

CONTINUING PROFESSIONAL EDUCATION IN ATHLETIC  
TRAINING

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## Chapter 1

### INTRODUCTION

#### Athletic Training

In 1950, the National Athletic Trainer Association was founded in Kansas City, Kansas, at the first national convention of athletic trainers. With just over 200 members in attendance at the first convention, the NATA was founded with the purpose to "build and strengthen the profession of athletic training through the exchange of ideas, knowledge, and methods of athletic training" (O'Shea, 1980, p. 1). A certified athletic trainer (ATC) is a trained professional who can be described as a highly skilled professional specializing in the prevention, treatment, and rehabilitation of injuries (<http://www.nata.org>).

From this original concept, the profession has seen rapid expansion in not only membership but also with the profession itself. Today there are approximately 22,756 members in the National Athletic Trainers Association (NATA). Of the total members, 16,242 can be titled as ATC's while 4,731 are classified as students ([www.nata.org](http://www.nata.org)). Just as the role of a certified athletic trainer has expanded so has the setting in which ATC's work. Traditionally, the ATC was primarily employed in the university or professional setting, but today that has changed. From the newest

figures prepared by the NATA (1997), the university and professional sports setting accounts for only 19% of the total employment of ATC's. The highest percent increase of employment for ATC over the last few years has been in the high school and high school/clinical setting. This setting is where the highest percentage of ATC's find employment. Today it is estimated that 29% of all ATC's are working in this environment. The remainder of the NATA's membership finds itself working at rehabilitation clinics (21%), hospitals (5%), corporate/industrial (2%), other (2%) or working towards certification as a college student (17%) ([www.nata.org](http://www.nata.org))

From its foundation in 1950, the NATA has experienced major changes that have enabled the profession to grow and become more recognized as a legitimate allied health care provider. Not only did the founders of the NATA want quality medical providers, but they were also interested with having a highly educated professional providing these services. As, a direct result of these concerns, the NATA made great strides in providing boundless educational opportunities for its undergraduate students. In 1959, the first athletic training curriculum model was approved by the NATA. Other milestones in athletic training education include in 1970 the first National Athletic Trainers Board



of Certification Examination (NATABOC) examination, in 1980 the NATA requiring a curriculum major or equivalent in athletic training, and in 1994 entry-level athletic training programs accredited by the American Medical Association/ Commission on Accreditation of Allied Healthcare Education Programs (AMA/CAAHEP) (Delforge, 1999).

Currently, there are two routes for a student to be eligible to take the National Athletic Trainers Board of Certification Examination. In the effort to become a certified athletic trainer, there are several steps or criteria one has to meet in order to be eligible for the exam. These two routes include the curriculum route and the internship route. For one to be eligible from the curriculum route, the applicant must have a minimum of 2 years experience in a CAAHEP accredited entry-level athletic training program. In addition, the applicant must have also logged at least 800 hours of athletic training experience under the direct supervision of a NATABOC certified athletic trainer.

The other route that an applicant could take to certification is that of doing an internship. This particular candidate must have completed a minimum of 1,500 hours of athletic training experience under the direct supervision of a NATABOC certified athletic trainer in no

less than two academic years. In addition, the candidate must show on an official transcript that verifies completion of at least one formal single course in each of the following areas: general health, human anatomy, kinesiology/biomechanics, human physiology, physiology of exercise, basic athletic training, and advanced athletic training ([www.nata.org](http://www.nata.org)).

#### Continuing Education in Athletic Training

From the founding of the NATA, the profession has made great strides in improving the knowledge base of its certified and non-certified members. From hundreds of national, regional, and local conferences and seminars to college course credit and home-study programs, NATABOC ATC's are afforded the luxury of countless educational opportunities. According to the NATA, the purpose of continuing education for the ATC is to promote continued competence and development of current knowledge and skills and to enhance professional skills and judgement beyond the levels required for entry level practice ([www.nata.org](http://www.nata.org)). In addition, the professional governing body feels that the continuing education activities must be directed towards professionals in the athletic training field and must focus on increasing knowledge, skills, and abilities in the practice of athletic training Commission on Accreditation of

## Allied Healthcare Education Programs

In the field of athletic training a certain amount of Continuing Education Units (CEU's) are required of each member to maintain good standing within the profession. CEU's are a set amount of continuing educational units or credits achieved by each member according to their year of certification. In 2000, the NATA revised its Continuing Education Units requirements and categorization of providers. As before, there are certain requirements that an ATC must fulfill to maintain current certification. The CEU requirements are as follows: for those certified before the year 2000--80; for those certified during 2000--55, for those certified during 2001--25, and for those certified during 2002-0 ([www.nata.org](http://www.nata.org)).

Within the new structure of CEU requirements, there are five categories where ATC's can choose to attain their CEU contact hours ([www.nata.org](http://www.nata.org)). Category A, approved provider programming, is an area where many ATC's choose to fulfill this requirement. The first category is one where contact hours can be made at seminars, workshops, and conferences. Category B, professional development, allows ATC's to gain CEU's through such activities as being a certification examiner, authoring a journal article or textbook, or presenting at professional workshops. Category C enables

ATC's to gain up to 75 CEU's in course work done at an accredited college or university. Category D is a section that applies to all ATC's and is one in which they must show documentation that they have satisfied this requirement. A minimum of 5 CEU's per year must be satisfied in showing that each ATC has passed the appropriate CPR certification. The final section or category of possible CEU's is Category E. This section allows up to 20 CEU's every two years for purchasing multi-media materials or attending a program that is not given by an approved provider.

#### Reflective Practitioner

In the United States today thousands of people consider themselves professionals. For a vast majority of these professionals, it becomes necessary to go beyond the normal everyday functions of professional practice and seek deeper insight on professional artistry. As professionals within a certain disciplines, it is assumed that these practitioners will have received the proper education and knowledge to start in the profession at minimal in an entry level position. However, it becomes imperative during the course of a professional's career to attain a deeper knowledge based not only in professional content but more importantly how professionals can better understand the relationship between professional knowledge and artistry in

the profession (Cervero, 1998, p. 43).

To increase professional effectiveness and professional reflection, research was conducted to find new ways of educating professional. From his studies of professional development in architecture, town planning, and organizational consulting, Donald Schon (1983) has developed a model for advanced professional practice. Within this model, Schon discusses how traditional models of professional knowledge fail to develop an individual's full potential while he highlights possible solutions and courses of action.

This current dominating theory of professional knowledge is referred to as the functionalist viewpoint or technical rationality (Cervero, 1988, p. 42). This method is characterized by basic and applied research that is typically generated in the university setting (Cervero, 1998, p. 42). The process of technical rationality is one that dictates and dominates professionals during their preliminary and pre-service education. Though very necessary to a degree, this very rigid and standardized practice, often cannot explain why some practitioners thrive while others merely survive in their profession. (p. 43) To counter this trend, it is suggested that professionals should start not by asking how to make better use of

research-based knowledge but by asking what can be learned from a careful examination of artistry and how professionals can use their own unique knowledge of their profession (Schon, 1987, p. 13). A more salient and crucial stance that affects professional at a personal level is that of the critical viewpoint. This position "assumes that professionals construct the problem from the situation . . . where problems do not present themselves as well formed unambiguous structures" (Cervero & Azzaretto, 1990, p. 162-3).

From the critical viewpoint, there are two central forms of knowing: knowing-in-action and reflection-in-action. Contrary to the belief that practice is the application of knowledge, this model assumes that knowing is in the actions of the professionals and that most of the spontaneous actions that professional take do not stem from a rule or plan that was in the mind before acting (Cervero 1988, p. 43). Often times professionals will make decisions without knowing exactly what theorist it came from or from what rule it was based on. Schon calls this process as knowing-in-action and describes it as the mode of ordinary practical knowledge (Schon, 1983, p. 54). The properties in this form of knowing include:

1. Professionals know how to carry out certain actions and judgements without thinking

- about them prior to or during performance.
2. Professionals are not aware of having learned to do these things.
  3. Professionals are unable to describe the knowledge that the action reveals.
- (Schon, 1983, p. 54)

Though knowing-in-action helps to explain the basic level of professional artistry, reflection-in-action goes a step further to explain this occurrence. Most professionals sometime in careers will face situations of conflicting values and uncertainty. Therefore, to make these situations understandable, they need to make the problem solvable, and at the core of this is reflection-in-action. Reflection-in-action is seen as reflecting in the midst of action; professionals thinking reshapes what they are doing while they are doing it. The goal of reflection-in-action is to change indeterminate situations into determinate ones, and the key to successfully completing this problem-setting activity is to bring past experiences to bear on current action (Cervero, 1988, p. 44).

With respect to a professional's vast wealth of experiences, reflection-in-action allows for a new situation to be perceived as something already present in their repertoire thus allowing them to make sense of the situation. Both the recognition and evaluation of new situations happens in the midst of action for professionals, and in turn they must do an on-the-spot experiment to test

its utility and incorporate this new understanding it into immediate action (Cervero, 1988, p. 44).

In order to find a middle-ground between the applied sciences and reflection-in-action, Schon believes that there must be a fundamental change in continuing professional education. In the formation of new continuing education programs, it is suggested that professional education should be redesigned to combine the teaching of the applied science with coaching in the artistry of reflection-in-action.

(Schon, 1987, p. xii). First, applied sciences that are taught at the university level have great importance but should not be taught alone; they must be included with reflection-in-action. Formal continuing education programs should become a place in which practitioners learn to reflect on their own tactic theories of the phenomenon of practice in the presence of those disciplines (p. 321).

A second assumption that Schon makes is that there needs to be a purposeful consideration on the acquisition of reflection-in-action within continuing education programs. This inclusion is important not only because it is the basis for professional artistry but also because reflection-in-action is an important source of knowledge for a professional's repertoire. Becoming aware of reflection-in-action of practice must become an explicit part of



continuing education (Cervero, 1988, p. 46). This can be executed through the techniques that professionals use within their organizational setting and through the individualized framework they bring to their performance (p. 46).

### Adult Education

As individuals mature and develop in their professional setting, many changes may occur not only in title and stature but also in their acquisition of knowledge. In the ever increasing need for mature and reflective professionals, there is a tremendous demand for adult learners who have the ability to apply their experiential knowledge. Along with personal experiential knowledge, the adult learner within the profession today can greatly benefit from learning methods grounded in the learning concept of andragogy. This learning model for adult learners is instrumental in understanding just how important it is to be a reflective practitioner and development as a professional.

### Andragogy

When conducting any study involving adult learning processes, it is crucial to be familiar with the learning model known as andragogy. Before the andragogical model was developed by Malcolm Knowles (1970), instructors

traditionally used teacher-directed instruction, or pedagogy, with both child and adult learner. Here the adult learner would receive knowledge from the instructor and regurgitate it back in an approved format. With the pedagogical model, the control of learning rest with instructors who directs the process from their perception. This form of instruction is being replaced with andragogy which is a model more appropriate and respectful of adult learners and their experiences (Knowles, 1970).

When analyzing adult education, it is becomes paramount to be well versed with the learning model known as andragogy. Made famous by the educational researcher Malcolm Knowles (1970), the concept of andragogy helps to show distinctions between learning patterns of the adult and child learner. Focusing on the adult learner's experiences and self-directedness, Knowles made several distinctions on what exactly andragogy is. The basic assumptions are as people mature:

1. Their self-concept moves from one of being a dependent personality toward one of being a self-directed being.
2. They accumulate a growing reservoir of experience that becomes an increasing resource for learning.
3. Their readiness to learn becomes oriented increasingly to the developmental tasks of social roles.
4. Their time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly,

orientation toward learning shifts from one of subject-centeredness to one of performance-centeredness. (Knowles, 1970, p. 44)

In 1984, Knowles (1998) added a fifth dimension stating as one matures, the motivation to learn becomes internal (p. 68). Later a sixth assumption was made that "adults need to know why they need to learn something before undertaking to learn it" (p. 64). Knowles' work has proven to be instrumental in understanding the principles of adult learning.

### Self-Directed Learning

Another major tenet in the field of adult learning that plays a crucial role in continuing education is the concept of self-directed learning. Though the concept of self-directed learning has been around for centuries, it has not been until recent decades that much research been conducted on it (Knowles, 1990). Self-directed learning is "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (Knowles, 1975, p. 18).

Self-directed learning is a concept that can be directly applied to many areas of human endeavor. These

include diverse projects such as learning how to install kitchen tile, fixing a leaky faucet, or understanding new ways to evaluate shoulder injuries. These experiences may range from the most simple of projects to the most complex of all independent studies. Oftentimes overlooked in modern complex lifestyles, it becomes quite apparent that self-directed learning is all around. It has been discovered that from 79 to 100% of all adults conduct at least one learning project each year (Coolican, 1974, 1975; Penland, 1977). The typical adult spends about 100 hours on each learning project and conducts 5 projects a year for a total of 500 hours per year (Cross, 1981). In addition, nearly three quarters of the learning projects of an adult are completely self-directed while only 20% of learning projects are planned by a professional (Tough, 1978).

As far as professionals are concerned, they have central issues that are highly salient to their work which may have deep and immediate consequences on their lives. Often times professionals avoid structured classes and investigate problems on their own time because "taking control of the goals and purposes of learning and assuming ownership of learning" (Knowles, 1998, p. 135) is a important element of being a professional.

## Transformative Learning

Another major avenue in adult education that is directly related to professional development is the idea of transformative learning. Popularized by Jack Mezirow, "transformative learning is about change dramatic, fundamental change in the way we see ourselves and the world we live in" (Mezzirow, 1978, p. 167). Taking adult learning and professional development to new heights, tranformative learning focuses on the cognitive process of learning including the mental construction of experience, inner meaning, and reflection (Merriam & Caffarella, 1999, p. 318).

To make a professional's life experiences more of a meaning-making experience, it is imperative to understand how professionals must evolve in their learning experiences. Since all adults have unique experiences upon which to draw, tranformative learning relies on these experiences to guide a new understanding of meaning. Fundamental to the concept of transformative learning, meaning perspectives help professionals to see what exactly is happening in the world around them. From this lens professionals may experience a perspective transformation which they become "critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about

our world" (Mezirow, 1990, p. 14).

Once professionals have identified with the need to change their perspective, they are now ready to be a transformative learner. This transformative learning process involves a three step self-analysis of critical self-reflection, discourse, and action (Mezirow, 1997, p. 60). Professionals become truly critically reflective by challenging the established definition of a problem being addressed while also re-assessing the way they have posed problems and re-assessing their own orientation to perceiving, knowing, believing, feeling, and acting (Mezirow, 1990, p. 12-13). This is a time in professionals' lives where they call into question (a) many of the methods that they were taught in school as well as the interactions with others and (b) how they have used prior experiences to handle all situations in the same manner.

The second phase of Mezirow's process of transformative learning is often described as the discourse phase. This is the time shortly after internal searching through critical reflection that one must find the appropriate information to come to a general consensus. At this point, it is of the utmost concern that professionals seek the best judgement of the most informed, objective, and rational persons to find

and enter a special form of dialogue (Mezirow, 1995, p. 53). It is argued that dialogue with others can occur in a variety of settings including group sessions, one-on-one meetings, or formal educational settings. Ultimately, it is the goal of this phase to have unbiased information and to participate in the many forms of constructive dialogue.

The third and final phase in Mezirow's process of transformational learning involves a course of action. Though the course of action may vary from person to person, it is still "an integral and indispensable component of transformative learning" (Mezirow, 1991, p. 209). As professionals contemplate what course of action to take, first they must consider what actions are appropriate to create the desired change. Since professionals are faced with issues on an everyday basis that are quite complex and difficult to decipher, action can lead to workplace learning.

#### Learning How to Learn

As varied as the phrase implies, the term "learning how to learn" is a complex and multifaceted component of Adult Education. Like the term self-directed learning, learning how to learn is subject to a variety of definitions and "is not readily defined with precision" (Smith, 1982, p. 4). Learning how to learn can also be described as the process

of "possessing or acquiring, the knowledge and skill to learn effectively in whatever learning situation one encounters" (p. 19).

Adult Education is a process that has key components in order to have successful implementation. This process has the three key sub-processes of planning, conducting, and evaluating learning activities (Smith, 1982, p. 6).

Planning describes how adult learners identify their needs and set goals as they select resources and strategies.

Conducting involves adult learners as they learn to negotiate the selected procedures and resources while learning how to give and receive feedback. Evaluating illustrates how adult learners measure the extent to which their goals have been met and how to proceed with follow-up activities. These sub-processes assume that the learner is involved as much as possible in the learning process and that "the learner needs this kind of knowledge and skill to function optimally in the three phases of the process" (p. 6).

To gain further insight into the process of learning how to learn, it is important to understand that three further ingredients must be added. These include the learners' needs, the learners' learning styles, and training. These interrelated ingredients are components, or



supporting ideas, of the concept of learning how to learn (Smith, 1982, p. 17). Learners' needs are a general understanding of learning; the basic skills of reading and writing, self-knowledge; and learning process skills in self-direction, collaboration, and institutional learning methods (pp. 20-22). The learners' learning styles are the ways that people differ as they think, approach problems, and process information during learning activities (p. 23). Training "pertains to deliberate efforts to help people become better at learning and more successful in the educational arena" (p. 25).

The idea of learning how to learn is helpful to people seeking to expand the effectiveness of their learning process (Knowles, 1998). This is exceptionally true during times of fundamental change and development in a profession. Understanding the process how to learn is even more significant when looking at adult learning in situations such as continuing professional education.

### Learning Strategies

From early on in life, learners utilize traits that assist them in a variety of learning situations. A person's learning style is "the individual's characteristic way of processing information, feeling, and behaving in certain learning situations" (Smith, 1982, p. 24). Learning style

is one of the three components of the learning how to learn process (Smith, 1982, p. 23). Learning styles are generally established and are steady throughout the learner's life (Fellenz & Conti, 1989, p. 8).

In contrast to learning styles are the strategies that learners use when initiating a learning activity. Learning strategies are "the techniques or skills that an individual elects to use in order to accomplish a learning task" (Fellenz & Conti, 1989, p. 7). Learning strategies can also be described as ways in which learners and their resources may be arranged during learning situations (Smith, 1982, p. 113). Furthermore, learning strategies deal with the methods learners use to gain information in different learning situations (Conti & Kolody, 1995). Learning strategies allow for the learner to make choices. Learning strategies are behaviors that the learner may choose to use when attempting a learning task (Fellenz & Conti, 1993).

In the field of Adult Education, learning strategies have been conceptualized in the five areas of Metacognition, Metamotivation, Memory, Critical Thinking, and Resource Management (Fellenz & Conti, 1993). Research using these five domains has led to the recognition of three distinct groups of learners. The groups are referred to as Navigators, Problem Solvers, and Engagers (Conti & Kolody,

1999).

Navigators are often considered to be high achievers who seek organization and deadlines. Navigators "are focused learners who chart a course for learning and follow it" (Conti & Kolody, 1999, p. 9). This group of learners utilize such strategies as Planning, Attention, Identification, and the Use of Resources. Navigators work well under organized deadlines, clear-cut goals, and definite clearly-communicated expectations (p. 9).

Problem Solvers are often seen as critical thinkers. Problem Solvers "rely on a reflective thinking process which utilize higher order thinking skills" (Conti & Kolody, 1999a, p. 11). Problem solvers will often look externally to the resource around them which will best help them in their learning. In addition, Problem Solvers frequently test assumptions and bring forth alternatives to the problem at hand. Problem Solvers are "handy at adjusting their learning process and resources to fit their learning needs" (Conti & Kolody, 1999a, p. 12).

Before a learning project can take place, Engagers must be certain that this learning activity will be meaningful to them (Conti & Kolody, 1999a, p. 14). As internally motivated learners, Engagers are "passionate learners who love to learn, learn with feeling, and learn best when they

are actively engaged in a meaningful manner" (p. 13). These learners prefer to focus more on their involvement in the learning process than on the material itself.

### Barriers and Motivating Factors

#### Barriers

When investigating the reasons why adults choose not to gain more education, it becomes important to investigate what obstacles or hindering factors they encounter in this process. The seminal work on barriers and deterrents to adult education was conducted by Johnson and Rivera (1965). They discovered that almost 43% of adults failed to participate in education for financial reasons. Following closely behind financial considerations were time constraints and family responsibilities. Potential barriers were broken down into two major categories, external barriers and internal barriers. External barriers are influences beyond the individual's own control. On the other hand, internal barriers were characteristics that reflected personal attitudes on why they should not participate (Merriam & Caffarella, p. 56-7).

Expanding beyond the early works of Johnson and Rivera, Pat Cross (1981) further investigated the phenomenon of barriers to education. Cross discovered that there were other types of obstacles that adults can encounter in

continuing education. These obstacles include situational, institutional, and dispositional barriers (p. 98).

Situational barriers can be described as barriers at a given time in one's life. For example, responsibilities to work or family may inhibit further education while lack of money, time, or resources may preclude others from their educational dreams. Institutional barriers are practices of the institution that inhibit participation in adult learning activities. These deterrents may include inconvenient scheduling of classes, excessive time requirements for the degree, and difficulty even enrolling in courses.

