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Factors affecting the self-perceived continuing education needs of certified athletic trainers

Marchell Cupett Austin

University of Northern Iowa

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FACTORS AFFECTING THE SELF-PERCEIVED
CONTINUING EDUCATION NEEDS OF
CERTIFIED ATHLETIC TRAINERS

A Dissertation
Submitted
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Approved:

Dr. Susann Doody, Chair
Dr. Glenn Hansen, Committee Member
Dr. Margaret Ishler, Committee Member
Dr. Susan Koch, Committee Member
Dr. Michael Waggoner, Committee Member

Marchell Cuppett Austin
University of Northern Iowa
May 1998

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Dr. John Somervill
Dean of the Graduate College

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ABSTRACT

This purpose of this study was to determine the self-perceived continuing education needs of Certified Athletic Trainers, the factors that affect those needs, and continuing education participation as well as preference for program format. A survey was developed using the domains and tasks depicted by the NATABOC's Role Delineation Study. Respondents rated the importance of their need for continuing education for each task within five domains: prevention of athletic injuries; recognition, evaluation and immediate care of athletic injuries; rehabilitation of athletic injuries; health care administration; and professional development and responsibility.

The survey was sent to 2,000 randomly selected Certified Athletic Trainers. The return rate was 52% (n = 1040). Statistical analysis included descriptive analysis of self-perceived continuing education needs of Athletic Trainers according to the five previously mentioned domains and preference for program format. Multiple regression and canonical correlation analysis were also performed to measure the extent that factors affect self-perceived continuing education needs as well as participation and preference for program format.

Athletic Trainers in this study generally saw “some need” amongst all of the domains. Rehabilitation of athletic injuries was indicated more often than other areas. Respondents indicated highest need for continuing education on the back and neck, followed by shoulder, head systemic illness, and abdominal injuries. Higher need was indicated on all anatomical areas than on any of the tasks pertaining to administration or professional development.
Gender proved to be a significant factor in determining the continuing education needs of athletic trainers when subjected to multiple regression. Professional isolation, employer support and employment setting were also significant factors. The results of this study indicated that cost and convenience factors outweighed the importance of content for athletic trainers with lower salaries, female athletic trainers and those athletic trainers employed in the high school and college settings. An overriding importance of economic factors in decisions regarding attendance was also evident. Athletic trainers in this study preferred conferences and seminars as a mode of instruction despite the high cost of those activities.
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CHAPTER 1

INTRODUCTION

The maintenance of knowledge and growth in conceptual, human, and technical skills is critical for any professional. Thus, the obligations of professionalism, along with the changing nature of knowledge, have resulted in the need for continuing education (Trivett, 1977). Continuing education in the health professions can be defined as:

... processes aimed at improving health care outcomes through learning, either by individual efforts or as part of activities, products and services developed by continuing education provider units. Learning may result in the maintenance or enhancement of professional competence and performance or in health care organizational effectiveness and efficiency. (Suter et al., 1984, p. 2)

Leaders of many professional groups see continuing education as a necessary part of a lifelong education process (Cervero, Bussigel, & Helliyer, 1985). The growth of mandatory continuing education requirements for relicensure and recertification in many professions is the most visible symbol of the necessity of continuing education within professional organizations. The medical and allied health professions were among the first to attempt to assure competency by requiring continuing education for their constituents. This orientation to continuing education subsequently spread to other client-oriented professions (Scanlon, 1985). Changing technology, new techniques, and the desire of organizations to provide a means for accountability to clients makes continuing education a desirable and necessary component of any profession.
Continuing education has historically been a part of the profession of athletic training. Mandatory continuing education requirements were originally established by the National Athletic Trainers Association (NATA) in 1973 to encourage attendance at the national meeting. Two continuing education units (CEUs) were provided for attendance at the national meeting which equaled the two CEUs per year necessary for continued certification (Paul Grace, Personal Communication, March 30, 1996).

Post-certification education for athletic trainers continues to be enforced today. The National Athletic Trainers Association Board of Certification (NATABOC) requires that each Certified Athletic Trainer (ATC) requalify for certification every three years. At the conclusion of each three year cycle, ATCs must meet recertification requirements including the following: the completion of eight continuing education units (80 clock hours), evidence of adherence to the NATABOC Code of Professional Practice and submission of annual NATA dues (NATABOC, 1995a).

In the field of athletic training, large group instruction for continuing education is the norm. Typically, athletic trainers gather for topic centered symposiums which usually consist of one hour lectures by an expert on the topic. The topics are generally chosen by the continuing education provider using feedback from the previous year's symposium or simply basing selections on the availability of certain experts for the scheduled date.
Continuing education providers in athletic training must have completed a process for approval by the NATABOC. The suitability of content and format of continuing education activities and the administrative aspects of each program must meet NATABOC requirements. Each provider is approved for three years before reapproval is necessary (NATABOC, 1995a). Any continuing education activity conducted by approved providers can be applied towards the 80 hours of continuing education contact hours needed for a certified athletic trainer to maintain certification.

The number of approved continuing education providers for athletic trainers has never been greater. There are a plethora of programs available to the certified athletic trainer to use in obtaining the required CEUs. There is, however, much discrepancy among the programs in terms of length, quality, depth of information offered and value to the certified athletic trainer.

The necessity for athletic trainers to maintain competence through systematic acquisition of new knowledge and skills as part of a life long learning process has never been greater. Factors contributing to this increased need are the more rapidly changing nature of knowledge in the field, increasing diversity of employment settings in athletic training, restructuring of the professional preparation requirements, the influence of technology on assessment and treatment procedures and the changing health care system.

The nature and profession of athletic training have changed immensely since the National Athletic Trainers Association was founded in 1950. The traditional
athletic training setting (college or university and high school) is still paramount; but in the past several years, the majority of newly certified athletic trainers have been placed in employment settings such as sports medicine and physical therapy clinics, as well as physician owned practices. An increasing number of athletic trainers are now employed in the industrial setting (NATAPEC, 1996). The growing diversity in professional roles dictates that continuing education opportunities be broadened to meet the needs of the entire profession, not just athletic trainers in the traditional setting.

Recognizing the increasing education needs of athletic trainers, the NATA appointed a task force in 1992 to evaluate the education and professional preparation of the Certified Athletic Trainer. Among several charges, the task force has been assigned to address the need to provide quality athletic training education “across the life span” and the need to assure continuing competence of practicing athletic trainers (NATA Education Task Force, 1996). For the NATA, “as a membership service, establishing an educational plan for specialty or athletic training domain skill building, along with a method to assure continuing competency, is essential” (NATA Education Task Force, 1996, p. 23).

There is a lack of research on continuing education in athletic training. A review of current literature shows there is no evidence that continuing education opportunities are systematically offered. Additionally, no research has been done to assess the self-perceived or expressed needs of athletic trainers for continuing education or if those needs differ for various employment settings or with years of
experience in the profession. The field of athletic training has changed over the past several years and we cannot assume that all athletic trainers have the same needs with regards to continuing education. There may be many factors that determine what the athletic trainer needs for maintaining continued competence in his/her field. There may also be many factors which determine what types of continuing education activities athletic trainers attend. With the focus of the National Athletic Trainers Association on reform of all aspects of athletic training education, it is timely that a formal needs assessment be performed in the area of continuing education to determine what athletic trainers perceive they need.

Statement of the Problem

The purpose of this study was to determine the self-perceived continuing education needs of current certified athletic trainers and the factors affecting those needs. This study also identified factors which influence participation in current continuing education programs in athletic training as well as preference in format.

Research Questions

1. What are the self-perceived continuing education needs among certified athletic trainers?

2. What factors affect self-perceived continuing education needs among certified athletic trainers?

3. What factors affect participation in current continuing education programs for certified athletic trainers?
4. What factors affect preference in program format of continuing education among certified athletic trainers?

**Hypotheses**

1. The factors of employment setting, years of experience, education, and professional isolation will significantly contribute to the self-perceived continuing education needs of athletic trainers within the five domains of athletic training.

2. The factors of employment setting, years of experience, educational background, temporal convenience of offering, geographical convenience, cost, and employer support will significantly contribute to the self-perceived reasons for athletic trainers to participate in continuing education and their decision to attend or not to attend specific continuing education programs.

3. The factors of employment setting, years of experience, employer support, professional isolation, education and minor children at home, will significantly contribute to preference for program format in continuing education.

**Assumptions**

1. The respondents who participated in the study understood the questions and gave accurate and honest answers.

2. The questionnaire was a valid measure of the research questions.

3. The respondents had the ability to assess their continuing education needs.

4. There is a relationship between self-perceived needs and real needs in continuing education.
5. The sample population was representative of the total athletic training population.

Limitations

1. The questionnaire was based on self-reporting which may have resulted in biased answers.

2. Participation in the study was voluntary.

Definitions

For the purposes of this study, the following terms are operationally defined.

