

5. Are you currently involved in conducting research?
   - ☐ Yes
   - ☐ No

6. Do you currently have teaching responsibilities in an approved or accredited Athletic Training Education Program (ATEP)?
   - ☐ Yes - If yes, then do you teach in: *(click all that apply)*, ☐ classroom setting ☐ clinical setting
   - ☐ No

The remainder of the Part 1 inquires about your educational preparation for teaching responsibilities. If you are not currently teaching in an approved or accredited program, please click on the "Next" button below. (This will send them to the last "your comments" screen for them to submit and be done.) If you are currently teaching in an approved or accredited program, please click on the "Continue" button below.

Next *Continue*

7. How many years have you been teaching in an Athletic Training program? *(check only one)*
(scroll down window from 1 year to 25 years, including "more than 25yrs." as last choice)

8. What percentage of your job responsibilities include teaching? (for example: teaching one 3-hour course = 10% load in a 9 month contract) (choose closest percentage)

- ☐ 10%
- ☐ 15%
- ☐ 25%
- ☐ 33%
- ☐ 50%
- ☐ 66%
- ☐ 75%
- ☐ 100%

9. When in your career did you have your first formal teaching assignment (defined as being the primary instructor for a semester/quarter long course)? *(check only one)*

- ☐ During undergraduate program
- ☐ During graduate program
- ☐ Immediately after receiving graduate degree
- ☐ Within two years after receiving graduate degree
- ☐ More than two years after receiving graduate degree

10. Did you receive instruction in teaching methods (defined as one of the activities listed below) *before* you graduated with your Master's?

- ☐ Yes
- ☐ No
- If ***YES***, what type of training? *(check all that apply)*
  - ☐ course(s) in teaching methodology in undergraduate education
  - ☐ course(s) in teaching methodology in graduate education
  - ☐ teaching certificate/credential
  - ☐ graduate teaching assistantship
  - ☐ professional development seminar in teaching methodology
  - ☐ structured mentoring
  - ☐ CIE training (clinical instructor educator)
  - ☐ ACI training (approved clinical instructor)
  - ☐ CI training (clinical instructor)
  - ☐ other - _____

11. Did you receive instruction in teaching methods *after* you graduated with your Master's?

- ☐ Yes
- ☐ No
- If ***YES***, what type of teacher training? *(check all that apply)*
  - ☐ teaching certificate/credential
  - ☐ professional development seminar in teaching methodology
  - ☐ structured mentoring
  - ☐ CIE training (clinical instructor educator)
  - ☐ ACI training (approved clinical instructor)
  - ☐ CI training (clinical instructor)
  - ☐ other - _____

12. *Immediately upon graduating with your Master's*, how competent would you say you were with your teaching abilities? *(check only one)*
- ☐ Extremely competent
- ☐ Very competent
- ☐ Competent
- ☐ Minimally competent
- ☐ Not competent

13. Remembering your *first teaching assignment after graduating with your Master's*, what was your level of anxiety about teaching? *(check only one)*
- ☐ Extremely high
- ☐ Very high
- ☐ High
- ☐ Minimally high
- ☐ Not high

14. How beneficial do you feel additional instruction in teaching methodology would be to you now or in the future? *(check only one)*
- ☐ Extremely beneficial
- ☐ Very beneficial
- ☐ Beneficial
- ☐ Minimally beneficial
- ☐ Not beneficial

15. How likely would you be to take a teaching methodology professional development seminar if offered at a convenient location to you? *(check only one)*
- ☐ Extremely likely
- ☐ Very likely
- ☐ Likely
- ☐ Minimally likely
- ☐ Not likely

16. To what do you attribute your *competency* in teaching? *(check all that apply)*
- ☐ course(s) in teaching methodology in undergraduate education
- ☐ course(s) in teaching methodology in graduate education
- ☐ graduate *teaching* assistantship
- ☐ professional development seminar in teaching methodology
- ☐ structured mentoring
- ☐ knowledge of Athletic Training (content knowledge)
- ☐ teaching experience on the job
- ☐ observing others teach
- ☐ other: _____

Part 2: Assessment of Teaching Knowledge and Self-Perceived Competence

Instructions:
Please respond to each statement carefully and honestly. The following items represent many of the professional knowledge and skills teachers need to possess. ***There are two columns to the left of each question to respond to.***

- The ***first column*** is to record your knowledge of the item.
- The ***second column*** records how skilled you feel you are at implementing that item in your instruction.

In each column, please click on the scale from 1 to 5 (1=very low, 2=low, 3=fair, 4=high, 5=very high). Please choose **"NF"** if you are **"Not Familiar"** with the item, and feel free to not respond to either scale for that item.