Dispositional barriers occurs when the learner's own attitudes and self-perception inhibit their educational attainment. Feeling that they are too old to learn or that they were a poor student in the past can lead an adult to believe that further education is not for them.

### Motivating Factors

Conversely to hindering factors, motivating factors are characteristics that help to explain why adult respond in a positive manner to attaining more education. Cyril Houle (1961) began conducting research on what motivates adults to learn more information on the world around them. In his research, Houle discovered that there were three basic types of adult learners: goal-oriented learners, activity-oriented

learners, and learning-oriented learners. Goal-oriented learners use education as a means of achieving some other goal; activity-oriented learners participate for the sake of the activity itself and the social interaction; and learning-oriented participants seek knowledge for its own sake (Merriam & Caffarella, 1999, p. 54).

Additional studies have build upon Houle's original idea of motivating factors in adult education. Shortly after Houle's model was developed, Sheffield (1964) developed an instrument to measure an adult's learning orientation. From his factor analysis, Sheffield surmised that there was a possibility of five orientations. Other research models and measures were soon developed by Burgess (1971), Boshier (1971), and Mortsain and Smart (1974). Between these different models, the original works of Houle was greatly expanded to included the possibility of a seven-factor typography of adult learning orientation (Merriam & Caffarella, 1999, pp. 54-55).

Related specifically to professional development and continuing education, Ronald Cervero (1988) explained the possibility of why adults choose to attain more education. According to Cervero, the findings in the studies show that there are five major reasons why professionals participate in continuing education. These reasons include maintaining

current abilities, increasing the likelihood that their clients will be better served, being prepared to be challenged by colleagues, maintaining identity in the profession, and enhancing one's individual security in their present profession (Cervero, 1988, p. 65). In addition, the research suggests that the reasons for participation can differ significantly according to the type of profession, career stage in that profession, type of practice setting, and number of years in that profession (p. 65).

#### Problem Statement

With new research discoveries made everyday in the allied health care professions, it becomes paramount for certified athletic trainers to renew and update their current education level. Consequently, with new changes in undergraduate requirement for certification and with the new restructuring of continuing education units, continuing education for current ATC's is now more important than ever ([www.nata.org](http://www.nata.org)). Because of new technological advances and procedures, no longer can ATC's avoid continuing professional education. From the 1970's, the NATA CEU's have been a way for the profession to strengthen itself and to ensure the proper medical care for the active population which it serves. With clear mandates regarding CEU requirements, both ATC's and the NATABOC must be able to

understand that these practitioners need to know their attitudes towards continuing professional education and orientations toward learning strategies.

With a wide array of possible classifications of ATC's according to their attitudes on continuing professional education, it becomes imperative to understand how these individuals feel about the importance of professional education. Besides top-down mandates on continuing professional education by the profession's governing body, little is known about the status of attitudes and barriers of the professionals taking these continuing professional education credits. Since learning is affected by the status of the practitioners' perceived attitudes and barriers on continuing professional education, it is important to gain insight on these dispositions.

To demonstrate that there are different levels of professional involvement and attitude toward continuing professional education, Cyril O. Houle (1980) used a normal bell curve to demonstrate that professionals can fall under different classifications according to "their dominant attitudes towards their professional practice" (p. 155). Since practitioners themselves are partially responsible for their continuing professional education, "the extent of the desire . . . to learn ultimately controls the amount and



kind of education he or she undertakes" (p. 124).

Within Houle's example of a professional normal bell curve lie four distinct groups based on their attitudes towards practice. The first of these is the Innovators. These high performance practitioners are individuals who "continuously seek to improve their performance, sometimes in highly unconventional ways" (p. 156). As enemies of the "establishment", these individuals will often challenge longstanding practices and the keepers these practices. These practitioners sometimes move beyond "their basic profession in order to become an expert in some other field of study" (p. 157).

The second group, Pacesetters, are progressive but not comfortable jumping into something until it has been "fairly well tested" (Houle, 1980, p. 157). What makes this group unique is that they often look in two direction; "toward the innovators and to the majority adopters" (p. 157). They will often look forward to the new ideas of the innovators but feel a sense of conservatism to established practice.

The third group of active practitioners, the Middle Majority, include the greatest number of professionals. The middle majority is often the hardest to describe since they vary greatly in their application of new knowledge. For those at the "upper level support for innovation is often

won because pacesetters have approved it" (Houle, 1980, p. 158). Those at the "lower levels eventually adopt new practices because they have become generally accepted by colleagues and clients" (p. 158). Due to their broad rate of adopting innovations, the middle majority is a diverse and complex group.

The last group of active professionals are described as Laggards. These are the professionals "who learn only what they must know if they are to stay in practice" (Houle, 1980, p. 159). A few of the characteristics that describe these practitioners is that they may have "low achievement motivation, failure to understand the need to keep on learning, or a disillusionment with the profession" (p. 159). These individuals pose a threat not only to their profession but also to the clients that they serve.

#### Purpose

The purpose of this study was to (a) describe the motivating factors that enable certified athletic trainers to attain and apply new knowledge, (b) describe the possible deterrents that hinder certified athletic trainers from attaining and applying new knowledge, and (c) to describe the learning strategy preferences of Certified Athletic Trainers. This was achieved by administering three instruments via the Internet. Motivating factors for

participation in continuing education were measured with the Adult Attitudes Toward Continuing Education Survey-General. Deterrents to continuing education were measured with the Deterrents Toward Participation Survey. Learning Strategies were measured with Assessing The Learning strategies of Adults.

### Research Questions

The following research questions were used to accomplish these research goals:

1. What is the profile of certified athletic trainers on the (a)AATCES, (b)DTPS-G, and (C)ATLAS?
2. How do the ATLAS scores compare to norms of ATLAS?
3. What is the relationship between (a)AATCES (b)DTPS-G and(C)ATLAS and demographic variables of gender, age, years of experience, education level, place of employment, money allocated for continuing education, and formal continuing education exposures a year?
4. Does the data for the certified athletic trainers confirm the DPS-G?
5. There is no interaction between ATLAS and AATCES and DTPS-G instruments.
6. Distinct clusters of certified athletic trainers exist based on their (a)AATCES, (b)DTPS-G, and (c)ATLAS scores.

A variety of descriptive and inferential statistical procedures were used to analyze the quantitative data that was collected for the study. The profiles of the Certified Athletic Trainers on the three instruments was constructed from the descriptive statistics of frequency counts and

means. Chi square was used to compare and obtain scores on ATLAS for the Certified Athletic Trainers to the expected scores for the norms on ATLAS. The relationship between the instruments and demographic variables will be analyzed with analysis of variance. Discriminant analysis was used to explore the interaction between the instruments. Finally, cluster analysis will be used to probe for groups among the Certified Athletic Trainers. Analysis of variance and discriminant analysis will be used to determine the process that separates any groups found in the cluster analysis.

#### Design

This study utilized a descriptive research design. This research method tests hypotheses or answers questions concerning participants' current status and it reports "the way things are" (Gay, 1987, p. 11). In addition, this design is "generally asking questions that have not been asked before (p. 11). This study will describe the certified athletic trainers' attitudes on continuing professional education, perceived deterrents to continuing professional education, and preferred learning strategies used in continuing professional education programs.

#### Population

A population is a group that has similar set of characteristics and the group to which the researcher would

like the results of the study to be generalized (Gay, 1987, pp. 102-103). The target population for this study will be certified athletic trainers who are members of the athletic trainers list serve at Indiana State University and the professional athletic trainers education at Findlay University.

A sample is the number of people chosen from a target population so that they portray the characteristics of the target population (Gay, 1987, p. 114). For a descriptive research project, it is desirable to attain the responses from a minimum of 10% of the population. Based on the population of certified athletic trainers on the NATA list serve, a sample size of 1,000 participants was needed.

#### ATLAS

ATLAS is a relatively new instrument that is designed to quickly identify learning strategy profiles of adults (Conti & Kolody, 1998a, p. 109). Ordinarily, ATLAS is printed in colored-coded paper bound in a pamphlet format. For this study, the ATLAS instrument was embedded in an online questionnaire as an instrument to discover an individual's learning strategy. Participants followed descriptive phases by clicking their mouse indicators on selected responses. Each response led the participant to eventually discover their learning strategy group of

Navigator, Problem Solver, or Engager. Once they discovered their learning strategy group, participants were asked to indicate whether the learner description fit them or not.

ATLAS is a valid instrument for measuring the learning strategies of adults in real-life learning situations (Conti & Kolody, 1998). Validity is the "degree to which a test measures what it is intended to measure" (Gay, 1987, p. 553). The ATLAS instrument was based on the research findings of the Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS) and carries with it the validity of the SKILLS instrument (Conti & Fellenz, 1991).

Three kinds of validity are important when conducting research in education and the social sciences. They are construct validity, content validity, and criterion-related validity. Construct validity is "the degree to which a test measures an intended hypothetical construct" (Gay, 1987, p. 131). Construct validity for ATLAS was achieved by merging and concentrating the data from SKILLS strategies and using cluster analysis to identify three groups of learning strategies patterns. These group were identified as Navigators, Problems Solvers, and Engagers.

Content validity is "the degree to which a test measures an intended area" (Gay, 1987, p. 129). Content validity for ATLAS was established using discriminate

analysis to determine the exact learning strategies pattern used by each group compared to the other groups (Conti & Kolody, 1999a, p. 19).

Criterion-related validity is "validity which is determined by relating performance on a test to performance on another criterion" (Gay, 1987, p. 543). Criterion-related validity is still ongoing effort by the authors and have included the result from this study in their data base (Conti, personal communication, July, 2001). In a real-life analysis of how the criterion compared to the identified leaning strategy in ATLAS "at least of 90% of the participants agree that ATLAS correctly identifies their learning strategies" (Ghost Bear, 2001, p. 83). Furthermore, a study of high school non-completers "consistently indicated their agreement with the ATLAS description of their learning strategies" (James, 2000, p. 92).

Reliability is "the degree to which a test consistently measures whatever it measures" (Gay, 1987, p. 135). If a test is reliable, people can be confident that the same results will be reached each time the an instrument is administered (p. 135). "The more reliable a test is, the more confidence we can have that the core obtained from the administration of the tet were readministered" (p. 135).

While the reliability of the ATLAS instrument is ongoing, "test-retest measures results are approximately 90% accurate for placing people in the same learning strategy preference category" (Willyard, 2000, pp. 88-89). In test-retest examinations covering period of time from one-week to three-week, ATLAS has a reliability of .87 (Ghost Bear, 2001, p. 84).

#### The Adults Attitudes Toward Continuing Education Scale

The Adults Attitudes Toward Continuing Education (AATCES) scale is a scale used to measure adults' perceived attitudes on continuing education. Developed by Darkenwald and Hayes (1988), the AATCES is a 22-item scale that uses a 5-point Likert scale to detect perceived attitudes on continuing education. The content validity support for the AACTES was "inferred from the procedures utilized in its construction" (Darkenwald & Hayes, 1988, p. 5). The construct validity was established through correlations between AATCES and selected demographic variables (Erikson, 1990). It has a Cronbach reliability coefficient of .90 in its final form (Erikson, 1990).

#### Deterrents To Participation Scale-General

The Deterrents To Participation Scale (DPS) was developed by Scanlan and Darkenwald in 1984. Its purpose was to investigate and expand upon the theory of adult



education participation by measuring the reasons adults give for nonparticipation in continuing education. Darkenwald and Valentine (1985) refined this earlier work and developed another scale to determine deterrents to participation by the general population. The Deterrents To Participation Scale (DTPS) is a 37-item scale that utilizes a 5 point Likert scale to determine deterrents to continuing education. Content validity was established by a elaborate interview process on each item. Construct validity was established using a correlational analysis between selected variables and six deterrent variables (Darkenwald & Valentine, 1985, p. 187). Internal reliability was established through a coefficient of .86.

#### Definitions

AATCES: Adult's Attitudes Toward Continuing Education Scale (Darkenwald & Hayes, 1988).

Adult Learning: The process of adults gaining knowledge and expertise (Knowles, Horton, & Swanson, 1998, p. 124).

Andragogy: The art and science of helping adults learn (Knowles, 1980, p. 43).

ATC: A certified athletic trainer (ATC) is a trained professional who can be described as a highly skilled professional specializing in the prevention, treatment, and rehabilitation of injuries (www.nata.org).

ATLAS: Assessing the learning Strategies of Adults is an easy to administer and complete learning strategies assessment instrument developed using the international data base using SKILLS data (Conti & Kolody, 1998b, p. 109).

CEU's: Continuing Education Units.

Continuing Education: The process of systematic learning to prepare for the field of practice and to maintain proficiency in a context of changing knowledge base and practice" (Knox, 1993, p. 275).

DTPS: Deterrents To Participation Scale (Darkenwald & Valentine, 1985).

Listserv: An email account that can be served among a group of users. The listserv provides a means of "sending messages to an identified group easily". The listserv requires a subscription and allows messages to be sent to anyone with the same subscription (Gilbride & Stensrud, 1999, p. 221).

NATA: National Athletic Trainers Association.

NATABOC: National Athletic Trainers Association Board of Certification.

Self-Directed Learning: A learning activity that is self-planned, self-initiated, and frequently carried out alone (Knowles, 1975, p. 18).

SKILLS: The Self-Knowledge Inventory of Lifelong Learning Strategies that consist of six real-life scenarios that reveal learning strategies preferences in the areas of metacognition, metamotivation, memory, critical thinking, and resource management (Conti & Fellenz, 1993).

Transformative Learning: a concept related to professional development that is about change, dramatic, fundamental change, in the way we see ourselves and the world we live in" (Merriam & Caffarella, p. 318)

## CHAPTER 2

### REVIEW OF LITERATURE

#### Reflective Practitioner

Today, almost all professionals find it necessary and often times mandatory to participate in continuing education. Professionals enroll in programs that go beyond their original degree in order to maintain current certifications or skill level. In the process of evolving and maturing beyond entry-level status, many professionals have to rethink and reformulate what it truly means to be a professional. As professionals mature, it is essential not only to have a deep understanding of their professional content but more importantly to know how their past experiences help to shape future learning and how they can incorporate their new knowledge into practice (Cervero & Azzaretto, 1990, p. 161).

Donald Schon (1983) contends that the early dominating theory on how professionals develop and continue their education is that of a functionalist viewpoint or technical rationality. Technical rationality is a concept that assumes professionals "apply a systematic body of knowledge to problems that are highly relevant to the central issues in society" (Cervero & Azzaretto, 1990, p. 161). Within this viewpoint, it is understood that problems are well formed

and unambiguous and that these problems are solved by the application of scientific knowledge (p. 161). This method is one which implies that many professionals see problems and their solutions in a linear and non-complex manner. Though this method is helpful in only a handful of well-defined problems, it still does not answer many of the diverse and highly complex situations in which professionals find themselves in.

To counter the shortcomings of the technical rationality methodology, a new and more adaptive viewpoint evolved within the professional ranks. For the last 20 years, professionals have been developing a method that could possibly provide the answers to the many questions that the functionalist viewpoint could not. What soon arose was the development of the critical viewpoint. The critical viewpoint derived its name primarily "because professionals often make choices about what problems to solve as well as how to solve them, this approach stresses the need to be critically aware of these choices and their implications" (p. 162).

To gain a better understanding of this concept, it is important to view the two key concepts of its existence. The first notion is that professionals live and practice in a dialectic world. Here professionals often times find

themselves in situations that are "characterized by uniqueness, uncertainty, and value conflict" (p. 163). It can often be described that professionals "conduct most of their practice in the swamp of the 'real world' where problems do not present themselves as well-formed, unambiguous structures, but rather as messy, indeterminate situations" (Cervero & Azzaretto, 1990, p. 163). From this swamp metaphor, professionals realize that they must solve their complex problems from highly ambiguous and uncertain situations.

The second characteristic of the critical viewpoint is that knowledge is highly internalized, personal, and unique to each individual. Where knowledge comes from is not quite known, but the critical viewpoint believes that knowledge is heavily dependent upon past experiences. Schon (1983) argues that "the practitioner has built up a repertoire of examples, images, understandings, and actions" (p. 138) to use as their foundation for learning. As a professional tries to "make sense of a situation, she sees it as something already present in her repertoire. This knowledge from her repertoire is not applied in a rule-like fashion, but rather as a metaphor or example for helping to define the new situation" (Cervero & Azzaretto, 1990, p. 164).

Within the critical viewpoint itself lie two distinct characteristics that further define knowledge for a professional. Schon, in his model contends that "knowing is in the action of the professionals" (Cervero, 1988, p. 43). Schon further contends that "professionals constantly make judgements and decisions, and cannot state the rules or theories on which they were based" (p. 43). This process is what Schon calls knowing-in-action and describes it as "the characteristic mode of ordinary practical knowledge" (Schon 1983, p. 54). Schon claims that this form has three properties:

1. Professionals know how to carry out certain actions and judgements without thinking about them prior to or during performance.
2. Professionals are not always aware of having learned to do these things.
3. Professionals are unable to describe the knowledge that the action reveals. (Schon, 1983, p. 54).

Even though knowing-in-action to an extent helps to explain professional knowledge in certain situations, it cannot fully describe knowing in all situations. Since "most situations of professional practice are characterized by uniqueness, uncertainty, and value conflict . . . more often than not, knowing-in-action will not solve a particular problem" (Cervero & Azzaretto, 1990, p. 168).

In Schon's final section on professional knowledge, he

attempts to show how professionals need to take their understanding to a higher level. Schon calls this higher level of knowing reflection-in-action. The core idea to reflection-in-action is the practitioner's ability to "construct the situation to make it solvable. The ability to do this is the core of professional artistry" (Cervero, 1988, p. 44). When professionals are confronted with new situations for which they are to make decisions, it becomes paramount to "reflect in the midst of action without interruption; their thinking reshapes what they are doing while they are doing it" (p. 44).

Because past experiences are vital ingredients to reflection-in-action, a professional's repertoire proves to be invaluable in all situations. Therefore, when "practitioners make sense of a situation perceived as unique what they actually do is to see it as something already in their repertoire" (p. 44). Even though not all situations are the same, past experiences can help put new ones into an understandable context. Though this process appears to be lengthy, the "entire process is actually achieved in the midst of action. Professionals rethinking some part of their knowing-in-action, conduct an on-the-spot thought experiment to test the utility, and incorporate this new understanding into immediate action" (Cervero & Arraretto,

1990, p. 169).

In conclusion, it can be surmised that reflective practitioners are professionals who have continued to learn about new ideas in their field, reflect upon these ideas, and then take action to bring about change in their field based on these reflections. This action in turn leads to a new learning. This learning then helps to renew the cycle of reflective professional practice. Reflective practitioners assist to "restructure strategies of action, understandings of phenomenon, or ways of framing problems" (Schon, 1987, p. 28).

#### The History of Athletic Training

With a long and storied history, the profession of athletic training can trace its origins back to the times of ancient Greece. In ancient Greek society, it is plain to see the need for athletic trainers with the evolution of organized competition. Athletics were a very important part of the life of the Greek people (O'Shea, 1980, p. 4). The first form of athletic trainers included paidotribes, aleittes, and gymnastes. Paidotribes ("boy rubber") and aleittes ("anointer") suggest that massage was an important part of the duties of the first athletic trainers (p. 4). Gymnastes, the more scientific of the early athletic trainers, believed in a more holistic approach to training.



They studied more the effects of diet, rest, and exercise on the development of the body (p. 4).

Of the earliest athletic trainers was that of Herodicus of Megura. Not only was he a physician and an athletic trainer, but he was also the teacher of Hippocrates, the "father of modern medicine" (O'Shea, 1980, p. 4). By 776 B.C. the first Olympic games were held in Athens, Greece. Knowing that organized sports were no longer for the average man, it was seen that there was a need for people specifically trained in athletic related injuries.

As Greece's influences upon the region waned, Roman domination soon came to fruition. As Rome's new power grew, the Roman's love for athletic competition also grew. As one of the first recognized athletic trainers, Claudius Galen often wrote about athletics and the proper medicine to treat such athletic-related injuries. Knowing that there were direct benefits to exercise, he was one of the first athletic trainers to insist his patients exercise in the gymnasia to recover from injuries and illnesses (O'Shea, 1980, p. 5).

#### Modern Athletic Training

With the proliferation of collegiate athletic in the late 1800's and the early 1900's, there has been an ever increasing need for individuals who have the knowledge and

expertise to treat injuries related to athletics. With a large influx of German immigrants in the mid-1800's to the United States, many brought with them a love and passion for athletics. One those immigrants was Friedrich Jahn who brought with him many modern day techniques and equipment related to gymnastics. The popularity of athletics swept across the United States in part by Dr. Dudley Sargent who introduced gymnastics to several universities around the time of the Civil War (O'Shea, 1980, p. 1). With athletics in general picking up popularity among America's youth, there was a consistent need to ensure proper care and safety for these young men and women. This was echoed by President Theodore Roosevelt who in 1905 threatened to abolish football as an intercollegiate sport due 18 deaths that same year (p. 1). To show that there were people dedicated to the care and preservation of young athletes, Samuel E. Bilik, a pre-med student at the University of Illinois, worked as an athletic trainer part-time while attending medical school. In 1914 Dr. Bilik published what would soon become the bible for athletic trainers by writing Athletic Training (p. 3).