1. **Certified Athletic Trainer**: an individual who has met the educational criteria established by the NATABOC and has been awarded certification by passing the NATABOC Certification examination. This individual is recognized as a provider of health care to the physically active.

2. **National Athletic Trainers' Association (NATA)**: The recognized national organization empowered with regulating the profession of athletic training. This organization was founded primarily to establish guidelines, requirements and professional standards of athletic training.

3. **National Athletic Trainers' Association Board of Certification**: The recognized division of the NATA responsible for the creating, validating and administering the Athletic Training Certification Examination. The NATABOC is responsible for setting educational requirements for Athletic Trainers (both pre-
professional and post-certification). The NATABOC is also responsible for verification of continuing education for Certified Athletic Trainers.

**Significance of the Study**

There is a lack of research on continuing education in athletic training and no evidence was found of any needs assessment for continuing education ever being performed. The Educational Task Force in Athletic Training has made recommendations concerning the need for establishing a plan for continuing education. The information gathered in this investigation may be utilized by the Task Force and the National Athletic Trainers Association Board of Certification to determine the expressed needs in continuing education of its members for future revisions to the continuing education requirements and opportunities in the field of athletic training. This may allow for more efficient delivery of continuing education programs and a more systematic means of assuring continuing competency in athletic training. With information from this study, the continuing education opportunities and requirements for athletic trainers could be designed to better meet the needs of various groups within the profession of athletic training and to improve the overall quality of continuing education for athletic trainers. With better continuing education opportunities, the athletic trainer should be able to stay abreast of new techniques and remain proficient in the health care delivery to the physically active. In the end, the patient is the beneficiary of improved continuing educational opportunities for the health professional in the quality of care received.
CHAPTER 2
REVIEW OF LITERATURE

The concept of continuing education is not new. It can be traced as far back as the apprenticeship systems of the ancient and medieval worlds and has been an informal adjunct of professional practice into modern times (Houle, 1983). Although information on continuing professional education is readily available, continuing education literature for athletic trainers is sparse. In developing understanding about continuing education needs of athletic trainers, this chapter first examines conceptual frameworks of continuing education, adult learning characteristics, theories of motivation that explain why professionals take part in continuing education activities, and the current status of the field of continuing education. Additionally, athletic training as a profession is explored and continuing education in the field of athletic training is examined.

Conceptual Frameworks for Continuing Education

Many of the continuing educational models of today are based on the Tyler’s (1949) general model for education described in his principles for curriculum. The essence of the model develops around questions asked of the educational program as to the function and form of the educational experiences. The model divides the educational process into four specific steps: purposes and goals, educational experiences, structure, and evaluation. This model focuses on the needs of the learner and the objectives to be accomplished to meet those needs. This model is widely used and abused in continuing professional education as course designers...
develop educational objectives around potential interest areas and experts develop a
course around what they think participants will need. Belsheim (1986) calls this
method a "topical" approach, if it concentrates on the selection of topics and
speakers rather than on working with potential participants in the development of the
course objectives and appropriate formats for achieving those objectives (p. 972).

Change Model for Continuing Education

Another model for continuing professional education is Warren's Change
Model (1977). Warren outlined a framework for analyzing efforts to bring about
change and for identifying choices in the way change is approached. The change
model also analyzes the consequences of these choices. Components of the change
model are the change objective, the target system, the change-inducing system,
strategies for change, resistance to change, and stabilization of change. Unlike the
Tyler model, which focuses on the educational program and organizing learning
experiences, the change model puts strong emphasis on the total environment in
which the individual practices. When continuing professional education programs
include demonstrations and participatory formats, such as hands-on experiences, the
participants are able to move further in changing their behavior by evaluating and
trying out new knowledge in an educational setting (Belsheim, 1986). Resistance is
a key concept in this model of continuing professional education. The change model
of continuing professional education requires an analysis of resistance to change
when the program designer selects strategies to promote change. According to
Warren (1977) the perceived strength of the change model for continuing
professional education lies in its attention to the environment within which changes in individuals' behavior occur and in its recognition of the influence of resistance. The model is based on the recognition of the need to design programs that promote maintenance of the changes after the program ends.

**Problem-Based Model for Continuing Education**

Both the education model and the change model are often dominated by content experts. Inherent in both models is the assumption that experts and those committed to change know what is best for the participants or the systems in which the participants work. A model with a different approach is the problem-based model for continuing professional education. The problem-based approach focuses on the active participation of professionals in the discussion and resolution of problems they face, rather than on experiences and content covering specific knowledge. In this model, continuing professional education designers focus on problem analysis. This analysis is conducted by a planning group consisting of content experts, practitioners and a program development specialist. A problem is identified, and a focus area for the program is developed. A variety of experts and practitioners might then be chosen to participate, based on their experience of the problem for which the program will focus (Belsheim, 1986). The problem-based approach does not begin with the assessment of the professional as deficient in knowledge, as does the education model. Rather it recognizes and builds upon knowledge and experiences the professional has already acquired.
Regardless of the model used, the relationship between what professionals learn and their learning's direct application to daily practice is critical to the degree of participation and the success of the program. Professionals have specific and diverse educational needs, both because of individual differences and differences in practice due to settings and experiences. Educational providers need to recognize, understand and address these factors in educational planning (Stern & Queeney, 1992). In order to better meet the needs of the professional as a learner, continuing education providers also need to know how professionals learn and what motivates them to participate in continuing education.

**Adult Learners**

The passage from learning in preparation for a profession to learning as a professional entails a transition from an institutional to an individual impetus for learning. This is neither an all-or-none nor an instant phenomenon but rather a gradual maturation of the professional as a learner (Suter et al., 1984). In continuing education, as institutional influence decreases, individual professionals are expected to assume primary control over identifying their personal learning needs, setting their own learning goals and objectives, choosing learning approaches, selecting methods of evaluation, and the ultimate goal, applying their acquired competencies to practice (Suter et al., 1984). Many professionals do not easily make the transition from dependent to independent learning; they continue to depend heavily on institutions or professional organizations to direct their learning.
As consumers of continuing education, professionals are seen as learners. Adult learners share a number of characteristics related to the way in which they learn. Adult learners generally prefer educational activities in which they can participate actively, such as small group discussions and workshops, and they tend to value hands-on learning experiences. Adult learners also have contributions to make to the learning situation through the sharing of their experiences (Stern & Queeney, 1992).

The population of continuing professional education is a group of adult learners who are categorized by their occupational status and by their participation in continuing education activities. Thus as a group, the target population is more homogeneous than adults in general.

Adult learning differs from that of children. Knowles (1980) set forth four assumptions that separated the two types of learning:

1. With maturity, the learner becomes more self-directed.
2. Maturity and experience become a resource for learning.
3. With maturity, readiness to learn is more oriented toward social roles.
4. The adult learner becomes less subject-centered and more problem-centered.

Houle (1980) described three categories of adult learners, each varied in their educational objectives. The first category he describes as goal-oriented. This group pursues the educational experience for a specific objective or problem. The second category is activity-oriented. The learners may have no connection with
their purpose and the stated objectives of the learning activity. These persons may seek the learning activity for other reasons such as fellowship or socialization. The last category, Houle identifies as learning-oriented. These people seek knowledge for its own sake.

Allen Tough (1971) also studied adults’ learning efforts and concluded that about 70% of all learning projects are self-planned and usually for practical reasons. Many of the learning projects involve the learner’s daily work, either when entering a new position or striving for a promotion. They may also be pursued simply as maintenance of the necessary skills and knowledge to retain competence. Tough focused on self-planned learning and the belief that adult learners may have a more accurate sense of what they need in educational topics, methods, the time needed to learn the material and individual learning styles.

Cervero (1990) further illustrates the characteristics of professionals as learners in that professionals use practical knowledge systems. First described by Friedson (1986), practical knowledge is that knowledge that is gained other than from the use of textbooks or other publications of academics or formal learning systems. Systems of practical knowledge are used by professionals because they are situated and oriented toward action.

Theories of Motivation and Professional Participation in Continuing Education

Whereas general adult learners are often characterized as volunteers for learning, professionals may have somewhat less choice. Professionals are expected to participate in continuing education as a result of relicensure requirements, yet
time, cost, and the availability of relevant programming pose significant restraints (Scanlon & Darkenwald, 1984). Not only is the decision to participate often predetermined, but so, too are the professionals' decisions about where and when to participate (Grotelueschen, 1985). As a general rule, state boards within each profession establish the number of required continuing education hours. All 50 states have legislated mandatory continuing education requirements for one or more professions, whether health-related or in other fields (Little, 1993).