(1=very low.....5=very high)

	Item	*My knowledge of:*	*My skill level in using:*	
	Use of Teaching Methods:			
1.	Collaborative or group learning.	1 2 3 4 5	1 2 3 4 5	NF
2.	Class discussions.	1 2 3 4 5	1 2 3 4 5	NF
3.	Case studies.	1 2 3 4 5	1 2 3 4 5	NF
4.	Simulations.	1 2 3 4 5	1 2 3 4 5	NF
5.	Individualized mastery learning.	1 2 3 4 5	1 2 3 4 5	NF
6.	Incorporating technology in instruction (software, visual aides)	1 2 3 4 5	1 2 3 4 5	NF
	Teaching Student to:			
7.	Use inquiry skills.	1 2 3 4 5	1 2 3 4 5	NF
8.	Use critical thinking skills.	1 2 3 4 5	1 2 3 4 5	NF
9.	Use problem solving skills.	1 2 3 4 5	1 2 3 4 5	NF
10.	Use higher order thinking skills (transfer knowledge across topics).	1 2 3 4 5	1 2 3 4 5	NF
11.	Connect what they're learning with what they already know.	1 2 3 4 5	1 2 3 4 5	NF
12.	Use content skills (athletic training).	1 2 3 4 5	1 2 3 4 5	NF
	Your Classroom Decision Skills:			
13.	Stimulating students' interests.	1 2 3 4 5	1 2 3 4 5	NF
14.	Determining students' learning styles.	1 2 3 4 5	1 2 3 4 5	NF
15.	Establishing classroom environment (atmosphere).	1 2 3 4 5	1 2 3 4 5	NF
	Your Class Preparation Skills:			
16.	Determining teaching objectives.	1 2 3 4 5	1 2 3 4 5	NF
17.	Developing effective lesson plans.	1 2 3 4 5	1 2 3 4 5	NF
18.	Developing a syllabus.	1 2 3 4 5	1 2 3 4 5	NF
19.	Selecting instructional strategies based on learning styles.	1 2 3 4 5	1 2 3 4 5	NF
20.	Using a variety of assessment techniques, both formal and informal to assess student learning.	1 2 3 4 5	1 2 3 4 5	NF

Part 3: Your Comments

Please use the following space to provide comments you may wish to convey to the researcher about this survey:

(box for them to type text into)

Thank you sincerely for participating in this study! Your participation will help inform the professional preparation of future athletic training teachers.

To be entered into the drawing for the $50 cash prize, please write down my address below and, *after* you have submitted the survey, send an electronic mail message to that address saying, "Enter me into the survey drawing!" If you need to contact the researcher for any reason, please write down the following address and feel free to do so *after* you have submitted the survey by clicking on the "Submit" button:

Debbie I. Craig, MS, ATC, doctoral candidate
dccolorado@earthlink.net

By clicking the "Submit" button below, your survey will be sent to the researcher with no identifiers attached. Your response will be anonymous. Once the "Submit" button is clicked, you will not be able to return to this survey.

Thank you, again, for your participation!

Submit

APPENDIX C: Human Subjects Review Approval

Office of Regulatory Compliance
Office of Vice President for Research
And Information Technology
Fort Collins, CO 80523-2046
(970) 491-1563
FAX: 970-491-2293

MEMORANDUM

TO: Brian Cobb, School of Education, 1588
FROM: Celia Walker, Administrator for the
Human Research Committee
SUBJECT: **PROJECT APPROVAL**
Title: Job Preparedness of Graduate-Level Athletic Trainers: A Needs Assessment of Pedagogical Knowledge and Self-Perceived Competence.
Protocol No.: 02-149H
Funding Agency: N/A
Funding Agency Deadline: N/A
DATE: June 25, 2002

I am pleased to inform you that the above-referenced project was approved by the Human Research Committee on June 25, 2002 for the period June 25, 2002 to June 13, 2003. Because of the nature of this research, it will not be necessary to obtain a signed consent form. However, all subjects must receive a copy of the approved cover letter printed on department letterhead. The requirement of documentation of a consent form is waived under § _-117 (c) (2) with the use of the approved survey. **Approval is for 500 participants. As a condition of approval, the letter of cooperation from NATA must be submitted to the HRC prior to the initiation of the project.**

A status report of this project will be required within a 12-month period from the date of approval. You will be sent a reminder approximately two months before the protocol expires. The Principal Investigator will report on the numbers of subjects who have participated this year and project-to-date, about problems encountered, and provide a verifying copy of the consent form or cover letter used. The necessary form (H-101) is available from the Regulatory Compliance web page (see below). Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

It is the responsibility of the investigator to immediately inform the Committee of any serious complications, unexpected risks, or injuries resulting from this research. It is also the investigator's responsibility to notify the Committee of any changes in experimental design, participant population, or consent procedures or documents. This can be done with a memo which completely describes the changes and their consequences (new consent form or cover letter, or altered survey instrument, for example). Students serving as Co-Principal Investigators may not alter projects without first obtaining PI approval. The PI is ultimately responsible for the conduct of the project.

This approval is issued under Colorado State University's OHRP Federal Wide Assurance 00000647 issued July 1, 2001. If approval did not accompany a proposal when it was submitted to a sponsor, it is the researcher's responsibility to provide the sponsor with the approval notice.