Soon after this publication, many young men became interested in the field of athletic training. The awareness of athletically-induced injuries was not only capturing the

attention of all athletic trainers but equally importantly also the established-medical community. Two of the young men drawn to the profession were Charles and Frank Cramer. This team of brothers were soon to become the first manufacturers and suppliers of athletic training equipment. As the profession was growing and expanding the nature of the profession was changing. However, as the profession was expanding, the outbreak of World War II caused the original formation of the National Athletic Trainers Association to disband and cease to exist for several years.

After the World War II ended and normalcy was returning to the U.S., it was just a matter of time before the new generation of athletic trainers were to establish themselves as a profession of health care providers. In 1950, at the Kansas City Municipal Auditorium in Kansas City, Missouri, the NATA held its first ever National Athletic Training Clinic for two days in June. At this first annual meeting a new generation of athletic trainers were beginning to show themselves as educated professionals dedicated to the advancement of their profession. The modern NATA was beginning to show signs that this was a vibrant organization with a distinct purpose and a growing member base.

As the second president of the NATA, William E. "Pinky" Newell, Head Athletic Trainer at Purdue University, has been

credited as the man who lead and guided the NATA to prosperity in its infancy. Under his tenure many new and important professional developments occurred such as the development of the Journal of Scholarly Research and Discourse (1956), adoption of the Code of Ethics (1957), and an alignment with the National Collegiate Athletic Association in 1957 (Ebel, p. 11). Also under Newell's tenure, the NATA saw an expansion in executive responsibilities, number of committees, and departmental staffing (Ebel, 1980, p. 11).

After Newell's tenure ended in 1969, the NATA witnessed growth never imagined before Newell took the reigns in 1957. Entering the third decade of existence, the NATA saw fundamental changes that were needed to make athletic training even more of a recognizable and established profession. In the 1970's, the NATA mandated the implementation of an national certification entrance examination as well as the state licensing of athletic trainers. Also during this time, the profession saw a tremendous influx of women and minorities entering the NATA. However, there remained one critically important issue in the association during this decade that remained unanswered and difficult to address. As a certified athletic trainer, many people outside of athletics just did not quite

understand the true depth and scope of the profession. As one NATA member wrote in 1974, "We are tired of being confused and categorized as a boxer's trainer or the personal trainer who helps individuals with strength and weight loss programs. There is a vast array of names that would better suit our responsibilities to the community" (Ebel, 1980, p. 14). To demonstrate the true nature of these healthcare providers, the profession was to be described as athletic training and the practitioners were to be classified as certified athletic trainers.

For the next two decades, the NATA steam-rolled ahead with great vigor and determination to see that the profession grew and gained recognition for their works and accomplishments. The most significant accomplishment during this period was the incorporation of the NATA in 1983 (Ebel, 1980, p. 15). Related to this recognition of legitimacy was the fact that the profession in 1986 reached a cherished milestone of 10,000 members and by 1988 had over \$2 million in assets (Ebel, 1980, p. 15). As the decade of the 1990's came and went, the profession yet again had the energy and vision to see long-term and make a decision that would have a positive affect on the association. In 1990 the NATA hired its first full-time executive director while they also hired the services of an outside consulting firm

to assess goals and needs of the NATA's members (Ebel, p. 16-7). As the golden anniversary approached in 1999, the association was proud to announce that they had 25,000 in membership and a retention rate of 92% (Ebel, 1980, pp. 17-8).

### Education in Athletic Training

Recognizing the immediate need for a formal education the NATA even early in its formative years suggested that all athletic trainers must have some type of formal, practical education. Realizing that many of the early athletic trainers did not have a formal collegiate course of study in the areas of health care, the profession had to implement change in this area. Understanding that in order to gain acceptance in the established medical community, athletic trainers had to come to a consensus on the educational goals. This attitude was best summarized by William "Pinky" Newell when he said:

They [the old-time trainers] were a little bit jealous of those with an education, and I think most of them were a little bit concerned with their backgrounds. Very few of them had any formal education . . . .They learned by doing. A lot of the older trainers didn't want anybody with a formal education". (Ebel, 1980, p. 29)

As the chairman of the Professional Education Committee, Newell helped to implement a curriculum model for athletic trainer education in 1959. This curriculum model

helped to establish athletic trainers as teachers/trainers in the area of physical education as well as possible candidates in the field of physical therapy. Though this curriculum model had been in place since 1959, in 1973 there were only 14 schools with approved undergraduate programs (Ebel, 1980, p. 32).

To echo the need for a rigid standardized certification examination to streamline the profession's educational standards, the Board in 1962 called into action the Professional Advancement Committee to investigate the possibility of a professional certification. Not until 1969 did the committee come to the conclusion that a standardized examination was needed (Ebel, 1980, p. 35). Operating out of fear for the future of professional education standards, J. Lindsay McLean from the University of Michigan, who sat as the Chair of the Certification Committee, expressed his concern when he stated that :

unless the profession had a standard of competence, such as what certification could provide, it would be heavily populated by unqualified individuals, namely cronies of the coaches, who would hire them because they could pull their strings. (Ebel, 1980, p. 36)

Shortly thereafter, in 1971 the National Athletic Trainers Association Board of Certification (NATABOC) was established with its sole purpose to administer and evaluate individuals taking their certification examination.

However, this was not the end for adjustments on the certification examination. During the 1980's, a great amount of work was done by several committees within the profession to ensure appropriate certification and proper recognition as providers of expert medical attention. In the late 1980's, the groundwork was laid for the inevitable acceptance into the established-medical community. Specifically targeting athletic-trainer education and professional development, the NATA sought the recognition of the American Medical Association (AMA). In 1990, the AMA formally recognized the NATA as an allied health care provider (Delforge & Behnke, 1999, p. 53). With formal recognition by the AMA, the NATA was therefore free to seek accreditation of entry-level programs by the AMA Committee on Allied Health Care Education and Accreditation (CAHEA) (p. 54).

To ensure proper accreditation, the NATA enlisted the assistance of the American Academy of Family Physicians, the American Academy of Pediatrics, and the American Orthopedic Society for Sports Medicine in a joint committee on accreditation in 1990. This committee was soon to be called The Joint Review Committee on Educational Programs in Athletic Training. Through fundamental changes by the AMA, the CAHEA was disbanded, and the Commission on Accreditation



of Allied Health Education Programs (CAAHEP) was to cosponsor with the AMA the review of athletic training education programs (Delforge & Behnke, 1999, p. 58).

From the hard work between these different organizations and committees, a final consensus was achieved on how athletic trainers would receive their certification status. In 1996, it was determined that the "NATA work with the NATABOC to institute a requirements to take effect 2004, that, in order to be eligible for NATABOC certification, all candidates must possess a baccalaureate degree and have successfully completed a CAAHEP-accredited entry level athletic training education program" (Delforge & Behnke, 1999, p. 57). From this sweeping resolution, the authors "proposed to standardized athletic training education and enhance consistency with professional preparation in other allied health disciplines" (p.59).

#### The Need for Continuing Education

Understanding that a proper undergraduate education, which was well grounded in the topics of athletic training, was necessary for advancement of the profession, it was also equally important to the profession to ensure education beyond the core curriculum. Though a person might achieve certification, the Board's view of certification is that it is an "important education port of call but not the ultimate

destination" (Ebel, 1980, p. 38). Echoing these same sentiments was former NATA President Sayers "Bud" Miller, Jr., when he said "The danger of obsolescence is probably the primary motivator of athletic trainers' participation in continuing education activities . . . .Continuing education [is] a matter of necessity rather than choice (Ebel, 1999, p. 38)". Believing that continuing education was a necessary fact of life in the profession, work was underway by 1974 to implement continuing education unit requirements.

In 1974, the NATA was beginning to implement CEU requirements for all certified athletic trainers as the only means to maintain certification. ATC's were able to attain these CEU's in a number of different ways. Through workshops, district or national meetings, original publications, or in correspondence courses (Ebel, 1999, p. 38) all ATC's were afforded different venues to maintain certification. Though there was strong resistance to implementing CEU's at first, members had to come to the realization that continuing education was key to maintaining their skills and abilities.

As the main provider of CEU's for ATC's, the NATABOC began immediately the task of providing materials and venues for continuing education. As early as 1970, the profession created the Placement Committee which provided information

on educational opportunities. In 1971, the NATA created the Audio-Visual Committee which compiled a bibliography of film, slides, video, and audio cassettes that could be used for presentations (Ebel, 1999, p. 19). As the internet began to take shape in the 1990's, the NATA created in 1996 their own web site which gave members the opportunity to gain information on CEU's, annual meetings, brochures, as well as general information in the profession. In addition, this web site allowed the general public to investigate the profession of athletic training along with the association.

With the changing nature and scope of the profession, especially in the depth of new information, the NATA had to adapt and make appropriate changes in its delivery and accountability. During the 1996 convention in Orlando, Florida the NATABOC expanded its annual symposia to include:

1. Ten 90-minute labs, where participants practice, hands on, the techniques taught in the lab.
2. Thirty-two 90-minute workshops -hands-on interactive demonstration of current injury evaluation and treatment techniques.
3. Johnson and Johnson Sports Medicine Group Symposium: "Respiratory Illness in the Competitive and Recreational Athlete."
4. Gatorade Workshop.
5. Two Student Athletic Trainer workshops.
6. College/University Student Athletic Trainer Seminar. (Ebel, 1999, p. 24)

According to the NATABOC, the "purpose of continuing education for the ATC is to promote continued competence and

development of current knowledge and skills and to enhance professional skills and judgement beyond the levels required for entry-level practice. These activities are deemed necessary to protect the public" (www.nata.org). To further demonstrate this expanding nature and scope of the NATA's need for more continuing education of its certified athletic trainers, the NATA in 2000 formulated new CEU requirements. For all ATC's certified before 2000, they must complete 80 CEU's with current CPR certification by 2002. For those individuals certified during 2000 and 2001, between 55 and 25 CEU's with current CPR certification must be included before 2002, respectively (www.nata.org).

With an ever increasing demand for competent knowledge beyond the entry-level experience, it becomes necessary for professionals in this discipline to make every effort to seek and attain as much relevant information as possible. Because of this need for a highly educated, professional, athletic trainer, it is of the highest priority to ensure all ATC's have equal and attainable access to professional development.

### Adult Learning

#### Andragogy

The origin of the term andragogy can be traced back to a German grammar school teacher who first used the term in

1833 (Knowles et al., 1998). American adult education scholar Malcolm Knowles can be credited with bringing the term to the United States in the late 1960's and the early 1970's (Merriam & Brockett, 1996, p. 135). As Knowles conducted further research on this topic, he discovered that andragogy is of the utmost relevance to the concept of adult learning. As he first defined it, Knowles (1970) saw andragogy as an "emerging technology for adult learning" (p. 58). He later refined andragogy's meaning to "the art and science of helping adults learn" (Knowles, 1980, p. 43). Andragogy is "the single most popular idea in the education and training of adults" (Brookfield, 1986, p. 91).

Based on the premise that the adult learner process information differently than that of the child learner, Knowles first made four assumptions pertaining to this notion (Knowles, 1970). Later, Knowles added two more assumptions to make a total of six in his final examination (Knowles, et al., 1998). These basic assumptions are that as one matures:

1. Their self-concept moves from one of being a dependent personality toward one of being a self-directed being.
2. They accumulate a growing reservoir of experience that becomes an increasing resource for learning.
3. Their readiness to learn becomes oriented increasingly to the development task of social skills.
4. Their time perspective changes from one of postponed application of knowledge to immediacy ,

and accordingly, orientation toward learning shifts from one of subject-centeredness to one of performance-centeredness.

5. The motivation to learn becomes internal.
6. Adults need to know why they need to learn something before undertaking to learn it.

In the andragogical model it is assumed that the adult learners are active engagers in their own learning process and information gathering. Through andragogy, the instructor of the adults serves as more of a facilitator or as a coach than as a traditional lecturer. Also through this method, adult learners gains more responsibility in their own learning and application of this new knowledge. The experiences of an adult plays a vital role in the learning process and the accumulation of new material.

Traditionally, teachers have used teacher-directed instruction, which Knowles refers to pedagogy, for both the child and adult learners (Knowles, 1980, p. 40). In a pedagogical model the instructor assumes the role of information leader and the control of learning rests within this person. Here instructors are able to deliver information from their own perspective and control what information is to be presented to the learner. Today, the andragogical method is being implemented more often for the adult learner since it respects their experiences and individuality. The pedagogical method should be viewed as a

an ideology, but the andragogical model should be viewed as a program of elective assumptions (Knowles, et al, 1998, p. 69).

### Self-Directed Learning

In the field of adult learning, it is important to examine the concept of self-directed learning. Though the idea of self-directed learning paints a picture of learning and practicing in isolation, this is quite the contrary to the implementation of learning on one's own intuitiveness. "To many practitioners, the term self-directed learning conjures up images of isolated individuals busily engaged in determining the form and content of their learning efforts and controlling the execution of these efforts in an autonomous manner" (Brookfield, 1986, p. 56). Knowles (1975) made the distinction that "self-directed learning usually takes place in association with various kinds of helpers, such as teachers, tutors, mentors, resource people and peers" (p. 18).

Self-directed learning can be seen in wide array of terms and definitions. Allen Tough (1977) saw self-directed learning as "a major deliberate learning effort which the learner himself or herself is responsible for most of the day-to-day planning of what and how to learn" (p. 2). Knowles (1975) found that self-directed leaning "is a

process in which individuals take the initiative in designing learning experiences , diagnosing needs, locating resources, and evaluating learning" (p. 2). Kulich (1970) determined that the three steps in self-directed learning included an understanding of the assumptions underlying this mode of learning, understanding the processes itself, and gaining greater facility in implementing these processes.

Believing that self-directed learning is an essential concept in the andragogical model, Knowles (1975) insisted that self-directed learning was important to both the learner and teacher (p. 7). Knowles made a clear distinction of the two main tenets in self-directed learning. First, self-directed learning is self-teaching (p. 135). This occurs when learners takes it upon themselves to seek out the necessary instruments and resources to teach themselves the needed skills or knowledge. Second, self-directed learning is personal autonomy in which learners begin "taking control of the goals and purposes of learning" (Knowles et al. 1998, p. 135). Of these two concepts, Knowles believes that the latter of the two is the most important to the adult learner (p. 136).

Knowles (1975) suggested that there are five basic assumptions regarding self-directed learners. The first is that learners become more self-directed as they mature and



develop (p. 20). Second, self-directed learning values the learners' experiences as an important learning resource. Since all adult learners bring different experiences and understandings to the table, these experiences play a vital role in creating the necessary information pertinent to the learner. Third, self-directed learners exhibit a natural tendency to learn by focusing on tasks and problems unique to them. Fourth, self-directed learners assumes that their learning orientation is a result of their previous conditioning in school. Therefore, their learning should be organized as task-accomplishing or problem solving learning projects. Finally, self-directed learners are motivated by internal inspirations such as self-esteem, the desire to accomplish and grow, personal satisfaction, specific knowledge, and curiosity (pp. 19-21).

For well over three decades, the concept of self-directed learning has been a constant topic of examination by numerous adult education experts. Of these experts, Allen Tough (1968) expanded upon the true nature of self-directed learning early on through the examination of learning projects (p. 20). Tough (1970) defined the "learning project" as the measuring unit that is part of "a series of related episodes, adding up to at least seven hours. In each episode more than half of a person's total

motivation is to gain and retain certain fairly clear knowledge and skill, or to produce some other long lasting change in himself" (p. 6). Tough believed that even though a learning project is usually planned by others it is still self-planned and self-directed by the learner.

To the full extent that adults take on self-directed projects is still not exactly known; however, it is fair to say that participation in self-directed projects is almost universal. Studies report that anywhere from 79% (Penland, 1977) to 100% (Cooligan, 1974, 1975) of all adults conduct at least one learning project a year. The environment that adults undertake these self-directed projects will often take the shape of an independent learner. Tough (1978) discovered that almost three-fourths of all learning projects of adults are completely self-directed while only 20% of all learning projects are planned by a professional who is paid or institutionally designated to facilitate learning.

Stephen Brookfield, another prominent researcher in self-directed learning, has examined self-directed learning in the context of field dependence and effective practice. Brookfield (1986) explored the notion of successful self-directed learners and how they became successful in their endeavors. From his research, Brookfield was able to

identify successful self-directed learners from non-successful self-directed learners. Brookfield successfully identified field dependent learners as the more capable self-directed learners. Since "field dependents make greater use of the mediators in learning and experience greater difficulty in learning material in the absence of an imposed structure for learning" (p. 41), they are more capable of utilizing the resources necessary to complete their goals. In addition, Brookfield discovered that "successful self-directed learners appear to exhibit those characteristic that are associated with field dependent learners and accommodators" (p. 44). Therefore, he was able to determine that "successful self-directed learners appear to be highly aware of context in the sense of placing their learning within a social setting in which advice, information, and the skill model provided by other learners are crucial conditions for self-directed learning" (p. 44).

From the identification of successful self-directed learners, Brookfield (1986) was thus able to identify two forms of such successful self-directed learners. The first form involves the use of varied techniques in learning. First, the various techniques in learning must include "specifying goals, identifying resources, implementing strategies, and evaluating progress" (p. 47). Secondly,

learners must realize an internal change within their consciousness. This change comes about through viewing their "knowledge as relative and contextual, to view the value frameworks and moral codes informing their behaviors as cultural constructs, and to use this altered perspective to contemplate ways in which they can transform their personal and social worlds" (p. 47). Here the learners realize the direction they must take as well as the internal changes necessary to undertake their learning project.

Believing that facilitation between learner and instructor was necessary for successful completion of any project, Brookfield (1986) outlines six principles for effective facilitation in self-directed learning. The principles of effective practice are that:

1. Participation is voluntary; adults engage in learning as a result of their own volition. It may be that the circumstances prompting this learning are external to the learner, but the decision to learn is the learners.
2. Sense of mutual respect among participants. Effective practice is characterized by a respect among participants for each other's self-worth. Foreign to facilitation are behaviors, practices, or statements that belittle others or that involve emotional or physical abuse.
3. Collaboration between members . Facilitators and learners are engaged in a cooperative enterprise in which, at different times and for different purposes, leadership and facilitation roles will be assumed by different group members.
4. A praxis of theory and practice. Praxis is placed at the heart of effective facilitation. Learners and facilitators are involved in a continual process of activity, reflection upon activity,

- collaborative analysis of activity, collaborative analysis, and so on.
5. Critical reflection of prior assumptions. Through educational encounters, learners come to appreciate that values, beliefs, behaviors, and ideologies, are culturally transmitted and that they are provisional and relative.
  6. Nourishment of self-directed empowerment. These adults will see themselves as provocative, initiating individuals engaged in a continuous re-creation of their personal relationships, work worlds, and social circumstances. (Brookfield, 1986, pp. 9-11)

Self-directed learning is a "matter of learning how to change our perspective, shift our paradigms, and replace one way of interpreting the world of another" (p. 19).

#### Transformative Learning

In addition to andragogy and self-directed learning are important topics related to adult learning, "a third line of inquiry, which has taken over center stage since the late 1980's, is transformative or transformational learning" (Merriam & Caffarella, 1999, p. 318). The concept of transformative learning is directly related to the notion of professional development. Mezirow (1978), the pioneer of transformative learning describes transformative learning theory as a theory "about change-dramatic, fundamental change in the way we see ourselves and the world in which we live in" (p. 318). Rather than adding on to the knowledge that professional already have, "transformative learning shapes people; they are different afterward, in ways both

they and others can recognize" (Clark, 1993, p. 47).

Transformative learning therefore helps elevate professionals to a greater sense of learning and reflection.

To gain a better understanding of the methodology behind transformative learning, it is important to realize that this learning process is based primarily upon the life experiences of the professionals. Mezirow (1996) define this learning process as a meaning-making activity where "learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" (p. 162).

From a meaning-making transformation, Mezirow (1996) makes two distinct paths that professionals must take in order to become truly transformative in learning. First, Mezirow describes meaning perspectives as the primary step in this process. Meaning perspectives are the "lens through which each person filters, engages, and interprets the world" (Merriam & Caffarella, 1999, p. 320). Here "learning can consist of a change in one of our beliefs or attitudes (a meaning scheme), or it can be a change in our entire perspective" (p. 320). Arising from this emancipatory discovery about one's prior held beliefs and attitudes is the second path that Mezirow labels as perspective

transformation. Perspective transformation is the

“process of becoming critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about our world; of reformulating these assumptions to permit a more inclusive, discriminating, permeable, and integrative perspective; and of making decisions or otherwise acting on these new understandings” (p. 320).

By tapping into past experiences to make meaning for professionals, there is ultimately the opportunity to change perspectives.