The mandatory continuing education movement arose out of the perception that professionals need to be committed to lifelong learning in order to maintain and improve their competence. According to Cervero (1988) the impetus for mandatory continuing education came from federal and state governments, especially state licensing boards, professional associations and consumer groups. State governmental involvement in mandatory continuing education came about partly through awareness of professional admonishment for lifelong practitioner learning and partly through the stimulus of the malpractice crisis (Little, 1993). Professional associations have been at the forefront of encouraging mandatory continuing education and as Little (1993) suggests, were known to proclaim its value before the states began to apply their regulatory actions.

The consumer movement was a phenomenon of the 1960s and 1970s, and the consumer demands for greater protection of the public and better evidence of continuing professional competence added fuel to the mandatory continuing education fire (Little, 1993). Learners are seen both as participants and
beneficiaries in both general continuing education and continuing professional education. In continuing professional education, beneficiaries are also those patients/clients served by the learners. It is even argued that continuing professional education is successful only when benefits accrue to such secondary beneficiaries (Houle, 1980).

Benefits for patients/clients are some of the main thrusts behind mandatory continuing education policies put forth by consumer groups. Such policies assume that secondary beneficiaries—consumers of professional services, professional associations, institutional providers of services and the public in general all have a vested interest in continuing professional education (Grotelueschen, 1985).

Even though continuing education for many professions is mandatory, that does not seem to be the primary motivating factor for professionals that attend continuing education. Several authors indicated that the primary motivation to learn for professionals arises from problems or issues in their daily practice and that these interest areas are part of a well rounded program of learning (Cervero, 1981; Grotelueschen, 1985).

Rogers (1986) argues that much more significant and lasting learning can take place when the learning is integrated with work or is acquired through active involvement by placing the student in direct experiential confrontation with problems. Learning is facilitated when the learners define their own problems, discover their own learning resources, decide their own course of action and recognize the consequences of their decisions. The most lasting, pervasive learning
results when learners identify the learning on their own personal initiative (Rogers, 1986).

Cross (1981) reviewed writings on adult education theory and practice from several theorists and developed the chain-of-response (COR) model, explaining motivation for learning based on several variables affecting participation in educational activities. The chain-of-response model incorporated four barriers to adult learning participation (Darkenwald & Merriam, 1982). The first barrier Cross identified was situational. He indicated that situational barriers are often characterized by time constraints. Secondly, Cross identified institutional barriers which can be characterized by lack of choice or time. Thirdly, there are informational barriers such as lack of awareness of continuing education programs. Lastly, Cross identified psychosocial barriers such as lack of interest or lack of belief that continuing education is helpful.

**Variables Affecting Participation in Continuing Education Programs**

A variety of instruments have been developed to try to study reasons for participation in continuing professional education. The Participation Reasons scale (PRS) (Grotelueschen, 1985; Grotelueschen, Harnisch and Kenny, 1979) has been administered to random samples of professionals at state, regional and national levels, as well as to a few local population groups. The PRS taps five basic clusters of reasons for participation in continuing professional education: (a) professional improvement and development; (b) professional service; (c) collegial learning and
interaction; (d) professional commitment and reflection; and (e) personal benefits and job security (Grotelueschen, 1985).

PRS findings have demonstrated that reasons for professionals' participation in continuing professional education can differ significantly according to the type of profession, the career stage of the professional, the profession-related characteristics of participants and the personal-related characteristics of participants (Grotelueschen, 1985). For example, the professional life cycle may be a factor in the decisions on participation in continuing education. As individuals move from entry into practice through the stages of their career life cycle, skills learned in the past may grow rusty or be rendered obsolete by new knowledge and technology. Professionals initially concerned with handling the basics of practice move into more senior roles, often become mentors to new professionals, and eventually consider decreasing professional involvement as they look toward reducing their workloads and retiring (Grotelueschen, 1985). Cervero (1981), previously found that physicians, besides attending continuing education to maintain and improve professional competence and service to patients also attended to enhance their personal and professional position. “These decisions involve personal financial gain, the individual’s prestige within the profession and the security of present work position” (p. 32).

Smith, Ross, and Smith (1980) in a similar study with nurses reported that the format and practical issues affecting the delivery of continuing nursing education programs were cited as factors influencing participation in continuing education. A
followup study by Richardson and Sherwood (1983) supported the findings and also found that statistically significant differences existed in content and format preferences according to specified personal and professional characteristics. They found that the most preferred content areas were those related to the nurse’s role as a clinician and suggested that a broad range of clinical courses be provided.

Dolphin (1983) found that motivational factors were more indicative of participation in continuing education than were demographic factors. The results in Dolphin’s study suggested that nurses attended continuing education programs for a wide variety of reasons and it was likely that the same individual was influenced to attend for more than one reason. The reasons were both self-directed and other-directed, with the most important reason being increased job competence. Employer pressure and peer pressure to attend continuing education courses were not found to be highly related to program attendance.

Format and the type of information available to the participant is another variable that may determine participation. Continuing education constructed with hierarchical information opportunities (one learning opportunity building on a previous opportunity) permits satisfaction of individual needs and is likely to encourage greater participation. In fact, the availability of different formats resulted in greater participation than the choice of course location or time-other options that were offered by the program (Woolfolk, Lang, Farghaly, Ziemiecki, & Faja, 1991). Research on reasons for nonparticipation in health professionals’ continuing education courses identified barriers such as: cost, lack of time, inconvenient
scheduling, job responsibilities, home responsibilities, lack of interest and lack of information about education opportunities (Carp, Peterson, & Roelfs, 1974; Escovitz & Augsburger, 1991).

In an attempt to identify the significance of barriers to participation in continuing education programs for nurses, Scanlan and Darkenwald (1984) identified six deterrent factors: disengagement, lack of quality, family constraints, cost, lack of benefits, and work constraints. With the exception of work constraints, this study showed that these six factors were powerful predictors of participation and accounted for 41% of the participation variance.

Employment Setting as a Variable in Participation

The results of a study on nursing continuing education conducted by Schoen (1979) suggested that attitudes toward continuing education were predicted best by attitudes toward the professionalization of nursing and by future career intentions. Current employment status, formal education beyond the initial nursing program, and independent learning activities were most predictive of participation. Schoen's study also indicated that the background variables such as marital status, initial nursing program, etc. did not have a direct affect on attitudes and participation in continuing education. However, Schoen feels that these variables may have important indirect effects through the explanatory variables-attitudes toward professionalization and future career intentions.

Studies conducted among veterinarians, judges, physicians, business professionals, nurses, dentists, social workers, pharmacists, and health educators
suggest that across professions, professional improvement and development items represent the most important cluster of reasons for participation, followed in order of relative magnitude by professional service, collegial learning and interaction, professional commitment and reflection, and personal benefits and job security.

The degree of importance attached to each reason cluster differs significantly for individual professions. For example, nurses and social workers rate the improvement, development and service clusters significantly higher than physicians and business executives (Grotelueschen, 1985).

There are also differences for ratings of personal benefits and job security, not only between professions, but also between age and professional groups. Younger judges and physicians attributed a higher level of importance to personal benefits and job security. On the other hand, younger nurses and business professionals attributed a lower level of importance to it than their older colleagues did (Grotelueschen, 1985).

Profession-related characteristics include such variables as type of practice settings, type of practice, professional membership and years performing current duties. In general, reasons for participation in continuing professional education relate most strongly to profession-related characteristics. Williams, Davis, Hale, and Collins (1989) found a correlation between physician practice settings and continuing education preferences and suggested that physician preferences for continuing education "may be heavily influenced by extrinsic variables related to
practice situations and policy" (p. 139). Woolf (1991) in a comparison of the perceived continuing medical education needs of semirural and urban physicians found that physicians practicing in a large city were usually satisfied by their continuing education activities as they had many opportunities for maintaining their competence. The situation is different in small towns where many of the physicians are clearly dissatisfied with their own efforts to obtain continuing medical education. Wolfe's study shows age and sex differences in attendance of "away-from-home" continuing education among physicians. Slotnick, Raszkowski, Jensen, and Christman (1994) evidenced that young female physicians are less likely than male physicians of the same age to attend 2-day continuing education sessions, but that older women physicians were more likely to attend these same sessions than their same age male counterparts. Slotnick et al. explain this phenomena by using the stages of psychological development, in that "young women physicians place more importance on family relationships and, therefore, are disinclined to attend activities that take them away from home. As they mature, their achievement needs receive more emphasis, their families become more self-sufficient, and they elect to attend more away-from-home activities" (p. 243).