Please direct any questions about the Committee's action on this project to me for routing to the Committee. Additional information is available from the Regulatory Compliance web site at www.research.colostate.edu/regulatory/

Attachment

xc: Debbie I. Craig w/attachment

APPENDIX D: Contact Letters to Participants

Colorado State University
Knowledge to Go Places

August 1, 2002

Dear ATC,

Within the next few days, you will receive a request to participate in a brief on-line survey as part of a research study. The title of the study is, "Job Preparedness of Graduate-Level Athletic Trainers: A Needs Assessment of Pedagogical Knowledge and Self-Perceived Competence". I am sending it to you via electronic mail with a link to the survey web-site included. As the number of accredited undergraduate Athletic Training Educational Programs grows sharply, the need for ATC's with teaching experience grows. This research study assesses the status of the educational background, knowledge of teaching methodology, and skills of instruction that current certified athletic trainers who have their graduate degree possess.

This survey is being conducted to better inform members of the National Athletic Trainer's Association who must make decisions on the educational content of the graduate degree programs across the nation.

I would greatly appreciate your taking the 7-10 minutes necessary to complete and submit your survey when it arrives within the next week. Your participation is voluntary. If you have any questions about the research study, please feel free to contact me at:
Debbie Craig – dccolorado@earthlink.net

Thank you in advance for your help! Please direct any questions about liability concerning this study to Celia Walker, Director of Regulatory Compliance at Colorado State University, at (970) 491-1563, or celia.walker@research.colostate.edu.

Sincerely,

Debbie I. Craig, MS, ATC, doctoral candidate
(970) 494-0716
Brian Cobb, PhD
(970) 491-6835
Colorado State University

Colorado State University
Knowledge to Go Places

August 6, 2002

Dear ATC,

As a certified athletic trainer, you are well aware that by January of 2004, the only route to certification will be through CAAHEP accredited Athletic Training Education Programs. This change has created an explosion of undergraduate programs seeking and attaining accredited status. A majority of the job positions at colleges and universities who have an accredited program are now requiring both a graduate degree in athletic training or a related field *and* teaching experience. Commonly, teaching experience is not provided in the curriculum of athletic training or related graduate programs. This raises a concern of how graduates of these programs acquire teaching experience and knowledge.

This is a *research study* designed to measure the need for instruction in teaching methodology in graduate programs across the nation. The title of the study is, "Job Preparedness of Graduate-Level Athletic Trainers: A Needs Assessment of Pedagogical Knowledge and Self-Perceived Competence". You have been selected to participate in this study because you are an ATC with a graduate degree who is currently working in a college or university setting. It is important that each survey be completed and submitted so that the results of this study truly represent the knowledge and skills of the selected population.

You may be assured of complete anonymity and confidentiality. When you submit the survey, no personal or institutional identifiers will be attached. If you wish, you may use a different computer to access the survey web-site to avoid the possibility of your employer tracing your computer access to the survey web-site. By submitting the survey, it is assumed that you give informed consent to participate in the study. *Your participation is, of course, voluntary.* You may discontinue participation at any point without penalty.

The study takes only 7-10 minutes of your time to complete and submit. The requested date of return for the survey is **September 6, 2002**. All who complete and submit the survey before this deadline will be entered into a drawing for a $50 cash prize! The results of the study will be provided upon request to all participants who complete the survey.

I would be happy to answer any questions you may have about this study. Please feel free to contact me via e-mail at: dccolorado@earthlink.net . Please write down this e-mail address, as you will need it to enter the drawing *after* the survey is submitted.

Thank you very much for your participation in the study! To complete the survey, **remember the password, "NATA"**, and click on the link below. Have a wonderful day!

Sincerely,
Debbie I. Craig, MS, ATC, doctoral candidate; (970) 494-0716
Brian Cobb, PhD; (970) 491-6835

Click here to access the survey (password – NATA) - http://www.colostate.edu/depts/r-dcenter/abc.html

Please direct any questions about liability concerning this study to Celia Walker, Director of Regulatory Compliance at Colorado State University, at (970) 491-1563, or celia.walker@research.colostate.edu.

Colorado State University
Knowledge to Go Places

August 26, 2002

Dear ATC,

Two weeks ago, an electronic mail message was sent to you requesting your participation in an on-line survey as part of a research study to assess the need for more instruction in teaching methodology for those ATC's who currently have their master's degree and are teaching. The title of the research study is, "Job Preparedness of Graduate-Level Athletic Trainers: A Needs Assessment of Pedagogical Knowledge and Self-Perceived Competence".

If you have already completed and submitted the survey, please accept my sincere thanks! If not, please do so today. I am especially grateful for your help because I believe that your response will be very useful to NATA members who must make decisions on the educational content of the graduate degree programs across the nation.

If you did not receive the electronic mail message containing the link to the on-line survey, the link is provided again below. Please try to complete and submit the survey by September 6th.

Sincerely,

Debbie I. Craig, MS, ATC, doctoral candidate
(970) 494-0716; dccolorado@earthlink.net
Brian Cobb, PhD
(970) 491-6835

link to web-survey: www.colostate.edu/depts/r-dcenter/abc.html