Mezirow (1991) goes further into his explanation of transformative learning because he acknowledges “that not all learning in adulthood is transformative” (p. 223). To have even a deeper and enriching transformative learning experience, Mezirow suggests that significant transformation must involve three distinct phases of learning. Critical reflection is the first step in this multifaceted process where as the individuals become aware of changes in their personal and or professional world. A “disorienting dilemma” (Merriam & Caffarella, 1999, p. 321) is a particular life event where a personal experience changes an individuals personal or professional life. After this dilemma occurs the individual will “engage in self-examination, which will be followed by feelings of guilt or shame” (p. 321).

Other pertinent steps in critical reflection include a critical assessment of prior assumptions and a recognition that others that have gone through the same situation (p. 321). From this point, the professional must "explore options for new roles and relationships" (p. 321). After a plan of action has been implemented and executed, the individual will finally be ready to complete the process of critical reflection. The process of "reintegrating back into one's life based on the new, transformed perspective" (p. 321) is the ultimate step in critical reflection.

The second component of significant transformative learning is described as the discourse phase. Mezirow (1995) views this stage as learning "which views differences as an opportunity, a challenge to our abilities to communicate, understand, and learn" (p. 55). To gain further meaning of the discourse phase, individuals need to understand that this process "involves an effort to set aside bias, prejudice, and personal concerns and to do our best to be open and objective" (p. 53). The conditions that foster this line of transformation include "having complete information, being free of self-deception, being able to evaluate arguments objectively, having an equal opportunity to participate in the various roles of discourse" (p. 54). Discourse, can occur "in one-on-one relationships, in



groups, and in formal education settings" (p. 55). It is the ultimate goal in this phase for individuals to set aside biases and other personal prejudices in order to conduct constructive dialogue with others.

The final phase in Mezirow's process of transformative learning involves an individual's direct course of action. Following critical reflection and discourse is action: an integral and indispensable component of transformative learning (Mezirow, 1991, p. 209). Just as all individuals are unique so too are the possible courses of action. However, it is important to realize that the "type of action that one takes depends upon the nature of the dilemma" (p. 209). Because professionals are faced with a wide array of issues on a continual basis, true transformed professionals must realize how their actions can impact the desired end.

#### Professional Development

In the quest to gain greater insight on how professionals gain and build upon acquired knowledge, it is important to understand what is professional development and why continuing education is critical to professional growth. To fully appreciate the complex and didactic nature of a profession, it is imperative to realize the development of the modern professional and how they can achieve the highest form of professional actualization.

For many years authors and researchers have attempted to properly identify one true and authentic definition of what a professional is. In one of earliest definitions Flexner (1915) defined professionals as "involving essentially intellectual operations with large individual responsibility; they derive their raw material from science and learning; this material they work up to a practical and definite end; they possess an educationally communicable technique; they tend to self-organization; they are becoming increasingly altruistic in motivation" (p. 904).

Recent studies on professions suggest that "only those occupations whose members are deeply concerned with establishing their collective identities are considered 'professions'" (Houle, 1980, p. 50). However, to gain an accurate and more comprehensive modern description, Friedson (1986) suggests that "to be classified as a profession, some amount of higher education must be a prerequisite to employment. The rationale is that formal knowledge creates qualification for particular jobs, for which others who lack such qualifications are routinely excluded" (p. 59). Due to these ambiguous descriptions it is often times difficult to properly describe a true professional.

### The Evolution of the Professions

From the times of early Greek and Roman societies, the

term "profession" has been used to describe a person who had acquired the needed skills and knowledge to perform a specific task. Carrying into the medieval times the idea of a professional began to take a new and improved form. Here there was a "rise of the guilds" where the first time there was "collectivism" amongst the professional ranks (Houle, 1980, p. 20).

However, beginning with the Industrial Revolution in the 1800's, the notion of a person having the capabilities of being a properly trained professional has been greatly expanded upon. Houle (1980) describes this advancement when he discovered that in "the age of Enlightenment in the eighteenth century and the industrial revolution of the nineteenth century caused a break with the past for the professions as for many other aspects of life" (Houle, 1980, p. 21). With respect to certain earlier informal trades such as "engineering, architecture, pharmacy, and nursing" soon separated themselves from others and "emerged as clear-cut separate professions" where highly developed associations created "interlocking networks of professional groups that could provide services for and exercise discipline over their members" (Houle, 1980, p. 21). This evolutionary process of the professions continued into the twentieth century when preliminary academic research was

conducted on the idea of professionalism. In the United States, research performed by Flexner (1915) set forth one of the first classic detailed definitions of professionalism.

### Professionalization

For almost the first 50 years of the last century, society had come to accept the notion that if a person or collective group called themselves a professional or a member of a certain profession, it was often accepted as that. However, in the 1960's a new undercurrent was beginning to re-examine the individuals and organizations calling themselves a member of a profession. These problems arose when there was "growing concern about the extent to which the needs for a highly competent and subtle of essential services are being met for a society as a whole" (Houle, 1980, p. 26).

Certain professions could not meet the demands of society because they placed their own self-serving needs at the forefront thus permitting any "vocation to define itself as a profession" and allowing "complete abandonment of all standards" (p. 26). As an immediate reaction, a new approach was underway to curb this trend. The term professionalization soon became a key word in identifying those professions that sought to separate themselves from

other crafts.

For years professions have sought legitimacy through many different avenues. Houle (1980) found that many organizations attempting to professionalize their profession would form "restricted membership associations, accreditation of instructional programs, and licensure of practitioners" (p. 49). However, this often did not fulfil missions or goals. In order for a profession to become truly professionalized two important criteria must be met. (Houle, 1980)

The first characteristic is that those who seriously attempt to "professionalize an occupation try in many ways to establish its collective identity by building systems and structures that foster and maintain conceptual and competency characteristics" (Houle, 1980, p. 49). The second characteristic in this model is that "the professionalizing occupations are distinctive from those other vocations because their leaders seek to encourage and regulate standards of practice based on a profound central mission and on an advanced and esoteric bodies of knowledge" (p. 49). From the professionalization model, it is apparent that these practitioners attempt to elevates their members to a to a newer and higher level of professional development.

Though the aspiration to be professionalized may seem quite lofty at first glance, the outcomes can have a positive impact on both the practitioner and society. The benefits of such a theoretical framework allow the practitioner to practice in such a system that has an "open rather than a closed system of thought" as well as motivating the practitioner to "strive to become more professional than they are . . . and achieve goals that now lie beyond their reach" (Houle, 1980, p. 30). Since educators must raise the standards of operation in many occupations, "professionalization offers educators both the opportunity and the challenge to use active principles of learning to help achieve the basic aims of the group which they work" (Houle, 1980, p. 30), and with this elevated status in society practitioners "become not merely reinforcers of the status quo, as they so often are now, but the colleagues of all who work to further the power and the responsibility of the vocation. They serve but are not subservient" (p. 31).

#### Learning to be Professionalized

The process of continued learning through professionalization can be seen as a procedure that has learning as its backbone of existence. Within this mode, there are three distinct phases of learning, and all have

all with different and unique procedures and goals. In practice, "if lifelong education for professionalization is to be fully effective, it must be conceptualized and applied in applied sophisticated fashion" (Houle, 1980, p. 31).

The first mode of learning, the inquiry method, can often be described as a "process of creating some new synthesis, idea, technique, policy, or strategy of action" (p. 31). This methodology has several different methods of formation within a profession. This method can be conceived through a formal structure through "discussion or encounter groups, seminars, clinics, and guided experiences" (p. 31). However, oftentimes via informal settings or through secondary outcomes, new learning can take place. Through casual practice learning can be "a by-product of efforts primarily at establishing policy, seeking consensus, working out compromises, and projecting plans" (p. 31). The value of such a model can be judged on the "accomplishment of objectives" when they are put forth in a practical working environment.

The second mode of instruction is that of the inquiry method (Houle, 1980). This mode is one with many people even outside of the professions is very familiar. Important to this model is the notion of authority resting primarily in the methods and knowledge of the instructor. Many of

those who utilize this mode "assume that the teacher already knows or is designated to convey everything that the student will learn" (p. 32). Because this method relies upon the student's ability to "disseminate established skills, knowledge, or sensitiveness" (p. 32), the role of the professional is to be a passive engager in the learning process. The worthiness of such instruction in this learning mode can be best measured "in the achievement by the student of goals that are usually known to the teacher at the beginning of the learning episode" (p. 32). Since this method is a competency-based model, skill outcomes is most easily assessed outcome as compared to knowledge or sensitiveness.

The third and final learning mode in the professionalization of professionals is that of performance (Houle, 1980) . The performance model is "the process of internalizing an idea or using a practice habitually, so that it becomes fundamentally part of the way in which a learner thinks about and undertakes his or her work" (p. 32). A performance based model necessitates a consistent use of practice to ensure the likelihood of gained knowledge. Guided by a constant changing workplace, performance-based learning ensures the practitioner will have the necessary knowledge through not only "formal



educational activities but also manipulation of various physical and social aspects of the environment" (p. 33). Empowered by their need to improve their abilities, the performance mode as well as the other modes help professionals increase their operating standards when evaluated "by peers, [or] by supervisors" (p. 33).

To understand how these three modes compliment themselves, it is necessary to see how they play out in real-world situation or how they might impact an individual practitioner. As each mode has its own unique function and purpose, so does its ability to impact professionalization. When new ideas, methods, or societal changes affect a profession, it is critical for the existence of that profession and for the practitioner that a new praxis be developed.

In a natural progression, these distinct modes play separate roles at different times in the development of new ideas. When a profession realizes that new methods must be used, the mode of inquiry will be used "to identify the essential nature of the new method or theory and explore the ramifications of its application" (p. 33). Once the theory has been installed, it is "disseminated by the mode of instruction to the other practitioners" (p. 33). Finally, the mode of performance will be utilized "so that they

[changed behaviors] become established in practice and are monitored by whatever means seem appropriate in the various workplaces" (p. 33). In the process of professionalization, it is critical to understand these three modes and how to better appreciate their value in professional development.

### Continuing Education

Seminal to the practice of professional development is the concept of continuing education. With professional development and "mandatory continuing professional education emerging in the 1970's" (Houle, 1980, p. 288) it has become important to understand the basis of continuing education along with its goals in developing professionals in their field of practice. The development of mandatory continuing professional education arising over three decades ago "demonstrates how societal pressures can create responses related to professional fields" (Knox, 1993, p. 288). As a direct result, many professions seeking to increase their knowledge bases and adapt to changing environments turned to continuing professional education as their main avenue towards proficiency.

As varied as the term "profession" is, so to is the plausible definition of continuing education. However, many researchers see continuing education in a much narrower scope. Knox (1993) offers a basic and comprehensible

definition when he describes continuing education as "the process of systematic learning to prepare for the field of practice and to maintain proficiency in a context of changing knowledge base and practice" (p. 275). From this definition continuing professional education has a role from even pre-service training to established tenured practice.

Though the comprehension of continuing professional education is of great importance to all professionals, it is also just as important to know why many professionals must utilize this process. One such explanation is that "continuing education enables practitioners to progress from novice to expert" as it pertains to their field of practice (Knox, 1993, p. 275). However, in a deeper context, other external factors must be assessed on the relevance of acquiring new knowledge. For example, continuing professional education must take into account both the profession itself and its role within society. Because society is becoming increasingly knowledgeable and up-to-date on standards in professional practices, professions must now seek continuing education to adhere to society's "performance standards and accountability" (p. 276).

In the effort to make continuing professional education a reality to many professionals, it becomes mandatory to bring this theory into practice. In the process of

establishing and providing credible education for professionals many factors must be taken into consideration. These influences might include "career transitions, organized knowledge, indigenous knowledge, economic conditions, supply and demand for professionals, circumstances affecting the clients of the professionals, interprofessional relationships, and societal expectations" (p. 277).

Through his course of action for professionals, Knox (1993) highlights three important themes that help address the strategic planning of continuing professional education. First, professionals are "highly educated, who are influenced both by the continuum of preparatory and continuing professional education and by technology and other societal trends during their careers" (p. 278). Second, outcomes play a crucial role in the application of continuing professional education. This can be seen where continuing professional education is "only one influence on professional performance and multiple beneficiaries of improved performance" (p. 278). Third, the notion of collaborative agreements made between the different procedural stakeholders becomes important. Here, "interprofessional education to address issues relevant to various fields, international influences, and resource

acquisition to support continuing professional education" can be achieved with proper and strategic planning (p. 278).

Cyril Houle, another prominent researcher in continuing professional education, has examined continuing professional education in the context of lifelong learning of the professional. Houle (1980) described continuing professional education in a manner that saw the professional as a modern yet visionary contributor to society. The goal for continuing professional education according should be one that will "convey a complex attitude made up of the readiness to use the best ideas and techniques of the moment but also to expect that they will be modified or replaced" (p. 75). From this description of continuing professional education, the intent must also be purposeful and "imply some form of learning that advances from a previously established level of accomplishment to extend and amplify knowledge, sensitiveness, or skill" (p. 77).

Deepening the understanding of professional development, Houle also explored continuing professional education as it is related to the complex nature of the professional in the ever changing job market. Acknowledging that the job market has been changing and that many people do not fit the regular patterns of pre-service training or development, professional competence needed to be

reformulated and restructured to adjust to these recent trends. Recognizing this tendency, Houle (1980) discovering three methods that assist in reshaping learning patterns in the professions. The first tendency includes "people entering professions later than at the traditional time" (p. 77) leads to the acquisition of knowledge in non-traditional time patterns. Second, in a changing job market, many people may choose to leave their established position and "follow atypical pre-service and in-service training patterns" for their new profession (p. 77). Third, as a person matures, their willingness and "desire to learn may sometimes make its initial appearance somewhat later in life" (p. 77) thus influencing the individual's ability to learn new knowledge.

In summation, Houle finds that continuing professional education can play a vital role not only in the development of the professional but also in influences that it may have in society. Houle expressed the need and importance of continuing professional education due to the belief that "professionals could deal with the specifics of social policy formation. . . and give tangible evidence of individual and collective efforts to meet the needs of clients and society" (p. 14).

Ronald Cervero, an authority in the field of continuing

professional education, takes a different approach when he describes the field of continuing professional education. According to Cervero (1988), when "continuing professional education began to be used in the late 1960's to describe an identifiable field of study and practice" (p. 14), it helped to shape how many professions would formulate their future educational goals. Believing that different professions learned in similar fashion, Cervero came to the conclusion that "a comparative approach" had taken place between professions. Behind this approach were adult and continuing educators "who were struck by the similarities in the educational process used by the different professions with which they worked" (pp. 14-15).

Cervero contends that continuing professional education can be seen as a combination or a blend between different areas of study. Central to this argument, Cervero believes that "continuing professional education practice is influenced by the fact that the practitioners are adults who work in a professional setting" (p. 16). Paramount to his findings, the same methods used in continuing and professional development were those used in "adult education and in human resource development and training" (p. 16). The blending and combination of these disciplines helps to identify useful concepts and practices for professionals.

## Participation in Continuing Education

Although adults have been attending education programs for years, it was not until about 40 years ago that this phenomenon was formally studied (Johnstone & Rivera, 1965). The early research used surveys and questionnaires quite often which asked respondents about their reasons for learning and what motivates them to learn (Cross, 1981). The reasons why adults choose to participate in adult education are quite varied in nature. Adults may be motivated to participate in continuing education because of family concerns, personal change, professional development, or even personal satisfaction (Cross, 1981; Houle, 1961; Merriam & Caffarella, 1999).

Houle (1961) conducted research on adults that were participating in continuing adult education. What Houle was trying to determine was what motivates these individuals to learn and acquire new information. From his research, Houle discovered that adults participate in educational activities for three distinct types of reasons. These groups of learners included goal-oriented learners, activity-oriented learners, and learning-oriented learners.

The first of these groups, goal-oriented learners, can be described as individuals who "have clear cut aims they wish to achieve" (Houle, 1961, p. 17). From the onset of



their educational endeavor, the primary purpose of their learning centers on achieving some type of goal. Their learning typical revolves around the "identification of an interest" (p. 18) and comes in multiple layers or episodes. The second group, activity-oriented learners, usually engage in learning for "reasons unrelated to the purposes or content of the activities in which they engage" (p. 19). Many people in this model will take up a learning activity for the sake of the activity itself or for the social interaction that they might engage in with others who have similar interests. The third group, learning-oriented learners, could be described as information seekers. Many of these adults will learn something new for the sake of learning. These adults enjoy learning new skills or information to get that extra piece of knowledge that they might have not have had prior to that experience. This group of learners are more than likely "avid readers" or will "join groups and classes and organizations for educational reasons" for the purpose of learning new information (p. 24).

Building upon the early work of Houle, other adult education researchers investigated the concept of motivating factors in adult education. Of the early research following Houle's findings, Sheffield (1964) developed an instrument

to measure an adult's learning orientation. In his research Sheffield used a factor analysis to find that there was a possible of five learning orientations. These orientations included learning-orientation, desire-activity, personal-goal, societal-goal, and need-activity (Sheffield, 1962, p. 82).

As for motivating factors that professionals point to in increasing their educational base, Ronald Cervero (1988) explained the many possibility to why professionals choose to gain more education and knowledge. In his work, Cervero highlighted five potential reasons why professionals choose to participate in continuing education specific to their professional careers. The reasons include maintaining current abilities, increasing the likelihood that their clients will be better served, being prepared to be challenged by their colleagues, maintaining identity in the profession, and enhancing one's individual security in their present profession (Cervero, 1988, p. 65). Along with these reasons the research showed that these reasons, can change from professional to professional and with the type of profession in which they are currently engaged.

#### Reason for Non-Participation

To fully understand why a person chooses not to participate in continuing education it is essential to

identify the reasons and barriers that deter an individual from learning. Knowing that there are reasons why adults do not participate in educational opportunities presumptions cannot be made that these individuals are happily employed and satisfied with their family, community, and leisure activities (Merriam & Caffarella, 1999, p. 56). In one of the earliest studies into barriers of participation, Johnstone and Rivera (1965) conducted a national survey which found that 43% of the participants cited cost as a reason for not attending adult education courses while 39% said that they were too busy. Similar to the Johnstone and Rivera study, Valentine (1997) in the United Nations Educational, Scientific, and Cultural Organization study (UNESCO), it was found that 45% of the participants said lack of time was a barrier for job-related education, and 33.4% gave cost as barrier for job-related education.

Through a cluster analysis, Johnstone and Rivera (1965) clustered ten potential barriers into two distinct categories: external, or situational, and internal, or dispositional barriers. Situational barriers were identified as the most often cited reason for not participating in continuing education. Situational barriers were described as "influences more or less external to the individual or at least beyond the individual's control" (p.

214). For example, work place responsibilities, family commitments, or lack of resources could be included in this area. In most surveys, lack of time vies with cost for first place among the obstacles to education. It is more often mentioned by people in their 30s and 40s than by those younger or older, more often by the highly educated than by the poorly educated, and more often by those in high income populations than by those in low-paying jobs (Cross & Zusman, 1979). Younger people are actually more likely than older people to mention cost as problem (Cross, 1981, p. 101).

Dispositional barriers are described as those that reflect on the learner's personal attitudes or self-perceptions, such as thinking that one is too old to learn or that they are too busy to learn new information. In surveys, it has been reported that only from 5% to 15% of respondents state that this barrier is an identifiable problem. Noting this deficiency Cross (1981) points to two flaws in methodology of data collection. The first lies in the social desirability issue; that is, it is far more acceptable to say that one is too busy to participate in learning activities or that they cost too much than it is to say that one is not interested in learning, is too old, or lacks ability (pp. 106-7). Second those individuals who

reported that they were not interested in further education from interviews were often dropped from further analysis (p. 107).

Elaborating on the early works of Johnson and Rivera, Pat Cross (1981) carried the investigation of barriers to education even further. In her analysis, Cross (1981) discovered that institutional barriers could be considered a third distinct barrier that should be added to situational and dispositional barriers. These were barriers that consisted of all the practices and procedures that exclude or discourage working adults from participating in educational activities (p. 98).

Institutional barriers, usually subconsciously erected by providers of educational services, rank second in importance to situational barriers, and affect between 10% and 25% of the potential learners in most surveys (Cross, 1981). Institutional barriers can generally be grouped into five areas: scheduling problems; problems with location or transportation; lack of courses that are interesting, practical, or relevant; procedural problems and time requirements; and lack of information about programs and procedures (Cross, 1981). Lack of information, for example, could be an institutional barrier if one assumes that institutions should assume the responsibility for their

offerings being known (Cross, 1981). A great deal of effort has been done by educational institutions to decrease these barriers such as changing course offerings and flexible admissions the problem exists if individuals perceive a barrier. Surveys were intended to tell what people perceive to be obstacles, and this may have as much to do with the lack of participation as actual barriers (Cross, 1981).