Professional Isolation as a Variable in Continuing Education

Another factor that has been found to influence perceived continuing education needs is professional isolation. Often referred to with teachers and administrators in rural communities and business persons that work alone, geographical and professional isolation may affect professional development.
Geographic isolation affects the provision of education in terms of time taken to travel, cost, terrain, and technology. Rural communities have groups that are socially isolated from each other and from the staff in schools. Green, Roebuck, and Futrell (1994) indicated that in rural school districts, the isolation factor becomes a major concern and recommend countering "the sense of isolation by establishing collegial relationships at school" (p. 5). Miller and Hull (1991) also addressed the problem of professional isolation as a factor that may limit professional development and affect the needs of rural educators. This is consistent with above mentioned Woolf study with physicians, that there were different levels of satisfaction and need in regard to continuing education between urban and rural physicians. The professional who works and interacts with colleagues on a regular basis may have different professional development (continuing education) requirements than the professional who works in isolation from other colleagues.

**Current Status of the Field of Continuing Education**

Beginning in the 1960s, expanded technology, increased concerns about public welfare, and specializations within professions called for more carefully structured education for professionals throughout their careers (Schuman, 1981). In addition, a longer working life span combined with the explosion of new knowledge and the professions' need to assure a level of competency to the public have led to a trend in mandatory continuing education (Stern & Queeney, 1992). Lifelong learning is a necessity if professionals are to experience productive work lives that impact positively on their professional roles.
The number of adults who take part in continuing education has grown as new information and technology is made available. Continuing professional education has become a large but emerging field with the intentions of further education of skilled practitioners beyond degrees and beyond their initial professional education (Stern, 1985). "Maintenance of basic competence for all professionals has been constantly emphasized as the goal of continuing professional education" (Houle, 1983, p. 257).

Continuing education is a focused program extending the preparatory professional curriculum and expanding it through the career stages of professional practice. To do this, it must go beyond individual learning activities to include development of learning agendas specifically designed to meet professionals' practice oriented educational needs (Nowlen, 1988).

Most continuing professional education follows the Tyler model and uses the topical or categorical content approach. This approach allows for efficient delivery of information to large groups of professionals at a fairly low cost. Nowlen (1988) describes this most commonly encountered form of continuing professional education: "A single instructor lectures and lectures and lectures fairly large groups of business and professional people, who sit for long hours in an audiovisual twilight, making never-to-be-read notes at rows of narrow tables covered with green baize and appointed with fat binders and sweating pitchers of ice water" (p. 65).

As early as 1967, Dr. Miller argued that this categorical content model used to design courses has failed to meet the aims or needs of continuing education. That
is, building courses around specific topics on the assumption that practitioners "will transform this knowledge into action" has not worked, partly, Miller believes, because the topics usually addressed reflect recent research findings of limited applicability in general practice from what practitioners need (Miller, 1967, p. 323). The categorical content model is still the most prevalent continuing education model today with continuing education providers generally deciding the content.

Others too, have criticized the current categorical content model and the delivery system of continuing professional education. Stern and Queeney criticize the providers of continuing professional education: "Some of these independent providers have been guilty of neglecting to assess professionals' needs or failing to distinguish between lower level instruction and that for more mature professionals before jumping in to offer seminar programs. The result has been programs that benefit neither less sophisticated audiences or advanced practitioners" (Stern & Queeney, 1992, p. 17). Smutz and others (1986) have cited "fragmented course offerings, lack of standards, and a variety of providers in any one field" as symptoms of a lack of coherence in the field (p. 390).

Even with the above criticism the education model is still widely used and can be effective. The educational or topic centered model is cost effective. It is able to serve large audiences with the least amount of time and expense. The large group/lecture sessions have also been preferred over other methods by respondents on some evaluations of continuing education sessions. The education model and categorical content delivery focus on the content or knowledge the participants
should learn, and this focus has led to a streamlining of the process by which course
designers develop educational objectives for a continuing education program. The
model may be based on interests of the participants but is largely based on what
“lack of knowledge” experts feel the participant may have in any one topic area.
Little attention is paid to characteristics of potential practice in the area of the topic
or to the psychology of learning relevant to professions (Belsheim, 1986, p. 972).

Developing Continuing Professional Education Content

Currently the content of most formal continuing professional education
represents responses to a single issue, advances in knowledge and technology that
can render professionals’ knowledge and skills obsolete (Scanlon, 1985). As a
result, considerable energy has been focused on providing opportunities for
individuals to update their knowledge and skills in order to remain competent (Willis & Dubin, 1990). The challenge of helping professionals remain current and become
familiar with new information has been sufficiently attractive to providers that they
have devoted minimum effort to broader educational context and content issues.

Building a sound continuing professional education program begins with
understanding the full scope of the specific profession being addressed. A
comprehensive practice description or role delineation is one way for providing a
foundation that outlines the practice areas educators might consider in developing
educational activities or that practitioners might review when planning their
individual continuing professional education (Kris-Etherton, Lindsay, Smutz, &
Chernoff, 1983). Because proper definition of the scope of practice is a profession-
wide concern, the professional association usually takes the initiative if a practice
description, outlining all duties performed by practitioners within that profession is
to be developed. Several professions, including athletic training, have developed
comprehensive practice descriptions.

The National Athletic Trainers’ Association Board of Certification and
Columbia Assessment Services, conducted a study of the primary tasks performed
by the entry-level Athletic Trainers. This first Role Delineation Study was
performed in 1989 with revisions in 1993. The Role Delineation Study provides a
comprehensive analysis of the work that athletic trainers perform (NATABOC,
1995). Identification of the broad areas, or domains of practice as suggested by
Queeney (1995) was the initial step of the practice description for athletic trainers.
The NATABOC derived five domains within the field of athletic training. They are
(a) prevention of athletic injuries; (b) recognition, evaluation and immediate care of
athletic injuries; (c) rehabilitation and reconditioning of athletic injuries; (d) health
care administration; and (e) professional development and responsibility. Keeping
in mind the changing role of certified athletic trainers, the panel next directed its
attention to the delineation of the tasks in each of the five domains and generated a
list of knowledges and skills required to perform each task. The panel subsequently
evaluated each domain and task according to its importance and criticality to the
certified athletic trainers and to the frequency with which the activities associated
with each domain and task are performed (NATABOC, 1995b). Queeney (1995)
suggested that once a role delineation or comprehensive practice description is
developed. The next step is to assess the needs of the profession.

**Needs Assessment**

Needs assessment is not a new concept, but it is an underutilized one that has
potential to revolutionize the program development process. As Vella suggested, it
can be “the key to adult learning. Without it there is no honest defining of learning
needs, no dialogue, no listening” (1994, p. 45).

Needs assessment is defined as a decision-making process that provides
information about the necessity and feasibility of an educational intervention. In the
broadest terms, a need is a discrepancy between an existing set of circumstances and
some desired set of circumstances (Knox, 1965). Some experts use the term “real
needs” to describe the discrepancies between optimal and actual care. Educational
needs as defined by potential learners are called “felt needs” (Atwood & Ellis,
1971).

Properly utilized, needs assessment provides solid data on which to base
decisions regarding not only program content but also format, delivery mode, and
audience. Needs assessment is also essential for promotion and scheduling of
continuing education programs (Queeney, 1995).

The desired final product of needs assessment is an ordered specification of
educational needs in a form that can be readily used in developing educational
projects. Needs assessments can be done on many levels. Queeney suggests that a
strategic needs assessment will provide long-range planning for the continuing
professional education provider unit. Assessment results will identify general content areas and the professions that will be addressed by the continuing professional education provider unit during a specified period of time. These might include current health care issues, social, cultural or environmental issues, and technological or scientific advances that require dissemination to health care providers through continuing professional education (Queeney, 1995).

Needs assessment should also be done on a programmatic level. This assessment provides information about specific concerns within the general areas identified at the strategic level and of results in a list of program topics that will be offered by continuing professional education providers.

**Use of Perceived Needs**

Perceived needs are those needs that individuals believe they have. Perceived needs, although not always the same as assessed needs are of considerable value because people who believe that their knowledge, skills or performance abilities are weak in certain areas may lack the confidence to perform well in those areas. Thus, whether perceived needs are real or imagined, they represent opportunities for continuing education.

One of the ways to determine perceived needs is through the use of self-reported questionnaires. Self-reports that are used in needs assessment are responses to inquiries regarding individuals' perceptions of their learning needs. "Self-reports are particularly appropriate as a first step in identifying needs when a
continuing educator seeks broad, general perceptions of needs" (Queeney, 1995, p. 118).

The primary disadvantage of self-reporting or perception of needs is that they are a product of individuals' limited awareness and understanding of their own needs. In considering their educational needs, people are prone to cite areas of new knowledge. As Nowlen's (1988) suggests, people are comfortable reporting that their knowledge and skills may need updating but usually are less comfortable admitting that discrepancies between their behavior and that which is desirable exist in areas related to their past learning or to regularly performed activities.

To overcome some of the shortcomings of self-reporting questionnaires, a number of specific questions can guide respondents to consider relevant factors rather than simply offer quick answers without much thought. Often, unless particular areas are pointed out to them, people simply do not think of them (Queeney, 1995). Queeney suggests that "the use of specific questions can make the difference between obtaining a list of casual interests and a list of perceived needs" (1995, p.120).

Although there are many potential means to determine continuing education needs, some educators believe that a need is a need only when it is recognized by the potential learner as a need. (Monette, 1977). "When practitioners' perceptions of need and usefulness are accommodated, successful continuing education outcomes are more likely to occur" (Woolfolk et al., 1991, p. 223).
Like the aforementioned professions, it is assumed that some of these same continuing education concerns are present in the field of athletic training. The next section provides an overview of the field of athletic training, the changes that are occurring in the field and current continuing education requirements.

**Athletic Training as a Profession**

Athletic training is an allied health profession responsible for the care and prevention of injuries and/or illnesses to the physically active (NATA, 1992). As a profession, athletic training has been recognized by the medical community as unique and separate from the professions of physical therapy and physical education since 1950 when the National Athletic Trainers Association (NATA) was organized. In 1959, an educational curriculum was formed for the professional preparation of athletic trainers.

There are currently two ways to become a certified athletic trainer. The first is to complete an accredited athletic training program at a college or university. This consists of a major in athletic training as well as clinical education. The second method is an internship process in which the student may attend a college or university whose athletic training program is not accredited by the NATA. This student must have a basic core of classes in athletic training as well as 1500 hours of clinical experience under the supervision of a certified athletic trainer. The student may major in a subject area unrelated to athletic training. Upon graduation, the student from either type of program must sit for a written, written simulation and
practical test in athletic training. Upon successful performance on the examination, the candidate then becomes a Certified Athletic Trainer.

The NATA has spent much time and effort to assure that the certification examination is a valid measurement of competency in athletic training and has spent an equal amount of time and money on defining what skills and knowledge are required of an entry-level athletic trainer. The Role Delineation Study discussed earlier in this section outlines the domains within which athletic trainers must be competent. The Role Delineation Project was completed in 1989 and was revised in 1994.

The Changing Profession of Athletic Training

The field of Athletic Training is changing, as are most health professions, impart due to changing technology, new techniques, new employment settings, and changing populations. According to Kenneth Clarke of the United States Olympic Committee in a presentation to the Pennsylvania Athletic Trainers Society: “The athletic trainer is a professional, not a technician. A technician goes by the book, follows the directions of others. A professional makes judgements and sometimes must do so in situations wherein the basis for the judgement is thin. Even though an athletic trainer is a professional, he or she is not a specialist. No singular person can acquire the knowledge and expertise to adequately care for all sports injuries” (Knight, 1987).

Gary Thibedeau, Athletic Trainer and Editor-in-Chief of Sports Health Care Perspectives sees the role of the athletic trainer expanding:
In the future, we can expect the athletic trainer to spend additional time dealing with health education, preventive care, health care screening and wellness initiatives. Changing demographics, the aging of the population, and increased participation in movement- and sports-related activities by growing numbers of individuals of all ages will increase the demand for the specialized services that can be provided by the athletic trainer of the future. (Thibedeau & Sexton, 1995, p. 13)

Perhaps the most dramatic change in athletic training in the past twenty years is the change in the employment setting of athletic trainers. The traditional setting of the college or university athletic trainer is slowly decreasing. In fact, as of 1990, the “non-traditional” settings employ more athletic trainers than the traditional college or university setting. In 1996, according to the statistics compiled by the NATA over 40% of all athletic trainers were employed in the clinic, hospital or industrial setting (including athletic trainers who split time between high schools and clinics) while 18% were employed at the college or university and 15% at the high school. A smaller percentage of certified athletic trainers were employed in professional sports (3%). Almost 23% of certified athletic trainers listed “other,” indicating choices such as student, employed outside of athletic training or a more non-traditional setting (NATA, 1997).

According to recent statistics released by the NATA, of the 857 graduates of athletic training education programs in 1995, 318 (37%) accepted employment in athletic training positions. When the specific type of placement among the total 318 graduates receiving athletic training employment was considered. 27 were placed in four-year colleges, 73 in high schools, nine in professional sports organizations, and
183 were placed in sports medicine clinics. Of the total 857 graduates, 328 entered post-graduate study. The same study examined placement of athletic trainers from graduate athletic training programs. Of the total 143 graduates in 1995, 81% were employed as athletic trainers, 8 were placed in college settings, 12 were employed in high schools, 8 went to professional sports organizations and 33 were placed in sports medicine clinics (NATA Professional Education Committee, 1996).

The 1996 study reflects the changing employment settings in athletic training when compared to just five years ago. In 1991, only 8% of the graduates went to the high school setting as compared to 39% to the colleges and universities (NATA Professional Education Committee, 1996). Employment opportunities at sports medicine clinics for athletic trainers have continued to grow and can be expected to be the major employer of athletic trainers over the next 10-15 years.

**Continuing Education for Athletic Trainers**

The National Athletic Trainers Association Board of Certification (NATABOC) first required continuing education for certified Athletic Trainers in 1973 when they required 2.0 CEUs per year. The NATA national meeting was awarded 2.0 CEU's, in part, to encourage athletic trainers to participate in the National meeting (personal communication, Paul Grace, Executive Director of NATABOC, March 29, 1996). Presently the NATABOC requires that each Certified Athletic Trainer (ATC) requalify for certification every three years. At the conclusion of each three year cycle, ATCs must meet recertification requirements including the completion of eight continuing education units (80 clock hours), evidence of adherence to the
NATABOC Code of Professional Practice and submission of annual NATA dues (NATABOC, 1995a). Recertification activities are meant to ensure that Certified Athletic Trainers stay current in the field of athletic training. The purposes of the recertification requirements according to the BOC are as follow: Obtain current professional development information; explore new knowledge in specific content areas; master new athletic training-related skills and techniques; expand approaches to effective athletic training; further develop professional judgement and conduct professional practice in an ethical and appropriate manner (NATABOC, 1993, p. 1).

Athletic Trainers must maintain a continuing education file of activities attended in the three year period for which he/she is seeking recertification. Recertification activities must be directed toward professionals in the athletic training field and must focus on increasing knowledge and skills in the practice of athletic training. The NATABOC has established four qualifying categories. Category A includes national, district and state conferences sponsored by the NATA as well as other “approved” courses. Category B includes approved home study courses, conference presentations, publications, NATA certification exam examiner/model, or documentation of profession-related video tape viewing/purchasing. Category C includes post-certification education, while Category D includes CPR, First Aid or EMT certification.

The “approved” courses are those courses that are conducted by approved providers who have completed a formal application process for approval by the NATABOC of the suitability of the content and format of their continuing education.
activities. Once approved, providers may offer various activities under their provider status. Content is determined entirely by the provider of the continuing education activity. Currently there are more than 7,000 approved providers.

Recent Changes in Athletic Training Continuing Education

In 1994, an Education Task Force was created by the NATA Board of Directors to analyze all phases of educational preparation of athletic trainers (NATA, 1996). Attendant with the review of educational preparation was a review of all educational services being provided by the NATA and its affiliates. Of the 14 major issues addressed by the task force as driving the reform of athletic training education, several specifically deal with continuing education. The issues listed by the task force are:

1. The need to provide quality athletic training education across the life span.
2. The need to assure continuing competence of practicing athletic trainers.
3. The need to recognize special competence.
4. The need to prepare athletic trainers for post entry-level competencies required in specialized settings (NATA, 1996, pp. 22-23).

Over the course of the next two years, the Educational Task Force compiled information and made recommendations to the NATA Board of Directors and the Board of Certification. Due to the work and recommendations of the Educational Task Force, in 1996, the Board of Certification created an additional ad hoc task force to specifically review the current continuing education requirements for athletic trainers and to make recommendations to the NATA BOC for requirements to take the
profession into the twenty-first century. This Continuing Education Task Force revised the requirements for continuing education for the 1997-2000 certification period. These requirements categorize the hours so that not all continuing education hours may be obtained in one area. The areas that are identified for certified athletic trainers and the maximum number of CEUs obtainable in each area are (a) symposiums, seminars, workshops and conferences, 7.5 CEUs; (b) professional development, publication activities or other activities such as home study courses, 5.2 CEUs; (c) post certification education at a college or university, 7.5 CEUs, and (d) CPR, 1.5 CEUs. The NATABOC requires documentation of continuing education activities throughout the three year reporting period with a final report filed by each certified athletic trainer at the end of the reporting period. Random audits of the continuing education reports are conducted in which athletic trainers must produce evidence of participation in continuing education activities that they reported.