In one of the first studies dedicated to barriers in professional development, Dao (1975) investigated various reasons why adults do not participate in continuing education. From this study and from various other sources in the literature Dao compiled a list of 554 reasons for nonparticipation in continuing education activities which were later reduced to 88 through various analytical methods (Houle, 1980, p. 150). With further statistical analysis, Dao found that nine clusters of reasons existed. The nine clusters included:

1. Not enough time to participate in educational activities.
2. Individual and personal problems make it too difficult to participate.
3. Too difficult to succeed in activities.
4. Against the social norms to participate in educational activities.
5. Negative feelings toward the institution offering instruction.
6. Negative prior experience in educational activities.
7. Results of educational activities not valued.

8. Indifference to educational activities.
9. Unawareness of educational activities available.  
(Houle, 1980, p. 151).

These clusters are organized approximately in their order of influence for non-participation (Houle, 1980, p. 151).

Speculating that failure to participate may be caused by deeply ingrained attitude or group attitudes that effectively prevents positive action, Dao contends that even unawareness to educational activities can be the consequence of a long and deeply held blindness to the opportunities available (Houle, 1980, p. 152). To the extent that these negative orientations exist in a profession, they will systematically impede its capacity to provide a wholly satisfactory program of continuing education (Houle, 1980, p. 152).

#### Models of Participation

With the understanding that there are many different characteristics and barriers to learning, several different models of participation have been created to better comprehend the complex nature of participation in adult education. One of the earliest attempts to explain adult participation in education was that of Harry Miller's force-field analysis (1967). Drawing upon the theories of Maslow's (1954) motivational needs hierarchy and Lewin's (1947) force-field theory, Miller sought to explain the

forces applied to adults and how these forces affected educational participation (Merriam & Caffarella, 1999). From Maslow, Miller hypothesized that adults from lower socioeconomic classes would participate for job-related and basic skills reasons whereas participants from higher socioeconomic status would seek education to satisfy achievement and self-realization needs. By utilizing Lewin's notion of positive and negative forces on participation, Miller was able to properly identify motivational factors that increase or decrease participation. This notion holds that both positive and negative forces act upon an individual and that the direction and sum total of these forces determine an adult's motivation to participate. Therefore, if an individual has more barriers than motivators then the individual is more likely not participate in an education experience (Merriam & Caffarella, 1999).

The Boshier Congruency Model (1973) is another model that attempts to explain the phenomenon of adult participation. Building upon Miller's (1967) earlier theory on participation, Boshier attempted to explain participation in terms of the interaction between personal factors and social factors (Merriam & Caffarella, 1999). The model asserts that "congruence" both within the participant and



their educational environment determine participation/non participation and dropout/persistence (p. 256). Another assumption in this model is the idea of self-actualization and educational environment. The rate at which one participates is based on participation and persistence in adult education that are determined by how people feel about themselves and the match between the self and the educational environment. With the social, psychological, and subenvironmental variables affecting participation, this model suggests that these mediating variables have an effect on the person's orientation to learning (Merriam & Cafarella, 1999).

Rubenson's Expectancy Valence Model (1977) which address both socialization and structural orientation along with individual orientation examines the motivation of an individual in continuing education. The decisions to participate are a combination of negative and positive forces within the individual and the environment. The forces involved are a combination of the individual's expectations and attitudes toward education. Referring to an individual's orientation to learning, Rubenson states that expectancy is the anticipation of being successful in an educational situation whereas the term valence relates to the values a person places on being successful whether that

is positive, negative, or indifferent (Merriam & Caffarella, 1999, p. 63). Perceiving the worth and value of continuing education, is developed through the socialization of family, school, and work. Directly affecting how one sees the environment, structural factors in the environment can help to explain this occurrence. Structural factors may include the values of people important to one's self-definition and accessibility of educational programs (Merriam & Caffarella, 1999, p. 64). Unlike the earlier models of Miller and Boshier, Rubenson choose to focus on individual characteristics and moves away from demographic variables.

Cookson's ISSTAL Model (1986) is yet another model that takes the dimension of social interaction and how this process affects education participation. Based on Smith's (1980) social participation model, Cookson's (1986) model stresses the social dimension of participation. ISSTAL is the abbreviation for "interdisciplinary , sequential specificity, time allocation, and life span" (p. 64). The model is interdisciplinary because it includes concepts from different disciplines. Sequential specificity relates to the causal interconnectedness of variables leading to participation and time allocation and life span assumptions have to do with viewing participation in adult education as but one form of an adult's overall social participation

(Merriam & Cafarella, 1999, p. 64). This social interaction model looked at a combination of social structures, social demographics, personality traits, and present day situations. This association of social interaction as a lifelong pattern in adult education can be seen as one matures. "People who exhibit higher levels in their thirties may be expected to display similarity higher levels in their forties, fifties, and sixties" (Cookson, 1986, p. 213).

Developed by Pat Cross, the Chain-of-Response (COR) Model (1981) made a conceptual framework designed to identify various interrelated internal and external variables influencing participation. Cross contends that these chains of responses are related to both psychological and environmental factors with psychological factors being the most important factor in these chain of events (Merriam & Cafarella, 1999). In this cyclical model, several important steps are undertaken to evaluate the possibility of participating in educational opportunities. Self-evaluation, attitudes about education, importance of goals, life transitions, opportunities or barriers, and the choice of participation or nonparticipation are crucial steps in this whole process. This model, which focuses primarily upon an individual's internal beliefs, demonstrates that the

reasons adults participate or do not participate in adult education relates closely to their attitudes and beliefs in their values education.

The use and understanding of the various models of participation helps to give a greater understanding and appreciation of the many influences on adult learners. These conceptual frameworks allow the planners of adult education programs to have the knowledge of what deters adults from attaining further education and possible methods to overcome these shortcomings.

## Chapter 3

### METHODOLOGY

#### Design

This study utilized a descriptive research design. This research method tests hypotheses or answers questions concerning participants' current status and it reports "the way things are" (Gay, 1987, p. 11). In addition, this design is "generally asking questions that have not been asked before" (p. 11). This study investigates the undiscovered territory of certified athletic trainers' attitudes on continuing professional education, perceived deterrents to continuing professional education, and preferred learning strategies used in continuing professional education programs.

#### Sample

A population is a group that has a similar set of characteristics and the group to which the researcher would like the results of the study to be generalized (Gay, 1987, pp. 102-103). The target population for this study was certified athletic trainers who are members of the athletic trainers LISTSERV at Indiana State University and the professional athletic trainers education list serv at Findlay University.

A sample is the number of people chosen from a target

population so that they portray the characteristics of the target population (Gay, 1987, p. 114). For a descriptive research project it is desired to attain the responses from a minimum of 10% of the population. Based on the population of certified athletic trainers on the athletic trainers listserve at Indiana State University and the professional athletic trainer education listserve at Findlay University, based on a sample size of 1,000 participants was needed. The athletic trainers listserve operated at Indiana State University is a listserve for athletic trainers who are interested in topics related to the profession. The professional athletic trainer educators listserv, operated at Findlay University, primarily serves athletic trainers who develop and implement athletic trainer education programs.

#### ATLAS

Assessing the Learning Strategies of Adults, was designed to quickly identify learning strategy profiles (Conti & Kolody, 1998a, p. 109). Ordinarily, ATLAS was printed in color-coded paper bound in a pamphlet format. For this study, the ATLAS instrument was embedded in an online questionnaire as an instrument to discover an individual's learning strategy. Participants followed descriptive phases by clicking their mouse indicators on

selected responses. Each response led the participant to eventually discover their learning strategy group of Navigator, Problem Solver, or Engager. Once they discovered their learning strategy group, participants were asked to indicate whether the learner description fit them or not.

ATLAS is a valid instrument for measuring the learning strategies of adults in real-life learning situations (Conti & Kolody, 1998). Validity is the "degree to which a test measures what it is intended to measure" (Gay, 1987, p. 553). The ATLAS instrument was based on the research findings of the Self-Knowledge Inventory of Lifelong Learning Strategies and carries with it the validity of the SKILLS instrument (Conti & Fellenz, 1991).

Three kinds of validity are important when conducting research in education and the social sciences. They are construct validity, content validity, and criterion-related validity. Construct validity is "the degree to which a test measures an intended hypothetical construct" (Gay, 1987, p. 131). Construct validity for ATLAS was achieved by using a database of 3,070 responses to the Self-Knowledge Inventory of Lifelong Learning Strategies to identify three groups of learning strategy patterns. These groups were identified as Navigators, Problem Solvers, and Engagers.

Content validity is "the degree to which a test

measures an intended area" (Gay, 1987, p. 129). Content validity for ATLAS was established using discriminate analysis to determine the exact learning strategy pattern used by each group compared to the other groups (Conti & Kolody, 1999a, p. 19).

Criterion-related validity is "validity which is determined by relating performance on a test to performance to another criterion" (Gay, 1987, p.543). Criterion-related validity was established by comparing results on ATLAS to responses on the Self-Knowledge Inventory og Life-Long Learning Strategies and by checking the accuracy of ATLAS results with respondents. In a real-life analysis of how the criterion compared to the identified learning strategy in ATLAS, "at least 90% of the participants agree that ATLAS correctly identifies learning strategies" (Ghost Bear, 2001, p. 83). Furthermore, a study of high school non-completers "consistently indicated their agreement with the ATLAS description of their learning strategies" (James, 2000, p.92).

Reliability is "the degree to which a test consistently measures whatever it measures" (Gay, 1987, p. 135). If a test is reliable, people can be confident that the same results will be reached each time the instrument is administered (p. 135). "The more reliable a test is, the



more confidence we can have that the core obtained from the administration of the test were readministered" (p. 135).

While the establishment of reliability of the ATLAS instrument is ongoing, "test-retest measures results are approximately 90% accurate for placing people in the same learning strategy preference category" (Willyard, 2000, pp. 88-89). In test-retest examinations covering a period of time from one week to three weeks, ATLAS has a reliability of .87 (Ghost Bear, 2001, p. 84).

#### The Adults Attitudes Toward Continuing Education Scale

The Adults Attitudes Toward Continuing Education Scale (AATCES) is a scale used to measure adults' perceived attitudes on continuing education. Developed by Darkenwald and Hayes (1988), the AATCES is a 22-item scale that uses a 5 point Likert Scale to detect perceived attitudes on continuing education. The content validity support for the AATCES was "inferred from the procedures utilized in its construction" (Darkenwald & Hayes, 1988, p. 5). The construct validity was established through correlations between AATCES and selected demographic variables (Erikson, 1990). It has a Cronbach reliability coefficient of .90 in its final form (Erikson, 1990).

#### Deterrents to Participation Scale-General

The Deterrents to Participation Scale (DTPS) was

developed by Scanlan and Darkenwald in 1984. Its purpose was to investigate and expand upon the theory of adult education participation by measuring the reasons adults give for nonparticipation in continuing education. The DTSP is a 40 item scale that utilizes a 5-point Likert scale related to six deterrent factors. The survey consisted of a random sample of healthcare professionals in New Jersey that held credentials in physical therapy, medical technology, and respiratory therapy.

In an attempt to determine deterrents to participation by the general population, Darkenwald and Valentine (1985) developed a second instrument Deterrents to Participation Scale-General (DPS-G). Expanding upon the work of Scanlan and Darkenwald, Darkenwald and Valentine (1985) refined this earlier work of the DTSP and developed another scale to determine deterrents to participation. The Deterrents To Participation Scale-General (DPS-G) is a 34 item scale that utilizes a 5-point Likert scale to determine deterrents to continuing education. The DPS-G is a valid and reliable instrument. Content validity was established by an elaborate interview process on each item. Construct validity was established using a correlational analysis between selected variables and six deterrent variables (Darkenwald & Valentine, 1985, p. 187). Internal

reliability was established through a coefficient of .86.

### Procedure

The population of the study was derived from the certified athletic trainers who are members of the athletic trainers listserv at Indiana State University and the professional athletic training educators listserv at Findlay University. A subscription to the above mentioned listserves was utilized to gain access to the population. The members were sent a message soliciting their assistance in completing this study. A brief explanation of the study and its significance to the profession of Athletic Training was attached. Each participant was first asked to complete a brief demographic portion of the study. Second, the participants completed the AATCES and DPS-G scales. Finally, the participants completed the ATLAS section to identify their learning strategies. The participants then click the submit button to end the study. A second message was sent out approximately one week later to ensure more participation in this study by certified athletic trainers.

In the field of adult education, two studies have been recently completed using electronic surveys (Ghostbear, 2001; O'Brien, 2001). Both dealt with the topic of learning strategies. Ghostbear (2001) described adult learning on the internet as part of the eBay auction process. O'Brien

(2001) described how teaching styles and teaching philosophies influenced occupational rehabilitation education.

## CHAPTER 4

### FINDINGS

The data for this descriptive study was gathered from the athletic trainer using the LISTSERV at Indiana State University and the professional athletic trainers education LISTSERV at Findlay University. A request to participate in this study was emailed to the listserv members with a combined total of 2,500 members in which 1,200 were certified athletic trainers. The Adult Attitudes Toward Continuing Education Scale (AATCES), the Deterrents to Participation Scale-General (DPS-G), and ATLAS were used to obtain the data. Demographic data were collected related experience level, race, age, route to certification, and continuing education meetings attended per year. The data which was collected with the AATCES, DPS-G, ATLAS, and demographics were organized to facilitate statistical analysis. The statical analysis included one-way ANOVA, dicriminant analysis, and cluster analysis.

#### Profile on Variables

Responses were derived from 268 certified athletic trainers. Of these 268, a little over one-half (55.86%) were males and a little under one-half (44.14%) were females (see Table 1). This profile of respondents closely represents the numbers reported by The National Athletic

Trainers Association. The NATA reports that male ATC's account for 56% of their membership while females account for 44% of the membership (www.nata.org).

Table 1: Demographic Variables

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
Gender		
Male	143	55.86
Female	113	44.14
Education		
Masters	162	63.53
Bachelors	50	19.61
Doctorate	43	16.86
Setting		
College	188	73.15
High School	33	12.84
Clinical/Hospital	18	7.00
Other	11	4.28
Professional	4	1.56
Industrial	3	1.17
Race		
White	237	94.42
Hispanic	6	2.39
African American	4	1.59
Other	2	0.80
Asian	1	0.40
Native American	1	0.40
Certification		
Internship Model	146	57.48
Curriculum Model	108	42.52

For the racial profile of the respondents in this study, a disproportionately high percentage were whites (94.42%) (see Table 1). Other groups represented in this study included Asians (.40%), Hispanics (2.39%), African American (1.59%), Native American (.40%), and other (.80%).

These findings highlight a representative sample of the general population of certified athletic trainers as reported by the NATA where whites accounted for 86% of its certified athletic trainer population while Asians accounted for 2%, Hispanics 2%, African Americans 1%, Native Americans 1%, and other 1% (www.nata.org).

Certified athletic trainers (ATC) are employed in diverse work setting. Of the 258 respondents in this area, nearly three-quarters (73.15%) reported to be employed at the college setting where as the NATA reports that only one-fifth (21%) of all certified athletic trainers work at the college setting (www.nata.org) (see Table 1). As for the remainder of settings, 12.84% reported to be employed at the high school setting while the NATA reports that over one-third (34%) of certified athletic trainers work in this setting. In the clinical/hospital setting, only 7% of the respondents reported to be employed in this setting while the NATA reports over one-third (34%) of its members are employed in that particular setting. For the professional setting, 1.56% of the responses reported to work in this setting, where as almost 10% of all certified athletic trainers work in that setting. For the industrial setting, the NATA reports that 1% of its members work at this setting with 1.17% of this study claiming to work in the industrial

setting. For the remainder of this population, 4.28% reported to employed at other settings. Thus, the population for this study had a disproportionately high number of respondents from the college setting and an equally disproportionately low number of respondents from the high school and clinical/hospital settings.

The entry level degree for a certified athletic trainer is the bachelor's degree. Of the 258 respondents in this area just under two-thirds (63.53%) report having a master's degree, one-fifth (19.61%) have a bachelors degree, and 16.86% have a doctorate (see Table 1). Similar to these findings, the NATA reported in 2000 that just over one-half (54%) of 1,000 randomly sampled ATC's held a master's degree. The remainder held a bachelor's degree (32%), a doctorate (6%), and other (8%) ([www.nata.org](http://www.nata.org)). Thus the sample for this study was slightly more formally educated than the general population of certified athletic trainers.

In the field of athletic training, certified athletic trainers can reach their certification from two different education routes. Certification can be attained from an internship model or from a curriculum model. Almost three-fifths (57.48%) came from an internship model while a little over two-fifths (42.52%) came from a curriculum model (see Table 1). Currently, the NATA does not keep records on the



route a current ATC has taken to their certification.

Currently, all certified athletic trainers must maintain satisfactory standing in the profession by attaining a certain level of continuing education units every two years. These continuing education units can occur either at annual meetings, conferences, seminars, or through home study courses. Relaying the significance of staff development as an important component of the profession, almost all the respondents (95.35%) reported attending one meeting a year while very few go to no meetings (4.65%) (see Table 2). Of the respondents, almost one-third (29.84%) reported attending one continuing education meeting a year. An additional one-third (31.01%) of the respondents attended two meetings a year. Finally, just over one-third (34.50%) of the respondents reported attended three or more continuing education meetings a year.

Echoing these responses, it was discovered that many of the certified athletic trainers receive some type of financial assistance to attend these meetings. Of the 231 respondents, nearly three-fourth (71.00%) reported financial support from their respective institution to attend continuing education meetings. In addition, almost one-third (30.91%) reported up to five hundred dollars allocated for continuing education meetings, one-fifth (19.4%) stated

they were given between five hundred and one thousand dollars for attending educational meetings, in less than one-fifth (14.5%) were give over one thousand dollars to attend continuing education meetings.

Table 2: Frequency of Meetings

<b>Number</b>	<b>Frequency</b>	<b>Percent</b>
0	12	4.65
1	77	29.84
2	80	31.01
3	59	22.87
4	15	5.81
5	8	3.1
6	1	0.39
8	3	1.16
10	2	0.78
12	1	0.39

Of the 252 respondents in this survey nearly two-thirds (65.27%) reported 10 or fewer years experience as an ATC. Of the remaining respondents just over one-third (38.70%) reported to have 11 or more years as an ATC (see Table 3). The profession of athletic training is a relatively new allied health care profession. It has grown recently since both amateur and professional athletics and sports medicine have received more exposure and attention the past several years. In addition, there has been a marked increase in female membership in athletic training in part due a more positive attitude towards female athletes, co-education facilities, and Title IX requirements in collegiate

athletics. As a result of the 252 responses, one-quarter (25.19%) have 1-3 years experience and nearly two-thirds (65.7%) have 10 or fewer years experience (see Table 3). Just over one-third (37.7%) have 11 or more years experience. However, even though the field is relatively new, one-quarter (22.62%) have extensive experience with over 15 years experience in the field.

Table 3: Years Experience

<b>Range</b>	<b>Number</b>	<b>Percent</b>
1-3	65	25.19
4-10	101	40.08
11-15	38	15.08
16-20	25	9.92
21-32	32	12.70

The group varied very little in its distribution of age. Nearly one-half (48.44%) of the respondents were between the ages of 26 and 35 (see Table 4). The next most represented age group with just over one-third (34.38%) of the respondents were those individuals age 36 and above. The smallest group with almost one-fifth (17.19%) of the respondents were between the ages of 21 and 25. The ages were placed in increments of 5 years due in part to logical professional occurrences that happen within these selected time frames. Those 21 to 25 are recent graduates and are just beginning in the profession or continuing their studies in graduate school. Those 26 to 35 are settling into the profession and in their current jobs. Those age 36 and

above are becoming well established in their position and advancing in the ranks of the profession.

Table 4: Distribution of Age

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
21 - 25	44	17.19
26 - 30	67	26.17
31 - 35	57	22.27
36 - 40	31	12.11
41 - 45	26	10.16
46 - 50	18	7.03
51 - 55	11	4.30
56 - 59	2	0.78

#### Profile on Instruments

As a group, the certified athletic trainers have a very positive attitude toward continuing education. The Adults Attitudes Toward Continuing Education Scale (AATCES) has a possible range of 22-110, and the range for the certified athletic trainers was from 66-110 (see Table 5). This was well above the midpoint of 66. The group's mean on AATCES was 90.11 with a standard deviation of 8.25; this represent an average response of 4.1 on the 5-point scale and is just above the rating of Agree.

Table 5: Frequency of Attitudes by Quartiles

<b>Range</b>	<b>Number</b>	<b>Percent</b>
66 - 84	65	25.19
85 - 90	71	27.52
91 - 96	61	23.64
97 - 110	61	23.64

The respondents on the Deterrents to Participation Scale for the General Population (DPS-G) reported a fairly

low score overall showing many respondents do not see deterrents to continuing education at their lives. The DPS-G has a possible range of 34-170. The group's mean was 80.39 with a standard deviation of 19.28. This is well below the midpoint of 102. The mean of 80.49 represents an average response of 2.36 on the 5-point scale and is near the rating of Slightly Important. The respondents' scores ranged from 34-143 with the most frequently occurring score of 65 (see Table 6).