Summary

The common focus of continuing professional education programming for professional improvement and development is only one of many reasons why professionals participate in continuing professional education. Professionals differ in the importance that they ascribe to those reasons for participation, both across and within disciplines. Differences in reasons for participation across disciplines suggest that educational expectations vary with characteristics specific to individual professions. For providers, it is clear that a knowledge of their professional
clienteles' reasons for participation can provide useful guidance in the planning, implementing and evaluating of continuing professional education programs. Sound planning requires the content and format to correspond to the expectations of those targeted for learning. When there are substantial variations in a targeted group's reasons for participation, the opportunity exists to segment the market and provide differential programming or mixed formats that attend to the expectations of varied participants (Grotelueschen, 1985).

Adult education theorists postulate that adults are most likely to seek continuing education to solve a problem or need and are best suited to know what they need to learn. As the field of athletic training knowledge expands, so must continuing education opportunities. Providers of continuing education activities must know what the needs of athletic trainers are in regard to subject areas, format, etc. to better provide appropriate learning opportunities than have been available in the past. Most continuing education opportunities for athletic trainers, as well as other health professionals, have been haphazard and not necessarily been based on need. This haphazardness of continuing education is certainly not unique. Stern (1985) and Kempfer (1979) have both criticized continuing education in general, as a "disorderly market" and indicate that "everyone has gotten on the bandwagon, (to provide continuing education) but not everyone is playing the same tune" (Kempfer, 1979, p. 23). Episodic continuing education, in which practitioners choose isolated educational activities throughout their careers, simply is not structured to enable the practitioners to design a well-rounded learning program.
that will enhance practice (Smutz & Queeney, 1990). The NATA has attempted to encourage better self-planning of the continuing education learning experience by revisions in its proposed continuing education categories and requirements. Many of these new revisions are based on adult learning theory and could potentially provide the guidance that athletic trainers need in planning meaningful continuing education activities. However, with the changing role of the athletic trainer and the diversity in the field, there may be many factors that affect the continuing education needs of athletic trainers. A needs assessment in athletic training continuing education has never been performed and could be a vital source of information to the NATABOC and to the providers of continuing education activities for athletic trainers.

Dr. Cyril Houle’s statement in *Continuing Learning in the Professions* (1980) may well illustrate the need for research in continuing education and certainly applies to the field of athletic training. “The conception of a profession as a fixed entity may cause its members to believe that their only need for learning is to maintain their individual careers and the collective status they already possess. But the needs of society require that every professionalizing occupation becomes better than it is” (p. 30).

It is the intent of this study to determine factors affecting perception of continuing education needs and factors which influence participation in current continuing education programs in athletic training. This study will also identify the
self-perceived continuing education needs of current Certified Athletic Trainers.

With an understanding of these issues, the profession may then develop a systematic plan for the continuing education and competence of its members.
CHAPTER 3
RESEARCH METHODS

The purpose of this study was to determine factors affecting self-perception of continuing education needs and factors which influence participation in current continuing education programs in athletic training. This study also identified the self-perceived continuing education needs of current Certified Athletic Trainers.

Subjects

The subjects in this research project included a random sample of 2,000 Certified Athletic Trainers selected from a population of approximately 14,000. The sample number was chosen to coincide with the sample numbers used by the NATA in the validation of the Role Delineation Study. The sample was stratified based on the National Athletic Trainers' Association's 10 geographic districts. The 10 geographic districts are listed in Table 1 and shown geographically in Figure 1.

Figure 1. Geographical representation of NATA Districts.
### Table 1

**NATA Districts**

<table>
<thead>
<tr>
<th>NATA District</th>
<th>States in District</th>
<th>% of Pop.</th>
<th># of Surveys Sent to Dist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td>Connecticut, Maine, New Hampshire, Rhode Island, Vermont, Quebec, New Brunswick, Nova Scotia</td>
<td>7%</td>
<td>140</td>
</tr>
<tr>
<td>District 2</td>
<td>Delaware, New Jersey, New York, Pennsylvania</td>
<td>16%</td>
<td>340</td>
</tr>
<tr>
<td>District 3</td>
<td>Maryland, North Carolina, South Carolina, Virginia, West Virginia, District of Columbia</td>
<td>9%</td>
<td>180</td>
</tr>
<tr>
<td>District 4</td>
<td>Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, Manitoba, Ontario</td>
<td>23%</td>
<td>460</td>
</tr>
<tr>
<td>District 5</td>
<td>Iowa, Kansas, Missouri, North Dakota, Nebraska, Oklahoma, South Dakota,</td>
<td>8%</td>
<td>160</td>
</tr>
<tr>
<td>District 6</td>
<td>Arkansas, Texas</td>
<td>5%</td>
<td>80</td>
</tr>
<tr>
<td>District 7</td>
<td>Arizona, Colorado, New Mexico, Utah, Wyoming</td>
<td>6%</td>
<td>120</td>
</tr>
<tr>
<td>District 8</td>
<td>California, Hawaii, Nevada, Guam</td>
<td>9%</td>
<td>180</td>
</tr>
<tr>
<td>District 9</td>
<td>Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, Tennessee, Puerto Rico, Virgin Islands</td>
<td>13%</td>
<td>240</td>
</tr>
<tr>
<td>District 10</td>
<td>Alaska, Idaho, Montana, Oregon, Wyoming, Alberta, British Columbia, Saskatchewan</td>
<td>5%</td>
<td>100</td>
</tr>
</tbody>
</table>
To achieve a broad assessment of continuing education needs of athletic trainers across the U.S. a large sample was chosen and stratified geographically. This method has been shown to have particular merit if the intent is to develop programming for the entire population (Queeney, 1995). Sample names, addresses and mailing labels were obtained through the Director of Membership, NATA National Headquarters, Dallas, Texas. The breakdown of number of subjects per district is as follows: District 1, 140 labels; District 2, 340; District 3, 180; District 4, 460; District 5, 160; District 6, 80; District 7, 120; District 8, 180, District 9, 240; District 10, 100. Names in each district were randomly selected with the count per district determined by the districts percentage of the total of Certified Athletic Trainers.

Methods

The questionnaire/survey method was selected because it provides a systematic data collection tool to reach many people and provides a broad set of data which can be effectively summarized and reported. If well designed and executed, surveys are consistent and relatively inexpensive ways of collecting needs assessment data from a large group (Queeney, 1995).

Questionnaire Development

The questionnaire was developed by analyzing and adapting other needs assessment instruments used in several disciplines including adult education, medicine, engineering, allied health and leisure services. Specific instruments that were used in the development of the questionnaire for this study include Kerlin’s
(1993) Continuing Education Needs Assessment for Nursing Home Surveyors, and Escovitz and Augsburger's (1991) survey instrument of the continuing education needs of Ohio optometrists. The questionnaire for this research was developed through consultation with athletic training experts as well as adapting questions from the above mentioned surveys to the specific profession of athletic training. The NATABOC Role Delineation Study (1995) was used as the basis for structuring the survey of athletic trainers.

Questionnaire

The survey instrument consisted of three parts:

Part 1: Continuing Education Participation. The first part of the survey asked about the respondents' participation in continuing education activities over the last three-year reporting period. Importance of factors in determining attendance at continuing education activities and preference for program format were addressed. Information was also gathered on employer's support of continuing education participation. Lastly, importance of various factors on the participants decision to attend/not attend continuing education activities was asked.

Part 2: Continuing Education Needs. This part of the instrument was adapted from several needs assessments in allied health (Escovitz & Augsburger, 1991; Kerlin, 1993). It contained ordinal scale items that addressed topics or professional areas of perceived needs and interest in continuing education. Permission was requested from the NATABOC to use the NATA Role Delineation Study (NATABOC, 1995) as a framework for development of the questions. The
questions paralleled the tasks listed within each of the domains identified in the Role Delineation. To determine the level of interest for each of the tasks within each domain, a five-point Likert-type scale was used with "A" signifying substantial need, "B" being moderate need, "C" indicating some need, "D" indicating little need and "E" signifying no need. Space for other areas of need or interest was provided in the form of open ended questions.

Part 3: Demographics. In the last part of the survey, thirteen variables were measured on nominal and ordinal measurement scales to obtain an educational and work experience profile of the athletic trainers: employment setting, number of years of experience, educational degrees, gender, race, age, salary, marital status, dependent children at home, NATA district, and number of athletic trainers they are in contact with daily.

Content validity of the questionnaire was established through review of the instrument by the NATABOC Board of Directors and NATABOC Continuing Education Task Force. Personal communication with the Executive Director of the NATABOC preceded the mailing of the questionnaire to the Director for addition to the summer meeting agenda of the NATABOC. Follow-up telephonic communication with the Executive Director occurred several weeks following the summer meeting. The Director indicated that there were no corrections or additional suggestions for the survey (Paul Grace, Executive Director NATABOC, personal communication. July 29, 1996). The questionnaire was then piloted with 30 randomly selected athletic trainers to test for clarity of questions, etc. There
were no substantial changes in the questionnaire as a result of the pilot study; however, wording and order of questions were changed as a result of suggestions from the pilot study participants. The final survey and computerized answer sheet (NCS form 4521) may be found in Appendix A. The cover letter which accompanied the survey is presented in Appendix B.

Questionnaire Distribution

Questionnaires, answers sheets and accompanying letters were sent to all Certified Athletic Trainers identified in the sample. The cover letter (Appendix E) served as an introduction explaining the purpose of the study, provided direction for the completion and return of the questionnaire and offered written assurance of confidentiality of subject responses. The cover letter also informed the respondent that participation in the study implied consent. The 2,000 questionnaires were sent via first class U.S. Mail. Subjects were asked to return the questionnaire within two weeks via the enclosed self-addressed, stamped envelope. Each questionnaire was numerically coded to assist with follow-up notices on non-returned questionnaires. Three weeks after the mailings were sent, a total of 760 surveys (38% return) were received. A follow-up postcard reminder was then mailed to all individuals who had not responded. The final return rate of the survey was 1040 or 52%.

Data Reduction and Analysis

The returned answer sheets were read by National Computer Systems Optical Scanner, Model OpScan 10 and data were recorded into a data base. The data were coded, verified, entered and analyzed using the SPSS Statistical Software 6.1 for
Windows. Demographic data analysis included frequency distribution to describe the personal characteristics of the respondents by employment setting, years employed, educational degree, professional isolation, gender, and income. Characteristics of the respondents were compared to demographic data maintained by the NATA Membership Services to ensure that the sample was representative of the entire population of Certified Athletic Trainers. Additional statistical analysis was run with SAS Statistical Analysis Software (Release 6.08) on a Microvax 3100-80 computer. SAS was used for the canonical correlation because of its ability to run a canonical correlation with greater ease than SPSS. The Microvax was utilized because of the large number of variables analyzed in the canonical correlation.

In response to the four major research questions of the study, the following statistical methods were applied to interpret study findings:

Question 1: What are the self-perceived continuing education needs among certified athletic trainers? Descriptive analysis was used for this question. The means of the tasks within each domain were ranked in order of frequency selection with the mean score for each domain calculated for the whole population and also for each employment setting, gender, years of experience, and geographical location. Open ended questions were analyzed and categorized using content analysis. Recurring themes were identified and categorized. Categories were then ordered to refine patterns and themes. The refined patterns and themes were then reported.
Question 2: What factors affect perceived continuing education needs among certified athletic trainers? Multiple regression analysis was used to determine the level to which each factor: employment setting, years of experience, professional isolation, and educational background, contribute to the perception of need within each domain of athletic training.

Question 3: What factors affect preference in program format of continuing education among certified athletic trainers? Canonical correlation was performed to determine the extent that factors contribute to the preference in program format within continuing education programs for athletic trainers.

Question 4: What factors affect participation in current continuing education programs for certified athletic trainers? Multiple regression analysis and canonical correlation were used to determine the level to which each factor: employment setting, years of experience, employer support, educational background tempral convenience of offering, geographical convenience and cost contribute to the participation of athletic trainers in continuing education programs. Canonical correlation was chosen because it provides a tool for more complicated but general research settings when two sets of variables are measured and the experimenter wants to know how the two sets relate to each other. In canonical correlation, there are several variables on each side of the regression analysis. These variables are combined to produce, for each side, a predicted value that has the highest correlation with the predicted value on the other side. The combination of variables
on each side can be thought of as a dimension that relates the variables on one side to the variables on the other (Tabachnick & Fidell, 1996).
CHAPTER 4
RESULTS AND INTERPRETATION

The purpose of this study was to determine the self-perceived continuing education needs of current certified athletic trainers and the factors affecting those needs. Specific research questions were:

1. What are the self-perceived continuing education needs among certified athletic trainers?

2. What factors affect the self-perceived continuing education needs of certified athletic trainers?

3. What factors affect participation in current continuing education programs for certified athletic trainers?

4. What factors affect preference in program format of continuing education among certified athletic trainers?

Of the 2,000 surveys sent to the randomly selected certified athletic trainers across the country, the overall return rate was 52% (n =1040). Return rates of the districts ranged between 38% and 58%. District four and five both had return rates of 58% while District 8 had the lowest percentage with 38%. Table 2 shows the number of surveys returned by each district as well as the number sent to each district. Figure 2 shows graphic representation of the NATA Districts.
Figure 2. NATA Districts.

Table 2

Responses by District

<table>
<thead>
<tr>
<th>District</th>
<th># of responses</th>
<th># sent to district</th>
<th>% return</th>
<th>% of total return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>71</td>
<td>140</td>
<td>51%</td>
<td>7%</td>
</tr>
<tr>
<td>2</td>
<td>183</td>
<td>340</td>
<td>54%</td>
<td>18%</td>
</tr>
<tr>
<td>3</td>
<td>93</td>
<td>180</td>
<td>52%</td>
<td>9%</td>
</tr>
<tr>
<td>4</td>
<td>265</td>
<td>460</td>
<td>58%</td>
<td>25%</td>
</tr>
<tr>
<td>5</td>
<td>92</td>
<td>160</td>
<td>58%</td>
<td>9%</td>
</tr>
<tr>
<td>6</td>
<td>41</td>
<td>80</td>
<td>51%</td>
<td>4%</td>
</tr>
<tr>
<td>7</td>
<td>71</td>
<td>120</td>
<td>59%</td>
<td>7%</td>
</tr>
<tr>
<td>8</td>
<td>67</td>
<td>180</td>
<td>37%</td>
<td>6%</td>
</tr>
<tr>
<td>9</td>
<td>111</td>
<td>240</td>
<td>46%</td>
<td>11%</td>
</tr>
<tr>
<td>10</td>
<td>47</td>
<td>100</td>
<td>47%</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>1040</td>
<td>2000</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

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Demographic Data

Of the returned surveys, 24% (n = 243) were female athletic trainers, and 76% (n = 785) were male. The gender ratio of the NATA membership during the same time period was 43% female and 57% male. The sample in this research included more males than the general population of athletic trainers. Because of the large difference between the sample and the target population, weighting measures were used so that the data from this study might be more generalizable to the athletic training population. Weighting was performed by dividing the population percentages with the sample percentages. A new variable was then created representing the weighted values (male .75, female 1.79). The data were then weighted by the new variable. To check the accuracy of the weighting procedure, frequency statistics were run on the demographic characteristics. The data, once weighted represented 57% male and 43% female. Total n was then adjusted by the same procedure to be maintained at 1040.

A vast majority (95%) n = 989, of the respondents indicated that they were Caucasian, while .3% (n = 3) indicated they were African-American, 1.2% indicated Asian-American (n = 12), .5% indicated Hispanic (n = 5), and 3% (n = 16) indicated other or did not answer the question. The ethnicity of the sample was comparable to the NATA figures.

Twenty-six percent of all respondents indicated that they were single (n = 266) while 74% indicated that they were married. When marital status was analyzed by gender, 83% of all males indicated that they were married as compared to 45% of
the females. The sample was older and had more years of experience than the general NATA population. However, because the NATA membership statistics include student members who were excluded from this study, the age and years of experience as a whole is reduced. Age and years of experience of the respondents are indicated in Table 3.

Employment Characteristics

Of the total respondents 28% (n = 288) indicated that they worked in a high school setting, 39% (N = 410) in a college or university setting, 28% (n = 294) in a clinic setting, 4% (n = 41) in an industrial setting and 9% (n = 93) in a professional sports setting.

Table 3
Age and Years of Experience

<table>
<thead>
<tr>
<th>Age</th>
<th>%</th>
<th>Years of Experience</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>1%</td>
<td>&lt; 3</td>
<td>1%</td>
</tr>
<tr>
<td>30-35</td>
<td>1%</td>
<td>3-5</td>
<td>1%</td>
</tr>
<tr>
<td>36-40</td>
<td>25%</td>
<td>6-10</td>
<td>2%</td>
</tr>
<tr>
<td>41-50</td>
<td>58%</td>
<td>11-15</td>
<td>13%</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>15%</td>
<td>&gt; 16</td>
<td>83%</td>
</tr>
</tbody>
</table>

Note. n = 1040

Multiple responses were permitted for this question resulting in a total of greater than 1040 responses. When compared with the NATA data from the same
time period, very few differences were found. The main difference between the sample and the NATA data was in the number of respondents indicating they worked in a college or university (Figure 3). This discrepancy may be due to the fact that a majority of the athletic training research is produced at colleges and universities. These athletic trainers may have been more inclined to send in the survey to support athletic training research.