Table 6: Distribution of Deterrents by Quartiles

<b>Range</b>	<b>Number</b>	<b>Percent</b>
34 - 65	65	25.19
66 - 80	65	25.19
67 - 94	66	25.59
95 - 143	62	24.03

The three learning strategies preference groups identified by Assessing the Learning Strategies of Adults (ATLAS) include Navigators, Problem Solvers, and Engagers. Respondents are placed in one of the three groupings based on their responses. In the general population, the learning strategy preference groups are distributed as follows: Navigators--36.5%, Problem Solvers--31.7%, and Engagers--31.8% (Conti & Kolody, 1999, p. 18). However, participants in this study were unequally distributed between the three groups of learners with 42.86% Navigators, 41.27% Problem Solvers, and 15.87% Engagers (see Table 7). The distribution

with a disproportionately low number of Engagers is significantly different from the normal distribution for ATLAS ( $\chi^2=30.17$ ,  $df=2$ ,  $p>.001$ ). Of the total of 252 respondents, 239(94.84%) reported that ATLAS accurately described them and only 13(5.16%) felt it did not accurately describe them.

Table 7: Distribution of ATLAS

<b>Groups</b>	<b>Observed</b>	<b>Percentage</b>	<b>Expected</b>	<b>Difference</b>
Navigator	108	42.86	91.98	16.02
Prob Solver	104	41.27	79.88	24.12
Engager	40	15.87	80.14	-40.14

#### Factors in DPS-G

A confirmatory factor analysis was used in this study to examine the Deterrents on Participation Scale-General (DPS-G) instrument for relationships of factors within the instrument. Factor analysis can be seen as "a statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of many interrelated variables" (Norusis, 1988, p. B-41). In addition, factor analysis assists to "identify these underlying, not directly observable, constructs . . . or factors used to explain complex phenomenon" (p. B-41-2).

Factor analysis has several purposes or uses in its implementation. Factor analysis can be used as a confirmatory tool to test hypothesized relationships among

the data (Kim & Mueller, 1978a, p. 9; Lorr, 1983, p. 14). Other functions of factor analysis include the determination of construct validity within an instrument (Conti & Fellenz, 1986, p. 73; Huck, 2000, p. 106). The goals of factor analysis include the ability to "represent relationships among sets of variables parsimoniously" meaning that the observer would use "as few factors as possible" (Norusis, 1988, p. B-43). The second goal in factor analysis accounts for the purposefulness of the factors or for it to be "meaningful" in their scope (p. B-43). This can be achieved by "creating a solution with the smallest number of factors possible that simplifies the data and simultaneously preserves the meaning" (Davis, 2000, p. 176). With this method of data interpretation, greater determination of influential factors can be ascertained.

For the purpose of this study, a factor analysis was used to determine the nature of underlying concepts of the items in the DPS-G (see Table 8). In an exploratory factor analysis, eigenvalues are used to determine the appropriate number of meaningful factors to be included in the analysis of the DPS-G. An eigenvalue is a value used as a measurement of variance (Kim & Mueller, 1978, p. 76). An eigenvalue can also be described as the sum of the variance of each variable within the total variance (Norusis, 1988,

p. B-46). Since this analysis was a confirmatory analysis of the DPS-G, the factors were limited to six factors. An eigenvalue of one is considered the minimal value for retaining a factor in an analysis (p. B-47); and the eigenvalue for all six factors were greater than one: Factor 1--4.88, Factor 2--3.82, Factor 3--3.51, Factor 4--3.05, Factor 5--2.70, Factor 6--2.51.

Table 8: Items in DPS-G

No.	Item
1	Because I felt I couldn't compete with younger students
2	Because I was not confident of my learning ability
3	Because I felt I was too old to take the course
4	Because I felt unprepared for the course
5	Because I didn't think I would be able to finish the course
6	Because my friends did not encourage my participation
7	Because I didn't meet the requirements for the course
8	Because my family did not encourage participation
9	Because the available courses did not seem useful or practical
10	Because I didn't think the course would meet my needs
11	Because the courses available did not seem interesting
12	Because the course available were of poor quality
13	Because I wanted to learn something specific, but the course was too general
14	Because the course was not on the right level for me
15	Because of the amount of time required to finish the course



16	Because I didn't think I could attend regularly
17	Because I didn't have the time for the studying required
18	Because the course was scheduled at an inconvenient time
19	Because the course was offered at an inconvenient location
20	Because I'm not that interested in taking courses
21	Because I wasn't willing to give up my leisure time
22	Because I don't enjoy studying
23	Because participation would take away from time with my family
24	Because education would not help me in my job
25	Because I couldn't afford miscellaneous expenses like travel, book, etc
26	Because I couldn't afford the registration or course fees
27	Because my employer would not provide financial assistance or reimbursement
28	Because I had trouble arranging for child care
29	Because of family problems
30	Because of a personal health problem or handicap
31	Because the course was offered in an unsafe area
32	Because I didn't know about courses available for adults
33	Because of transportation problems
34	Because I prefer to learn on my own

Another important step of factoring included the utilization of a rotation of the factors. "The goal of rotation is to transform complicated matrices . . . into

simpler ones" (Norusis, 1988, p. B-54). In the course of refining the accuracy of factors, several different types of rotations can be applied. A varimax rotation was used because it "attempts to minimize the number of variables that have a high loading on a factor" (p. B-54), and it can "achieve a more simplified structure" especially on interpreting the factors (p. B-54). Since a varimax rotation is the most commonly used method in factoring it should help to "enhance the interpretability of the factors" (p. B-54). The factors are listed in descending order based on the amount of variance for which it accounts in the sample.

The factor analysis with the certified athletic trainers confirmed the factor structure of the DPS-G. The analysis of the items in each factor confirmed that almost all of the items loaded on the factors identified in the original instrument (Darkenwald & Valentine, 1985). In the original factoring which utilized 215 individuals from a random sample of households (p. 179), six factors were identified as possible deterrents to continuing education. In addition, the DPS-G contains three items that were not loaded to a specific factor. These factors included Lack of Course Relevance, Personal Problems, Lack of Confidence, Time, Cost, and Low Personal Priority.

Although the factor analysis confirmed the factor structure of the DPS-G, it also gave it more clarity for the sample of certified athletic trainers. From the factor analysis, it was found that Item 7 moved from Lack of Confidence to Lack of Course Relevance and that Item 8 moved from the Lack of Confidence factor and became better suited in the Personal Problem factor. Finally, the originally three items (32, 33, and 34) that were not put in a factor were found in this study to belong to and were loaded into the factor of Personal Problems (see Table 9).

Table 9: Factors of Factor Analysis

Categories	Items	Factors					
		1	2	3	4	5	6
<b>Relevance</b>	10	0.86					
	11	0.83					
	12	0.82					
	9	0.82					
	14	0.73					
	13	0.69					
	7	0.56					
<b>Personal Problems</b>	29		0.79				
	28		0.77				
	30		0.76				
	33		0.69				
	31		0.66				
	34		0.48				
	32		0.41				
	8		0.32				
<b>Confidence</b>	1			0.76			
	2			0.76			
	4			0.72			
	3			0.72			

	5			0.56		
	6			0.54		
<b>Time</b>	16				0.82	
	17				0.72	
	18				0.70	
	15				0.68	
	19				0.56	
<b>Cost</b>	26					0.91
	25					0.91
	27					0.81
<b>Low Personal Priority</b>	21					0.80
	20					0.68
	22					0.66
	23					0.56
	24					0.45

Because the factor loadings were very similar to the original factors, because they included all the items in the scale, and because the item shifts were logical, the factors produced by the confirmatory factor analysis were used in this study.

#### Relationship of Measures to Demographic Variables

Data were collected on several demographic variables and on the three measures of Adult Learning Toward Continuing Education Scale (AATCES), the Deterrents to Participation Scale-General (DPS-G), and Assessing the Learning Strategies of Adults (ATLAS). The demographic variables included gender, certification, meetings attended per year, experience, cost, and age. Participants were grouped by these variables and differences among these

groupings were analyzed for each instrument.

Analysis of variance (ANOVA) was used to compare the demographic groups on the AATCES and DPS-G because "ANOVA is used to determine whether there is a significant difference between two or more means at a selected probability level" (Gay, 1987, p. 392). Using the continuous scores from these scales, ANOVA was "used to compare two or more groups to see whether the differences between group means are large enough to assume that the corresponding population means are different" (Huck, Cormier, & Bunda, 1974, p. 49). When significant differences were found, Tukey post hoc comparisons were used to "find out where the significant differences after a significant  $F$  ratio . . . [had] been obtained" (p. 68). Since ATLAS places people in categories, chi-square tests were used to analyze the relationship between the demographic variables and learning strategies preferences. "A chi-square test compares proportions actually observed in a study with proportions expected, to see if they statistically significant" (Gay, 1987, p. 397).

The field of athletic training is divided nearly equally between males and females, and the sample for this study reflected this distribution. Therefore, the participants were grouped as males and females and compared on the AATCES, the DPS-G and the factors of the DPS-G.

Significant differences were found with Cost, Time, and the AATCES (see Table 10). Females (91.64) had a more positive attitude than males (89.11). However, the females (10.58) viewed Cost as a greater deterrent than did males (9.20), and females (17.71) also felt that Time was a greater deterrent than did males (16.22).

Even though these results are statistically significant it "does not automatically mean that they are of any educational value" (Gay, 1996, p. 521). In fact, researchers should be "concerned about practical significance as well as statistical significance" (Huch & Cormier, 1996, p. 316). These differences need to be viewed in relationship to the extremely high scores that the total group had on the AATCES and the low scores on the deterrent measures.

Table 10: ANOVA of AATCES and Deterrents by Gender

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>p</b>
Cost					
Between	120.11	1	120.11	8.46	0.004
Within	3608.13	254	14.21		
Time					
Between	140.36	1	140.36	7.05	0.008
Within	5059.64	254	19.92		
AATCES					
Between	402.53	1	402.53	6.21	0.013
Within	16462.33	254	64.81		
Personal Priority					
Between	22.30	1	22.30	1.24	0.266
Within	4553.64	254	17.93		
DPS-G					

Between	337.34	1	337.34	0.91	0.342
Within	94653.10	254	372.65		
Personal Problems	3728.23	255			
Between	13.45	1	13.45	0.35	0.554
Within	9715.64	254	38.25		
Course Relevance					
Between	18.22	1	18.22	0.35	0.557
Within	13397.39	254	52.75		
Confidence					
Between	0.10	1	0.10	0.01	0.916
Within	2331.46	254	9.18		

The field of athletic training is divided amongst those who attained their certification from the internship model and the curriculum model. An analysis of variance was performed to investigate if route to certification influences perceived deterrents to continuing education. The respondents were grouped as either internship or curriculum trained and were compared on the AATCES, DPS-G, and the factors on the DPS-G. No significant differences were found between groups for any of the variables (see Table 11).

Table 11: ANOVA of AATCES and Deterrents by Certification

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>p</b>
AATCES					
Between	164.272	1	164.272	2.517	0.114
Within	16446.5	252	65.264		
Personal Problems					
Between	33.447	1	33.447	0.870	0.352
Within	9686.93	252	38.440		
Cost					
Between	8.313	1	8.313	0.567	0.452
Within	3697.41	252	14.672		
Course Relevance					
Between	12.700	1	12.700	0.240	0.625

Within	13361.4	252	53.021		
DETER					
Between	43.835	1	43.835	0.116	0.733
Within	94914.2	252	376.644		
Time					
Between	1.649	1	1.649	0.080	0.777
Within	5168.53	252	20.51		
Confidence					
Between	0.125	1	0.124	0.014	0.907
Within	2305.29	252	9.148		
Personal Priority					
Between	0.014	1	0.014	0.001	0.978
Within	4562.34	252	18.105		

Professionals in the field of athletic training work in many diverse settings. In this sample, an extraordinary high number of respondents reported that they were employed in the college setting. Therefore, the respondents were grouped as those employed in the college setting or non-college setting and were compared on the AATCES, DPS-G, and the factors of the DPS-G. No significant differences were reported between groups for any of the variables (see Table 12).

Table 12: ANOVA of AATCES and Deterrents by Settings

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>p</b>
AATCES					
Between	114.316	1	114.316	1.736	0.189
Within	16789.2	255	65.834		
Cost					
Between	21.780	1	21.779	1.498	0.222
Within	3707.88	255	14.541		
DETER					
Between	350.76	1	350.76	0.945	0.332
Within	94679.6	255	371.292		
Course Relevance					



Between	46.913	1	46.913	0.893	0.346
Within	13398.4	255	52.543		
Confidence					
Between	5.194	1	5.193	0.569	0.452
Within	2328.91	255	9.133		
Time					
Between	5.632	1	5.632	0.276	0.599
Within	5195.13	255	20.373		
Personal Problems					
Between	5.124	1	5.124	0.134	0.714
Within	9724	255	38.133		
Personal Priority					
Between	0.088	1	0.088	0.005	0.944
Within	4575.9	255	17.945		

In the field of athletic training members are required to attain a certain level of continuing education units throughout their career. In this sample the participants reflected the need for continuing education within the profession. The participants were grouped according to those who attended one meeting a year, two meetings a year, three or more meetings a year and were compared on the AATCES, DPS-G, and the factors in the DPS-G. Significant differences were found with the factor of Cost (see Table 13). Those attending one meeting per year (10.69) viewed Cost as a greater deterrent than did those who attended two meetings a year (9.9) and those attending three or more meeting per year (8.97).

Table 13: ANOVA of AATCES and Deterrents by Meetings

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Cost					

Between	123.402	2	61.701	4.320	0.014
Within	3470.62	243	14.282		
AATCES					
Between	290.413	2	145.206	2.187	0.114
Within	16133.4	243	66.393		
Confidence					
Between	15.874	2	7.937	0.911	0.404
Within	2118	243	8.716		
Course Relevance					
Between	62.609	2	31.304	0.602	0.549
Within	12642.4	243	52.0261		
Time					
Between	21.230	2	10.615	0.548	0.579
Within	4704.61	243	19.361		
Personal Priority					
Between	14.652	2	7.326	0.407	0.666
Within	4369.43	243	17.981		
DETER					
Between	49.287	2	24.643	0.068	0.934
Within	87845	243	361.502		
Personal Problems					
Between	0.202	2	0.101	0.003	0.997
Within	9488.53	243	39.047		

When examining the field of athletic training, certified athletic trainers achieve different levels of experience throughout their professional membership. The sample for this study represents this diversification of experience. The participants were placed in one of three groups as follows: 1-3 years of experience, 4-10 years experience, and 11 or more years of experience as a certified athletic trainer. Significant differences were found with Personal Problems and Lack of Confidence (see Table 14). Those with 1-3 years of experience (9.61)

identified more Personal Problems than those with 4-10 years of experience (8.47) and those with 11 or more years (8.18). However, those with 11 or more years experience (15.55) identified a greater Lack of Confidence than those with 1-3 years experience (13.16) and those with 4-10 years of experience (12.6).

Table 14: ANOVA AATCES and Deterrents by Experience

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>p</b>
Personal Problems					
Between	457.081	2	228.54	6.174	0.002
Within	9217.25	249	37.0171		
Confidence					
Between	75.445	2	37.723	4.185	0.016
Within	2244.44	249	9.014		
Personal Priority					
Between	83.112	2	41.556	2.348	0.0977
Within	4407.6	249	17.701		
DETER					
Between	1735.02	2	867.508	2.337	0.099
Within	92416.2	249	371.149		
Course Relevance					
Between	200.08	2	100.04	1.926	0.148
Within	12935.9	249	51.951		
Cost					
Between	41.140	2	20.570	1.405	0.247
Within	3646.71	249	14.645		
Time					
Between	37.965	2	18.982	0.925	0.398
Within	5111.6	249	20.529		
AATCES					
Between	7.988	2	3.994	0.060	0.942
Within	16622.2	249	66.756		

The sample contained a wide age range of 22 to 59 and was divided into four groups: ages 22-25, ages 26-30, ages

31-35, 36-59. Significant differences were found in the area of Personal Problems (see Table 15). Those in ages 36-59 (15.73) identified more Personal Problems as a deterrent than did those ages 31-35 (13.51), 22-25 (12.61), and those ages 26-30 (12.39).

Table 15: ANOVA of AATCES and Deterrent Scales by Age

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>p</b>
Personal Problems					
Between	527.05	3	175.68	4.81	0.003
Within	9202.04	252	36.52		
Relevance					
Between	351.18	3	117.06	2.26	0.082
Within	13064.43	252	51.84		
Confidence					
Between	54.52	3	18.17	2.01	0.113
Within	2277.04	252	9.04		
Personal Priority					
Between	82.84	3	27.61	1.55	0.202
Within	4493.09	252	17.83		
DPS-G					
Between	1612.22	3	537.41	1.45	0.229
Within	93378.21	252	370.55		
Cost					
Between	45.44	3	15.15	1.04	0.377
Within	3682.79	252	14.61		
AATCES					
Between	66.10	3	22.03	0.33	0.803
Within	16798.76	252	66.66		
Time					
Between	19.43	3	6.48	0.32	0.814
Within	5180.57	252	20.56		

Chi square was used to analyze the relationship of the demographic variables with ATLAS. The same demographic variables were used in this Chi-square analysis. No significant differences were found among the groups and

ATLAS (see Table 16).

Table 16: Chi square of Demographic Variables with ATLAS

Variable	ATLAS				Chi square		
	Nav	P.S.	Eng	Total	Value	df	p
Age							
21 - 25	20	16	7	43			
26 - 30	30	28	8	66			
31 - 35	28	19	9	56			
36 - 59	30	41	15	86			
Total	108	104	39	251	4.66	6	0.588
Meetings							
1	33	29	14	76			
2	33	29	14	76			
3 or more	37	41	11	89			
Total	103	99	39	241	2.17	4	0.704
Experience							
1 - 3	26	22	7	55			
4 - 10	45	39	15	99			
11 - 32	36	40	17	93			
Total	107	101	39	247	1.643	4	0.801
Setting							
Non-college	28	29	11	68			
College	80	75	29	184			
Total	108	104	40	252	0.11	2	0.947
Gender							
Male	61	57	22	140			
Female	47	47	17	111			
Total	108	108	39	251	0.07	2	0.967

#### Interaction of Variables

Discriminant analysis was used to investigate the interaction of variables in the study. With discriminant analysis the researcher uses inductive reasoning "to make meaningful decisions about the data and to impose sense upon it" (Conti, 1993, p. 90). It is a "multivariate procedure with the simultaneous consideration of several interacting

variables in the complicated educational process" (pp. 90-91). This process allows for a greater interpretation of many real-life variables at one time than isolating them one at a time.

Discriminant analysis can be seen as a method of placing and "examining the difference between two or more groups of objects with respect to several variables simultaneously" (Klecka, 1980, p. 5). To do this, these data cases must be from mutually exclusive groups and be a member of that group only. For a discriminant analysis to take place, "at least two groups must exist which differ on several variables and these variables must be capable of being measured at the interval or ratio level" (Conti, 1993, p. 91). From being measured at an interval level, the "means and variances can be calculated so that they can be legitimately employed in mathematical equations" (Klecka, 1980, p. 9) Thus, discriminant analysis can investigate the differences between selected groups and selected variables.

In the context of educational and social science research, discriminant analysis is often "concerned with the grouping of people and with analyzing the interrelationship of multiple variables to determine if they can explain a person's placement in a specific group" (Conti, 1993, p. 91). Through a more personal interpretation of the

different variables, discriminant analysis attempts to put people within "sets of variables to determine if any of them interact in a combination that can explain the person's placement in the group" (p. 91).

Discriminant analysis varies from the traditional, positivist univariate analysis in that discriminant analysis does not depend upon a null hypothesis to state significant relationship between the independent and dependent variable (Conti, 1993, p. 92) to test hypotheses. Therefore, it is possible for a researcher to utilize "research questions instead of hypotheses with studies using discriminant analysis" (p. 92). However, two criteria should be met in order to judge the outcome of the analysis usefulness. The first criteria must be "that the discriminant function produced by the analysis is describable using the structure coefficients of the analysis" (p. 93). Here a value of .3 or greater is often used as a benchmark for determining if the variables will be used. The second criteria to be met is one where the "discriminant function correctly classify a certain percentage of the cases in the sample" (p. 93).

Several discriminant analyses were conducted for this study. The discriminating variables were gender, age, years of experience, setting, meetings attended per year, learning strategy categories, items on the AATCES, and items on the

DPS-G. When used as the grouping variable for a discriminant analysis, gender was grouped as either male or female. For age, respondents were grouped as either 21-25, 26-30, 31-35, or 36-59 years of age. Experience was grouped as 1-3, 4-10, or 11-32 years of experience as a certified athletic trainer. For work settings, the respondents were grouped as either working in the college setting or in a non-college setting. For meetings, participants were grouped as either attending 1, 2, or 3 or more continuing education meetings a year. Attitudes were grouped by the top 15% and the bottom 15% of scores on the AATCES, and deterrents were grouped in a similar fashion on the DPS-G. ATLAS was divided into those who responded as either a Navigator, Problem Solver, or Engager. When used as a discriminating variable, dummy variables were created for each of the learning strategy preferences on ATLAS. A dummy variable is created by treating each category of a nominal variable such as learning strategy preferences groupings as a separate variable and assigning it a score of either the presence or the absence of the condition of the variable (Nie et al., 1975, p. 374).

Several discriminant analyses were conducted. In order to examine the interaction among attitudes toward continuing professional education, deterrents to continuing



professional education, and learning strategy preferences, three separate discriminant analyses were conducted. One analysis used the highest 15% and lowest 15% of scores on the AATCES as the grouping variables and the items of the DPS-G and the dummy variables for the ATLAS groupings as the discriminating variables. The use of the 15% variables on the AATCES are equivalent to those scoring one standard deviation above and below the mean on the instrument. This analysis was 72% accurate in placing participants in their correct group, but the eigenvalue for the discriminant function was very low at .45 and accounted for only 31.14% of the variance in the analysis. A similar analysis was conducted using the highest 15% and the lowest 15% on the DPS-G as the grouping variable and the items from the AATCES and the dummy variables for ATLAS groupings as the discriminating variables. This analysis failed to produce an outcome because none of these variables accounted for enough variance to be included in the analysis. The third analysis used the ATLAS learning strategy preference groups as the grouping variable and the items of the AATCES and the DPS-G as the discriminating variables. This analysis was 48% accurate in placing participants in their correct groups, but the eigenvalue for each of the two discriminant functions were very low at .35 and .29, and each of these

functions accounted for only 11.9% and 8.23% of the variance in the analysis. Thus, because of the low degree of accuracy of the functions in accurately placing the participants in the correct groups and because of the low amount of variance explained by the functions, it was judged that there was no meaningful interaction among attitude toward continuing professional education, deterrents to continuing professional education, and learning strategies preferences.

A separate discriminant analysis was also conducted for each of the demographic variables. For each of these analyses, one of the demographic variables was used as the grouping variable and the discriminating variables were the items on the AATCES, the items on the DPS-G, and the dummy variables for the learning strategy preference groups on ATLAS. None of these analyses produced a function which had both a high percentage of correct placement of the participants in their correct groups and high eigenvalues (see Table 17). Because of the low degree of accuracy of the functions in placing the participants in the correct groups in all of these analyses and because of the low amount of variance explained by the functions in the analyses, it was judged that there was no meaningful interaction among attitudes toward continuing professional

education, deterrents to continuing professional education, and learning strategies preferences and any of the demographic variables.

Table 17: Discriminant Analysis of Variables

Variable	Classification Percentage	Eigenvalue Functions		
		1	2	3
Age	45.3	0.389	0.073	0.004
Education	51.0	0.155	0.106	
ATLAS	48.0	0.135	0.09	
Experience	42.3	0.064	0.014	
Attitudes	72.0	0.453		
Gender	67.2	0.185		
Certification	55.9	0.018		
Setting	74.8	0.079		

#### Groups of Athletic Trainers

Cluster analysis was used to uncover groups among the certified athletic trainers. Cluster analysis is a useful statistical tool for several scientific disciplines. Such social sciences as political science, anthropology, psychology, and adult education have used cluster analysis for years to interpret their findings and to make greater meaning of their results. From this sociological perspective, researchers take an inductive reasoning approach to where they will attempt to "tease sense out of the data" with the "goal to have meaning and understanding emanate from the data itself" (Conti, 1996, p. 67).

In its most basic form, cluster analysis is seen as a

"wide variety of procedures that can be used to create classification" (Alexander & Blashfield, 1984, p. 7). Within these classifications are groups or individuals with similar characteristics. From these groups or individuals, this clustering method becomes a "multivariate statistical procedure that starts with a data set containing information about a sample of entities and attempts to reorganize these entities into relatively homogenous groups" (p. 7).

"Clustering methods are designed to create homogenous groups cases or entities called clusters" (Alexander & Blashfield, 1984, p. 9). Cluster analysis has four principle goals: "(1) develop a typology or classification, (2) investigation of useful conceptual schemes for grouping entities, (3) hypothesis generation through data exploration, and (4) hypothesis testing" (p. 9). Of these goals, the most important would be the creation of classification. Since the formation of clusters is a high priority for researchers, "clustering is a good technique to use in exploratory analysis when you suspect the sample is not homogenous" (SPSS, 1999, p. 293).

As a principle component in cluster analysis, the selection of variables becomes an integral ingredient of this process. Because cluster analysis depends upon looking at "the person as a whole; all variables are kept together

for the individual and analyzed in relationship to each other" (Conti, 1996, p. 68). Appropriate variables must be selected so that they accurately and unambiguously act in "the context of an explicitly stated theory that is used to support classification" (Alexanderfer & Blashfield, 1984, pp. 19-20). Therefore, from the theory comes the reasoning for the choice of variables in the research.

In the formation of clusters, a very common method includes the use of agglomerative hierarchial clustering. Within agglomerative hierarchial clustering, "clusters are formed by grouping cases into bigger and bigger clusters until all cases are members of a single cluster" (Norusis, 1988, p. B-73). In agglomerative hierarchial cluster analysis, three distinct stages occur during the formation of clusters. The three phases include the consideration of separate clusters, combining two clusters into a single cluster, and the adding of a third cluster to a cluster containing two cases or two groups merged into a new cluster the (p. B-73). This process thus allows clusters once combined to stay combined and never be split and to be only combined with other clusters.

A cluster analysis was conducted using the items from the AATCES, the items from the DPS-G, and the dummy variables for the learning strategy categories from ATLAS.

Agglomerative hierarchical clustering was used with the Ward's method of combining clusters. The Ward's method is "designed to optimize the minimum variance with cluster . . . the method tends to find (or create) clusters of relatively equal sizes . . . . It has been widely used in many of the social sciences" (Alexanderfer & Blashfield, 1984, p. 84). This procedure produced a three-cluster solution that was judged to be the best solution for this data.

Discriminant analysis was conducted to examine possible separating differences between the groups. The same variables that were used in the cluster analysis were used in this discriminant analysis. A structure matrix was used to determine which items separated the three groups as well as the percentage in which they were correctly placed. It was found that items 9, 10, 11, and 12 in the DPS-G scale were items that separated the three groups. These four items are all part of the Lack of Course Relevance factor. In this study, items above .4 in the structure matrix determined group separation. Since all of these items were members of the same factor on the DPS-G, Lack of Course Relevance was the process that separated the group. The discriminant function for this process was 92.1% accurate in placing people in their groups.

An analysis of variance was conducted on these

groupings as well as a Duncan post hoc test using the demographic variable to extrapolate more meaning from the data. The area that separated these groups was the factor of Lack of Course Relevance. In describing each group, it becomes important to examine how they differed on their scores on the factor of Lack of Course Relevance.

Significant differences were found with the groups according to demographic variables of age, meetings, and experience.

The first group that exhibited significant differences in this study had an overall feeling that Lack of Course Relevance was of low importance to them (1.5) as reported on the DPS-G instrument. This "eager-beaver" group of 61 respondents tended to be younger (32.16). In addition, the "eager-beaver" group attended fewer continuing professional meetings a year (1.90) and tended to have less experience as a certified athletic trainer (8.84).

The second group found in this study believed that Lack of Course Relevance played a greater role in their selection of courses at meetings. This "cautiously-eager" group (3.17) felt that Lack of Course Relevance influenced their participation in continuing professional education as found on the DPS-G instrument. This group of 93 respondents were on average slightly older (32.63) than the "eager-beaver" group. In addition, this group attended more meetings

(2.56) than the "eager-beaver" group and had more years of experience (9.04) as a certified athletic trainer.

The third and final group in this study viewed Lack of Course Relevance as a greater concern for them in the selection of continuing education courses. For this group of certified athletic trainers, Lack of Course Relevance was of high importance to them (3.87) as reported on the DPS-G instrument. With 98 respondents, the "mellow" group were the oldest of the three groups with an average age of 35.2. Furthermore, the "mellow" group had the most years of experience as a certified athletic trainer (11.57) but attended fewer meeting than the "cautiously-eager" group.



## Chapter 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary of the Study

##### Overview

In the examination of continuing professional education, the study of populations that have never been studied before assist in broadening the scope of knowledge in professional adult learning. As a unique population of adult learners, certified athletic trainers to this point have not been studied with respect to their attitudes on continuing professional education, their perceived deterrents to continuing professional education, and their preferred learning strategies. At a point in the profession of athletic training where fundamental changes are taking place with regards to entry-level education and continuing education requirements of certified athletic trainers, new investigations are needed to analyze this impact upon its membership.

Since athletic trainers are employed in diverse work settings and are often the first person to respond to injured athletes, it becomes paramount that all athletic trainers receive the most current knowledge and trends in health care. However, since all athletic trainers must receive a certain amount of continuing education units every

two years, attaining this knowledge and attending seminars becomes an important issue for each certified member. Attending of seminars and conventions is the primary means for certified athletic trainers to attain their certification. However, certain circumstances can intervene and make continuing professional education a difficult task to accomplish.

Therefore, the purpose of this study was to describe the attitudes toward continuing professional education, perceived deterrents toward continuing professional education, and the learning strategies that can influence the participation of certified athletic trainers in continuing professional education. This study explored the attitudes, deterrents, and learning strategies for these respondents based on responses from various demographic variables, the Adults Attitudes Towards Continuing Education Scale (AATCES), the Deterrents to Participation Scale-General (DPS-G), and Assessing The Learning Strategies of Adults (ATLAS).

The population for this study included certified athletic trainers who were members of the athletic trainers listserve operated at Indiana State University and the professional athletic trainer educators list server at The University of Findlay. The collection of the data for this

study utilized the responses from a website on the Internet. The survey was first sent to listserve subscribers with a follow-up message sent out approximately one week later. The respondents were first asked to complete personal demographic questions followed by their views of continuing professional education on the AATCES and DPS-G scales with the questionnaire concluding with their personal learning strategies using ATLAS.

### Findings

The results of this study indicate that as a whole the professionals in the field of athletic training have a very favorable attitude towards continuing professional education. In fact, this can be clearly seen in how the respondents scored on the AATCES instrument. The overall mean score on the AATCES was 91. This corresponds to the 4.1 on the 5-point Likert scale. By scoring a 4.1 on the AATCES instrument, the responding certified athletic trainers saw continuing professional education as an important function in their professional livelihood. Although the instrument has a range between 22 and 110, the range for certified athletic trainers was between 66 and 110. In addition to the overall high scores on the AATCES instrument, no differences were found in the comparison of the different demographic variables to attitudes. The

absence of differences among the variables indicates that this favorable attitude toward continuing professional education is generally held throughout the profession.

However, in a three group cluster analysis only one difference was reported in the DPS-G instrument. In the area of deterrents, several variables that make-up Lack of Course Relevance were identified as the only factor that could possibly prevent certified athletic trainers from seeking further continuing professional education. These findings indicate that this population did not see deterrents to continuing professional education in their professional lives.

The third instrument for this study, Assessing The Learning Strategies of Adults (ATLAS), was used to discover the learning strategy preferences for the certified athletic trainers. The results of this study indicate that there is an usually high percentage of observed Problem Solvers (41.27%) and Navigators (42.86%) as compared to the norms of the instrument. Conversely, a disproportionally low percentage of Engagers (15.87%) was observed. With a total sample of 252 respondents, 239 (94.84%) stated that ATLAS was accurate in determining their preferred learning strategy while 13 (5.16%) stated that ATLAS did not accurately describe their preferred learning strategy.

Through the implementation of a confirmatory factor analysis on the DPS-G instrument, greater clarity was given to this instrument. In the factor analysis, the DPS-G was judged to be a valid instrument for this population and confirmed the factor structure. This analysis confirmed the six factors in the instrument as possible deterrents to continuing professional education. These factors included Lack of Course Relevance, Personal Problems, Lack of Confidence, Time, Cost, and Low Personal Priority. In addition to confirming the factor structure of the instrument, this analysis indicated that certain items were better suited in other factors. For instance, Item 7 moved from Lack of Confidence to Lack of Course Relevance and Item 8 moved from Lack of Confidence to the Personal Problem factor. In addition, Items 32, 33, and 34, which did not originally load into a factor, were found in this study loaded on the factor of Personal Problems.

A cluster analysis was conducted to see if natural groupings occurred within the data. A three-group cluster analysis proved to be the best solution for this sample. It was found through discriminant analysis that differences did occur in this sample. The items that separated the three groups were all in the factor Lack of Course Relevance. The items included questions 9, 10, 11, and 12 on the DPS-G

instrument. The first group, the "eager-beavers", did not see course relevance as important factor in continuing education. This group was younger, had fewer years of experience, and attended less meetings. The second group, the "eagerly-cautious", saw course relevance as somewhat important in their continuing education. This group was older, had more years of experience, and attended more meetings a year than the first group. The third group, "mellow", saw course relevance as a important factor in determining their participation in continuing education. This group was the oldest, had the most years of experience, and attended fewer meeting than the other two groups.

### Conclusions

#### Attitudes

Certified athletic trainers have a high positive attitude towards continuing profession education.

The field of athletic training has moved to a profession with appropriate professional development attitudes.

The field of athletic training has moved into the ranks of a profession with the appropriate professional attitudes. Progressing from an occupation of athletic trainers "where very few of them had any formal education" (Ebel, 1980, p. 29) to today where the American Medical Association has recognized the profession as an allied healthcare provider,

the field of athletic training has grown into a profession very rapidly. The field of athletic training is a relatively new and developing field which can be seen in this study where two-thirds (65.63%) of the respondents are under the age of thirty-five. With this youth driven profession, younger members of the profession greatly influence the continuing education methods and goals. The profession as this stage has high interest in career building and how to participate in this process where they can "further the power and the responsibility of the vocation" (Houle, 1980, p. 31). From this evolving knowledge base, practitioners in this profession are progressing into true professional where they "maintain conceptual and competencies, regulate standards of practice based on a central mission and . . . advance esoteric bodies of knowledge" (p. 49).

In the process of gaining further advanced levels in professional practice, professionals in the modern era must continue their education beyond their initial injury. Since many professionals must continue their formal professional education throughout their career, continuing professional education is an integral part of this process. However, continuing professional education can be a more important process in certain professions. In the professions that

deal with the health, care, and well being of individuals, the importance of continuing professional education becomes paramount. The profession of athletic training is no different. Because new techniques and methods of healthcare are constantly being developed, continuing professional education for athletic trainers has become an important issue within the profession. Since 1974, mandatory continuing education units have been mandated by the governing body of athletic trainers (Ebel, 1999, p. 38).

One avenue of inquiry in this study examined how certified athletic trainers viewed continuing professional education. In this study, it was found that certified athletic trainers have a strong willingness to attain new education. This strong positive attitude to continuing professional education allows certified athletic trainers to grow not only in their practice but also as better professionals in their delivery of healthcare. Since there is such a strong attitude toward continuing professional education in the field of athletic training, certified athletic trainers are primed to be reflective practitioners.

Because certified athletic trainers have a high regard for continuing professional education, the area of a reflective practitioner becomes a key concept for these professionals. In the theory of the reflective



practitioner, professionals advance their professional practice from that of ordinary professionals to that of those who take reflection on their learning and act upon it. In this multi-stepped approach to professional development, it becomes important for professionals to act upon past actions, engage in new learning, and advance their learning further. This is essential to professionals since reflective practitioners "restructure strategies of action, understandings of phenomenon or ways of framing problems" (Schon, 1987, p. 28).

### Deterrents

Certified athletic trainers do not perceive many barriers to their participation in continuing education

Female certified athletic trainers have more deterrents to continuing education than males.

The constructs in the DPS-G are valid.

The DPS-G is a valid instrument for measuring deterrents to continuing education for certified athletic trainers.

Adult educators have conducted several studies to examine possible barriers or factors that prevent adults from attaining further education. Several important studies were conducted on this phenomenon. Of these studies on deterrents to adult education, the works by Johnstone and Rivera (1965) and Cross (1981) helped to explain this occurrence. Johnstone and Rivera found two distinct

categories of deterrents: situational and dispositional. Situational barriers were described as "influences more or less external to the individual" (p. 214) whereas dispositional barriers reflected a learner's personal attitudes on attaining further education. Expanding upon these earlier findings, Cross (1981) elaborated on a greater understanding of possible deterrents to continuing education. In addition to situational and dispositional barriers, institutional barriers could be considered another deterrent to continuing education. Institutional barriers are considered those "practices and procedures" by places of learning that prevent an individual from participating (p. 98).

In this study of certified athletic trainers, deterrents to continuing professional education were examined using the DPS-G instrument. From these analyses, very few differences were found. In a few areas where deterrents did appear, they tended to be situational variables of Cost, Time, or Personal Problems. Women tended to have these problems more than men. However, as a group this population of certified athletic trainers did not identify with deterrents as situational, dispositional, or institutional barriers.

In this study, a confirmatory factor analysis was

conducted to examine the Deterrents to Participation Scale-General (DPS-G) instrument in the relationship of factors in the instrument. This confirmatory factor analysis with the population of certified athletic trainers helped to confirm the factor structure of the DPS-G thus demonstrating that this instrument worked for this population. In addition, this study helped to confirm the validity of the instrument.

From the original work of Darkenwald and Valentine (1985) the instrument had six factors that were labeled as possible deferments to continuing professional education. These factors were Lack of Course Relevance, Personal Problems, Lack of Confidence, Time, Cost, and Low Personal Priority. This study, which had a slightly larger sample than the original sample for the instrument, confirmed these factors and provided additional clarity to the instrument. In a study of small business managers, Erikson (1990) also confirmed these factors of the DPS-G instrument. Thus, while distinct categories exist for participating in continuing education, the certified athletic trainers did not view them as elements to prevent them from participating. Moreover, these categories cannot be associated with any demographic groups among certified athletic trainers. While individual situations may vary, certified athletic trainers do not perceive barriers that

will prevent them from participating in continuing education meetings.

### Learning Strategies

Engagers are not attracted to the field of athletic training.

The field of athletic training is structured with a base knowledge and problem alternatives which is structured towards Problem Solvers and Navigators.

In the analysis of the preferred learning strategies of the participating certified athletic trainers in the study, important findings were discovered. In the general population, participants would be expected to be distributed "relatively equally as Navigators--36.5%, Problem Solvers--31.7%, and Engagers--31.8%" (Conti & Kolody, 1999, p. 18). However, among certified athletic trainers only half as many Engagers were found as expected. While the ratio of Navigators and Problem Solvers was as expected, the number of Engagers was significantly low.

In recent studies of learning strategies, a relationship was found between the setting and the types of learners attracted to that setting. In studies in adult basic education setting (James, 2000), in community colleges (Willyard, 2000), and in a special vocational training college (Massey, 2001), Engagers accounted for a higher percentage of adult learners. For Engagers, there must be

an emotional attachment to the course content before they partake in it. Each of these settings in the studies offers a setting that encourages a warm and inviting environment towards adult learning. The image of each of these settings is of a place that utilizes teaching and learning techniques that are often geared to the affective domain that is dominant in this group of learners.

For the field of athletic training, an emphasis is placed upon the cognitive aspect of learning where there is little room for personal interaction with course material delivery. This occurrence can be found in this study where Navigators and Problem Solvers accounted for well over three-quarters (84.13%) of the participants on their preferred learning strategy. Since certified athletic trainers are often the first to respond to life-threatening emergency situations, immediate application and possible alternative solutions to care of these injuries becomes crucial. For effective practice in athletic training, certified athletic trainers are not afforded the luxury of learning new skills only if they are personally meaningful to them. They must have a variety of new knowledge and be ready to apply it in situations that are influenced by factors external their personal preference.

Today, the field of athletic training in conjunction

with the study of adult education has endless potential. Athletic training is an unexplored profession within the context of the many themes of Adult Education. Many of these practitioners need to be made aware of the many areas in Adult Education that deal with professional development, program planning, and the reflective practitioner. The field in general can be better served if its members are made aware of their true professional effectiveness if they can only bridge the gap between ordinary professional existence with the themes in Adult Education on advanced professional practice.

For this population of certified athletic trainers, continuing professional education is a distinct, necessary, and integral part of the profession. The responses on the AATCES and the DPS-G indicate that certified athletic trainers indeed have a high attitude towards continuing professional education and a low identification with deterrents. It can be concluded that continuing education is essential to not only the practitioners themselves but to clients they serve as well. Since these professionals work in a setting that cares for injured athletes, constant and up-to-date information is crucial to the progression of the profession.

In the examination of the items on the DPS-G instrument

the factor Lack of Course Relevance proved to be the source of separation. It was found that three distinct groups existed according to their responses on the DPS-G instrument. For these three groups it can be concluded that course relevance or perceived relevance has a direct influence on their attainment of continuing education. Because each group viewed this factor differently, program planning can impact these groups in such a manner that topic presentation becomes an important issue.

In this descriptive study of certified athletic trainers, this examination highlights important issues in researching this population. With only a small select sample of these professionals available to this study, future research should include a greater sample of certified athletic trainers. Since a majority of these respondents came from the collegiate setting, more research must be done in the other settings in which certified athletic trainers are employed. From this study, it has been judged that certified athletic trainers have the unique opportunity to advance their professional practice even further. This group of certified athletic trainers are primed to be reflective practitioners due to their high positive attitude toward continuing education, their absence of visible deterrents, and their high participation in continuing

education meetings. Since certified athletic trainers have high attendance in continuing education sessions, these practitioners must be able to connect their learning with reflection. Here, these professionals must have the ability to reflect on their newly acquired knowledge and judge how it will shape future actions.

### Recommendations

#### Field of Athletic Training

With escalating numbers of individuals participating in recreational, amateur, and professional athletics, an ever increasing demand is placed upon professional care givers that can assist these participants prevent and recover from exercise-induced injuries. One such profession is that of athletic training. In the field of athletic training, knowledgeable practitioners are often placed in the situation of providing initial treatment for athletic related injuries. To ensure that healthcare providers give the best care to their patients, it becomes important that certified athletic trainer keep up to date on current trends in allied healthcare.

In the assembly on continuing educational meetings important demographic considerations must be taken into account. In this study it was found that two-thirds (65.63%) of the respondents were under the age of thirty-



five. Due to the high number of younger practitioners in this field, a conscious effort must be made to include these individuals when creating continuing education programs. As a youth oriented profession, the training for the field must reflect this trend. In the short-term, planning of programs must reflect a development of a professional philosophy and ethical practice. As a unique characteristic, a curriculum of total development, a code of ethics, and a core knowledge base must be addressed. As an evolving profession with few older members, many of these younger members will still be in the profession ten years from now. Lacking this older generation, theoretical issues must now be addressed before potential generational conflicts arise as possibly seen in this study where the "mellow" group stated that at times courses were not relevant to their learning needs. In the long run, more research must be conducted on how the field of athletic training should evolve in the context of its professional goals and continuing education needs.

To maintain good standing within the profession, certified athletic trainers must maintain a certain level of competence through continuing education units. From this study, certified athletic trainers feel that even though continuing profession education is a mandatory part of their practice, they still had a very high positive attitude

towards it. These certified athletic trainers responded as though continuing profession education was intertwined into the fabric of the profession. Since certified athletic trainers are vital health care providers for an active population, the nature of the profession is one that cannot stand still in discovering and providing valuable continuing professional education.

One method that the profession of athletic training can use to ensure excellent delivery of continuing education is through proper program planning at conventions and seminars. As an integral component of continuing education, program planning can have a far reaching impact not only on course content but more importantly on the delivery and retainment of the course content. Since continuing education seminars can be quite diverse in content, these meetings "must therefore include a wide range of activities that give people the kinds of learning experiences they really want" Houle, 1980, p. 214). Therefore, since each member comes to these seminars to learn about different topics, program planning must be thought of as a key component on delivering the necessary information through multiple mediums.

In this study, an extraordinarily high number of Problem Solvers (41.86%) and Navigators (42.86%) were found in this group as compared to the norms of ATLAS. Having such a high

number of Problem Solvers and Navigators, proper program planning for these learning strategies should have a direct impact on course content and delivery. One recommendation would be that the course material be presented in an efficient and orderly manner so that Navigators comprehend and retain the information. As for the Problem Solvers, the course content should offer alternatives to traditional methods or to new ways of thinking of the problem assist in their learning experience.

In this study, an extraordinarily low number of Engagers (15.87%) were found in this population as compared to the norms of ATLAS. With such a low number of Engagers in the profession, proper program planning can have a major impact upon course participation and course delivery. One such recommendation might include offering greater course selections so that all of these attendants can find and attend a topic presentation in which they are highly interested. Instead of requiring certain topics be attended, allowing more personal freedom for participants to attend topics can give greater incentives for Engagers to participate. In addition, there should be a greater sense of interaction between the presenter, material and the participants. Since Engagers "seek out activities that provide the greatest opportunity for engagement", program

planners should include interactive discussions, hands-on presentations, and topics that can create an enjoyable interaction between the material and learner (Conti & Kolody, 1999, p. 14).

As for program planning for the whole population at a seminar or convention, one important issues should be addressed. As discussed earlier, interaction with other practitioners, the topics, the material, and the presenter can provide the learner a greater opportunity to gain more knowledge. As outlined by Houle (1980), interactive learning can "provide for enhanced forms of experiential opportunity, learner initiative, evaluative mechanism, and supervisory authority" (p. 223). With this notion, participants can exchange ideas with other professionals, get feedback on performance, and create a new knowledge base. Here the three learning strategies as presented in ATLAS should be kept in mind. Knowing that in all presentations three learning preferences exist, course content and delivery should be one where all three are interwoven with the course structure. By presenting information that is structured, flexible enough to generate new solutions, and interactive and engaging, all three learning preferences can be reached.

One addition recommendation in the area of program planning for continuing professional education seminars

includes the notion of mentoring or tracking at meetings. Here certified athletic trainers can gain a unique perspective from members who come from different settings or who have more experience in the field. Because mentoring can provide new opportunities for learning, "the mentor may treat the learner as a colleague, teaching by nuance and serving as a sophisticated role model" (Houle, 1980, p. 22) thus sharing more ideas and knowledge on professional practice. Besides the mentor alone imparting their knowledge on the less experienced members, a sharing or collaboration of knowledge can occur where the more experienced practitioner learns from the original learner.

Aside from on-sight program planning, practical recommendations for the field should also be made for other types of meetings. New approaches on seminar planning can also be made. To make the continuing education experience more meaningful the number of regional, state, or local meetings could be increased. These smaller meetings could allow for more interaction among the participants, more sessions to generate attendance, and more sessions with a specific focus. In addition to more regionalized meetings, larger national conventions can be better suited if more topics and rooms were provided as to make participation in topic interests possible.

Cost was not a deterrent to participation for certified athletic trainers in this study. However, nearly three-quarters (71%) of the respondents received some type of financial support from their institution to attend continuing professional education courses. To guarantee that institutions have the highest degree of professional competence in their certified athletic trainers, financial support for continuing education must continue. Whether it is providing compensation for travel, registration, or incidentals, institutions have an obligation to their clients that their health and well-being will be entrusted through knowledgeable and competent certified athletic trainers.

Another way that institutions can assist in providing quality continuing professional education for certified athletic trainers is through professional release time. Since many seminars and conventions do not conveniently occur on weekends or during holiday vacations, release time for certified athletic trainers can assist these professionals in attending seminars that they want to attend as well as ones that might have high relevance on their job performance.

Three distinct groups exist among the certified athletic trainers, and the primary process separating them is Lack of Course Relevance. Continuing education

activities should be planned with an awareness of the relevancy concerns of each group. For the "eager-beavers" and the "eagerly-cautious" will almost attend any meeting or course at a conference that is available to them. However, the problem lies with the "mellow-group". They are very selective and may be disinterested in courses that do not pertain to their needs. While the needs of each group should be elicited, this is especially important for the "mellow-group". Because they may have attended many of the same types meetings for years, constant repetition of the same material and delivery styles could possibly contribute to a lack of relevance. From their input, a wider variety of courses with different presentation styles could possibly be offered to satisfy their interests and needs. In addition, using these more experienced individuals as group mentors can solidify their presence in continuing education meetings.

ATLAS is an instrument that helps individuals to collect meaningful data on how adults learn. ATLAS is a quick and accurate test to inform adult learners on how they learn. ATLAS was used with certified athletic trainers to assess their perceived learning strategies. There were a disproportionately low number of Engagers (15.87%) among certified athletic trainers.

The nature of allied healthcare is not well suited for all learning preferences. In an area that is highly concerned with immediate application of knowledge in potentially life-threatening situations, allied health care providers are more concerned with the cognitive aspect of health care where efficiency and alternative solutions are important considerations. Though these professions might seem perfectly suited for a person that identifies themselves as an Engager, the reality of these professions is that the affective domain is to be divorced when caring for an injured individual. Furthermore, the nature of these professions can not allow the affective domain from interfering with patient care or with deep personal interactions with patients. Therefore, Engagers interested in the field need to be aware that they may need to learn new learning strategies in order to be meaningful in the field.

One plausible recommendation for Engagers that want to pursue a career in the allied healthcare professions is that they should go through an ATLAS training session where they must learn that their preferred learning strategy cannot be the only strategy that they implement. To accomplish this, Engagers must be able to learn about the other learning strategies that are congruent with the nature of the field



of allied healthcare medicine.

To ensure that each learning strategy is included in continuing professional education programs, each strategy should be included in course delivery. Certified athletic trainers who identify themselves as Navigators learn best when course material is presented to them in an orderly and efficient manner. For instance, these individuals will want the exact steps in sequential order on how to perform a proper ankle evaluation. Certified athletic trainers who are Problem Solvers learn new material best when it is presented in a manner that allows them to explore alternative methods of care. Programs should include alternative methods to the traditional ones that will allow Problem Solvers to find newer ways to apply recently learned knowledge in their practice. When Engagers partake in continuing professional education meetings, the learning situation will be vastly different. Engagers prefer an environment where they can interact and collaborate with their peers, gain a sense of satisfaction with learning the new information, and have a fun-filled experience while learning.

#### Adult Education

This study has important implications not only for the field of athletic training but also for adult education.

For the first time, certified athletic trainers have been studied in conjunction with the theories of adult education. Of the many ideas in adult education that relate to professional practice, the notion of self-directed learning offers insight on how practitioners achieve effective professional competence. With the belief that continuous learning is crucial to the health of the profession, athletic training fits into the mold of self-directed learners where they make a "deliberate learning effort which the learner himself or herself is responsible for . . . what and how to learn" (Tough, 1977, p. 2). Furthermore, certified athletic trainers are self-directed learners because they self-teach and take control of the goals and purposes of teaching (p. 135).

Knowing that certified athletic trainers are highly engaging participants in continuing education, it should also be seen why they want to participate. Because "participation can differ significantly according to the type of profession, career stage in that profession, type of practice setting, and number of years in the profession" (Cervero, 1988, p. 65), a deeper inquiry must be made into why these professionals choose to participate in continuing education.

Certified athletic trainers are eager and willing

participants in continuing professional education. Knowing that certified athletic trainers want to learn new and useful information for effective professional practice, such insight into the professional has important implications in the field of adult education. With a positive attitude towards continuing education and the unique ability to direct one's own learning needs, these professionals lend themselves to becoming reflective practitioners. In this higher level of professional practice, certified athletic trainers grow and develop into practitioners who have the unique ability to "construct the situation to make it solvable . . . and to reflect in the midst of action without interruption" (Cervero, 1988, p. 44).

In order for certified athletic trainers to progress to this level of professional practice, new ideas must take shape within the context of continuing professional education. Certified athletic trainers could benefit from the creation of a course of how to become a reflective practitioner at seminars or conventions. Here, a specialist in adult education might lead an educational seminar on the necessary criteria be a reflective practitioner and to show how these in the profession are primed to be such a practitioner. Besides an informational session, a breakout session or even long-term mentoring could take place where

certified athletic trainers team-up and share ideas in their repertoire of how they can become ever better practitioners in action.

To bridge the gap between applied knowledge and reflection in action, the formation of continuing education programs "should be redesigned to combine the teaching of the applied sciences and coaching in the artistry of reflection-in-action" (Schon, 1987, p. xii). Furthermore these programs "should become a place in which practitioners learn to reflect on their own tactic theories of the phenomenon of practice in the presence of those disciplines" (p. 321). Therefore, there must be purposeful consideration on the acquisition of reflection-in-action within the context of continuing education programs.

The findings of this study support the use of the Deterrents to Participation Scale-General (DPS-G) (Darkenwald & Valentine, 1985) as an effective instrument to detect perceived deterrents to continuing professional education. The factor analysis with the certified athletic trainers confirmed the factor structure of the DPS-G and gave the instrument greater clarity for this population. Thus the DPS-G should continue to be used with adults in various contextual settings.

To solidify the use and practicality of being a

reflective practitioner in the field of athletic training, further inquiries should be made into similar allied healthcare professions. Future research should include possibly similarities of reflective practitioners in athletic training with other health sciences such as nursing, physical therapy, and medical physicians. Because athletic training is a relatively new allied health care provider, the field of athletic training should investigate these professions in how they study and implement their own effective reflective practitioner practices.

Expanding upon the use of the reflective practitioner in the context of continuing education programs, transformative learning for the professional must also be considered. Focusing "on the cognitive process of learning including the mental construction of experience, inner meaning, and reflection" (Merriam & Caffarella, 1999, p. 318), transformative learning helps to mold the professional's learning experience. With an emphasis on experience to guide a new understanding of professional competence, transformative learning lends itself to even greater critical reflection. From "challenging the established definition [to] re-assessing the way they have posed problems and re-assessing their own orientation of perceiving, knowing, believing, feeling, and acting"

(Mezirow, 1990, pp. 12-13), professional can construct new meaning in their professional repertoire. From intimate dialogue with other certified athletic trainers at meetings and through the proper course of action for change at the work place than can true transformative learning take place.

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APPENDIX A-IRB

Oklahoma State University  
Institutional Review Board

Protocol Expires: 11/5/02

Date: Tuesday, November 06, 2001

IRB Application No ED0241

Proposal Title: CONTINUING PROFESSIONAL EDUCATION IN ATHLETIC TRAINING

Principal  
Investigator(s):

Brian Hughes  
420 Hamilton  
Warrensburg, MO 64093

Gary Conti  
206 Willard  
Stillwater, OK 74078

Reviewed and  
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

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Dear PI:

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive Secretary to the IRB, in 203 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,



Carol Olson, Chair  
Institutional Review Board

## APPENDIX B-DEMOGRAPHICS

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### About You

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The following information will help us better understand the information that you provide us.

**Gender:**  Male  Female

**Your Age:**

**Education:**

How many years of experience do you have as a Certified Athletic Trainer?

Please select your highest level of formal education.  Bachelors Degree   
Master's Degree  Doctorate

Educational Route to Certification:  Curriculum Model  Internship Model

How many continuing professional education meetings a **year** do you attend?

How much money is allocated to you per **year** for continuing professional education?

**Employment Setting:**

Clinical/hospital  College  High School  Industrial  Professional Athletics  Other

**Race:**  African American  Asian  Hispanic  Native American   
White  Other

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## APPENDIX C-AATCES

### Adults Attitudes Toward Continuing Education Scale

Continuing education includes credit and noncredit classes, workshops, seminars, discussion groups, conferences, training programs, and any other organized learning activity for adults who have completed or interrupted their formal schooling.

Please read the following list of statements. Each represents an opinion about continuing education. There are no right or wrong opinions. For each item, circle the response that best describes your feeling about the statement:

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
SD	D	UN	A	SA

Please circle only *ONE* response for each item. Be careful not to skip any items.

- |  |              |
|--|--------------|
| 1. Continuing education helps people make better use of their lives.                               | SD D UN A SA |
| 2. Successful people do not need continuing education.   | SD D UN A SA |
| 3. I enjoy participating in educational activities.  | SD D UN A SA |
| 4. Education for adults is less important than education for children.                             | SD D UN A SA |
| 5. Continuing education is mostly for people with little else to do.                               | SD D UN A SA |
| 6. The need for education continues throughout one's lifetime.                                     | SD D UN A SA |
| 7. I find learning activities stimulating.   | SD D UN A SA |
| 8. Participating in continuing education is a good use of leisure time.                            | SD D UN A SA |
| 9. I dislike studying.   | SD D UN A SA |
| 10. Going back to school as an adult is embarrassing.  | SD D UN A SA |
| 11. More people should be encouraged to participate in continuing education.                       | SD D UN A SA |
| 12. Continuing my education would make me feel better about myself.                                | SD D UN A SA |
| 13. Continuing education would not be of any benefit to me.  | SD D UN A SA |
| 14. Continuing education is not necessary for most adults.   | SD D UN A SA |
| 15. I'm fed up with teachers and classes.  | SD D UN A SA |
| 16. Being in a classroom makes me feel uncomfortable.  | SD D UN A SA |
| 17. I enjoy educational activities that allow me to learn with others.                             | SD D UN A SA |
| 18. Money spent on continuing education for employees is money well spent.                         | SD D UN A SA |
| 19. For me, continuing education is less important than my leisure activities.                     | SD D UN A SA |
| 20. Continuing education is an important way to help people cope with changes in their lives.      | SD D UN A SA |
| 21. The best way for adults to learn is to attend continuing education programs.                   | SD D UN A SA |
| 22. I can learn everything I need to know on my own without participating in continuing education. | SD D UN A SA |



## APPENDIX D-DPS-G

### Deterrents To Participation Scale--General

Adult education is defined as any organized activity for adults, including courses, workshops, seminars, and training programs offered by schools, colleges, and other organizations or community groups. However, adults sometimes find it hard to participate in these activities, even when they want to. Try to think of something--anything at all--that you wanted to learn related to your business in the past year or two, but never did. Then look at the reasons below and decide how important each one was in your decision not to participate in an educational activity. (Please note: in the questions below the word "course" refers to any type of activity, including courses, workshops, seminars, etc.).

Not Important	Slightly Important	Somewhat Important	Quite Important	Very Important	
1	2	3	4	5	
		-----			
1. Because I felt I couldn't compete with younger students.					1 2 3 4 5
2. Because I was not confident of my learning ability.					1 2 3 4 5
3. Because I felt I was too old to take the course.					1 2 3 4 5
4. Because I felt unprepared for the course.					1 2 3 4 5
5. Because I didn't think I would be able to finish the course.					1 2 3 4 5
6. Because my friends did not encourage my participation.					1 2 3 4 5
7. Because I didn't meet the requirements for the course.					1 2 3 4 5
8. Because my family did not encourage participation.					1 2 3 4 5
9. Because the available courses did not seem useful or practical.					1 2 3 4 5
10. Because I didn't think the course would meet my needs.					1 2 3 4 5
11. Because the courses available did not seem interesting.					1 2 3 4 5
12. Because the courses available were of poor quality.					1 2 3 4 5
13. Because I wanted to learn something specific, but the course was too general.					1 2 3 4 5
14. Because the course was not on the right level for me.					1 2 3 4 5
15. Because of the amount of time required to finish the course.					1 2 3 4 5
16. Because I didn't think I could attend regularly.					1 2 3 4 5
17. Because I didn't have the time for the studying required.					1 2 3 4 5

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 18. Because the course was scheduled at an inconvenient time.                    | 1 | 2 | 3 | 4 | 5 |
| 19. Because the course was offered at an inconvenient location.                  | 1 | 2 | 3 | 4 | 5 |
| 20. Because I'm not that interested in taking courses.                           | 1 | 2 | 3 | 4 | 5 |
| 21. Because I wasn't willing to give up my leisure time.                         | 1 | 2 | 3 | 4 | 5 |
| 22. Because I don't enjoy studying.  | 1 | 2 | 3 | 4 | 5 |
| 23. Because participation would take away from time with my family.              | 1 | 2 | 3 | 4 | 5 |
| 24. Because education would not help me in my job.                               | 1 | 2 | 3 | 4 | 5 |
| 25. Because I couldn't afford miscellaneous expenses like travel, books, etc.    | 1 | 2 | 3 | 4 | 5 |
| 26. Because I couldn't afford the registration or course fees.                   | 1 | 2 | 3 | 4 | 5 |
| 27. Because my employer would not provide financial assistance or reimbursement. | 1 | 2 | 3 | 4 | 5 |
| 28. Because I had trouble arranging for child care.                              | 1 | 2 | 3 | 4 | 5 |
| 29. Because of family problems.  | 1 | 2 | 3 | 4 | 5 |
| 30. Because of a personal health problem or handicap.                            | 1 | 2 | 3 | 4 | 5 |
| 31. Because the course was offered in an unsafe area.                            | 1 | 2 | 3 | 4 | 5 |
| 32. Because I didn't know about courses available for adults.                    | 1 | 2 | 3 | 4 | 5 |
| 33. Because of transportation problems.  | 1 | 2 | 3 | 4 | 5 |
| 34. Because I prefer to learn on my own.   | 1 | 2 | 3 | 4 | 5 |

VITA 2

Brian J. Hughes

Candidate for the Degree of  
Doctor of Education

Thesis: CONTINUING PROFESSIONAL EDUCATION IN ATHLETIC  
TRAINING

Major Field: Occupational and Adult Education

Biographical:

Education: Graduated from Boardman High School,  
Youngstown, Ohio in June 1992; received Bachelor  
of Arts degree in Political Science from The Ohio  
State University in Columbus, Ohio in June 1997;  
received Masters of Science in Curriculum and  
Instruction from Oklahoma State University,  
Stillwater, Oklahoma in May 1999. Completed the  
requirements for a Doctor of Education degree with  
a major in Occupational and Adult Education at  
Oklahoma State University, Stillwater, Oklahoma,  
in May 2002.

Experience: Employed as assistant professor at Central  
Missouri State University.

Professional Membership: National Athletic Trainers  
Association, Mid-American Athletic Trainers  
Association, Missouri Athletic Trainers  
Association, Kappa Delta Pi International  
Education Honor Society.