![Bar chart showing comparison of employment setting response with NATA data.](image)

**Figure 3.** Comparison of employment setting response with NATA data.

A majority (65%, \( n = 657 \)) of respondents indicated they worked in a city/urban environment. Another 29% (\( n = 297 \)) indicated they worked in a small community, with 6% (\( n = 64 \)) indicating that they worked in a rural environment. Fifty-three percent of all respondents indicated that they held a master's degree. Nine percent were currently pursuing an additional degree.
Salary

When respondents were asked to indicate annual salary, 16% (n = 166) indicated that they receive greater than $50,000 yearly. Twenty-seven percent (n = 266) indicated "$40,000-$50,000," 43% (n = 447) indicated "$30,000-$40,000," 8% (n = 79) indicated $20,000-$30,000, and 5% (n = 47) indicated they received less than $20,000 yearly in salary. It should be noted that no distinction was made between total salary and salary received for athletic training services. Therefore, salary might include compensation for duties other than athletic training duties. The NATA data reflected a lower salary range, but as in the above examples, the NATA data included students which would contribute to a lower overall salary for athletic trainers. In addition, NATA information included only salary directly attributed to athletic training duties.

Salary comparison between genders showed that 26% of the female athletic trainers indicated they made less than $30,000 per year as compared with only 7% of the male athletic trainers. When the top range of the salary scale is considered, 8% of the females indicated they made greater than $50,000 per year, while 34% of the male athletic trainers were in the same pay category. This discrepancy reflects the data that the NATA has published on the differences in salary between male and female athletic trainers. The NATA statistics from the same time period showed a mean salary for males of $34,650 compared to a mean for females of $28,250 (NATA, 1997). This study did not ask exact salary but instead used salary ranges so that a mean was not attainable.
Professional Isolation

When viewed as a whole, 31% of the respondents indicated that they did not have daily contact with other Certified Athletic Trainers. Another 21% indicated that they had daily contact with only one other Certified Athletic Trainer. When asked how many other health professionals (not including athletic trainers) they were in daily contact with, 20% (n = 201) of the respondents indicated “0,” while 19% (n = 194) indicated “1”. Seventeen percent indicated that they were in contact with two other health professionals while 23% (n = 241) indicated “3-5”. Finally, 21% of all respondents indicated that they were in contact with more than five health professionals daily. When analyzed by environment, 61% of rural athletic trainers work with zero to one other athletic trainer as compared to 53% of the small community and 49% of the urban athletic trainers. When contact with other health care professionals was considered, 52% of the rural athletic trainers worked with zero to one other health professionals, while 44% of small community athletic trainers and 33% of the urban athletic trainers worked with zero or one other health professional. As would be expected a larger number of urban athletic trainers worked with greater than three other health professionals (48%), while 39% of the small community athletic trainers did the same. Thirty-three percent of the rural athletic trainers worked with more than three other health professionals.
Reported Continuing Education Participation

Most athletic trainers (60%) indicated that they obtained between 9 and 13 continuing education units over the past three years. This is to be expected as the minimum requirements for CEUs in a three year period is eight.

Self-Perceived Continuing Education Needs Among Certified Athletic Trainers

In order to address the factors that affect self-perceived continuing education needs among athletic trainers, it was first necessary to identify the self-perceived needs. Need was defined by using the domains and tasks identified by the National Athletic Trainer's Association Board of Certification (NATABOC) Role Delineation Study. Within each domain are several tasks which are pertinent to the athletic trainer in his/her daily work. Domain 1 is concerned with Prevention of Athletic Injuries. Domain 2 involves Recognition, Evaluation and Immediate Care of Athletic Injuries, while Domain 3 identifies knowledge and skill about Rehabilitation and Reconditioning of Athletic Injuries. Domains 4 and 5 include knowledge and skills of Health Care Administration and Professional Development and Responsibility, respectively. Respondents were asked to rate their perceived need in each task (ranging from five to eight tasks per domain), indicating “no need” through “substantial need” (1-5). Responses within each domain were rank ordered according to frequency of response. The level of concern was determined for each domain as a whole by using an overall mean so that comparisons could be made across domains. The overall means for the five domains are presented in the following sections with the overall mean for each domain presented in Table 4.
Table 4

**Means and Standard Deviations for Perceived Continuing Education Needs within each Domain**

<table>
<thead>
<tr>
<th>Domain</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of Athletic Injuries (Domain 1)</td>
<td>3.67</td>
<td>.82</td>
</tr>
<tr>
<td>Recognition, Evaluation and Immediate Care (Domain 2)</td>
<td>3.88</td>
<td>1.06</td>
</tr>
<tr>
<td>Rehabilitation and Reconditioning of Athletic Injuries (Domain 3)</td>
<td>4.15</td>
<td>.90</td>
</tr>
<tr>
<td>Health Care Administration (Domain 4)</td>
<td>3.60</td>
<td>.98</td>
</tr>
<tr>
<td>Professional Development and Responsibility (Domain 5)</td>
<td>3.58</td>
<td>.88</td>
</tr>
</tbody>
</table>

*Note. n = 1040*

**Prevention of Athletic Injuries (Domain 1)**

The eight tasks dealing with prevention of athletic injuries are included in the analysis of the first domain. The mean level of self-perceived need for this Domain was 3.67 reflecting a moderate level of concern. When tasks within prevention of athletic injuries (Domain 1) were compared, identification of physical conditions predisposing the athlete or physically active individual to increased risk of injury/illness in athletic activity (Task 1) was most frequently cited as a continuing education need. This task would include content areas such as pre-season screening, nutrition and normal anatomy and physiology. The rest of the items in this domain were: Information on conditioning programs and testing for athletes (Task 2); construction of custom protective devices (Task 5); inspection and fitting of protective devices and athletic equipment (Task 7); education of parents and athletes
about the risks associated with participation (Task 8); information on environmental conditions and guidelines for safe participation (Task 3); taping and wrapping techniques (Task 6); and athletic facility inspection and maintenance records (Task 4). When rank ordered by means it appears Certified Athletic Trainers placed more importance on continuing education opportunities for tasks pertaining directly to patient/athlete care than on tasks which were more administrative in nature. Tasks that the Certified Athletic Trainer does daily such as taping and wrapping were not deemed as important by the respondents of this study. Means and standard deviations of each task in Domain 1 may be seen in Table 5.

Table 5

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of physical conditions predisposing the athlete to increased risk of injury/illness (Task 1)</td>
<td>3.96</td>
<td>1.06</td>
</tr>
<tr>
<td>Info on conditioning programs and testing (Task 2)</td>
<td>3.84</td>
<td>.88</td>
</tr>
<tr>
<td>Construction of protective devices (Task 5)</td>
<td>3.81</td>
<td>1.03</td>
</tr>
<tr>
<td>Fitting of protective devices (Task 7)</td>
<td>3.71</td>
<td>1.10</td>
</tr>
<tr>
<td>Education of parents and athletes about the risks associated with participation (Task 8)</td>
<td>3.64</td>
<td>1.07</td>
</tr>
<tr>
<td>Environmental conditions and guidelines for safe participation (Task 3)</td>
<td>3.62</td>
<td>1.02</td>
</tr>
<tr>
<td>Taping &amp; wrapping techniques (Task 6)</td>
<td>3.44</td>
<td>1.27</td>
</tr>
<tr>
<td>Facility inspection and maintenance records (Task 4)</td>
<td>3.36</td>
<td>1.08</td>
</tr>
</tbody>
</table>
Recognition, Evaluation, and Immediate Care (Domain 2)

Domain 2 deals with recognition, evaluation and immediate care of athletic injuries. The mean level of self-perceived need for this domain was 3.88 reflecting a moderate level of concern for continuing education dealing with recognition, evaluation and immediate care of athletic injuries. Respondents indicated that "special tests on the injured area" (Task 4) was the most important task requiring need for continuing education. Special tests might include tests for ligamentous instability, fracture tests, and other tests used to differentiate an injury. The application of special tests was followed in level of need by the task concerning determining the appropriate course of action (Task 5) and selection and application of emergency equipment and techniques (Task 7). Referral procedures (Task 8) were indicated as the area with the least need in this domain. As in Domain 1 (Prevention of Athletic Injuries) the rank order of self-perceived need for continuing education in this domain indicates that Certified Athletic Trainers are most concerned about evaluating the injury via special tests than any of the other tasks within this domain.

This domain typifies the role of the athletic trainer in that often he/she is the first to evaluate and care for the athletic injury. The means and standard deviations of the self-perceived need for continuing education within Domain 2 are listed in Table 6.

Perceived need listed by anatomical area. While the NATA has identified specific tasks in which a Certified Athletic Trainer must be competent, it is also possible that the Certified Athletic Trainers need for additional education may be greater for information on injuries to some parts of the body than others. In addition
Table 6

Self-Perceived Need in Recognition, Evaluation and Immediate Care (Domain 2)

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 4 Special Tests on Involved Area</td>
<td>4.27</td>
<td>.94</td>
</tr>
<tr>
<td>Task 5 Determining appropriate course of action</td>
<td>4.13</td>
<td>1.08</td>
</tr>
<tr>
<td>Task 7 Selection and application of emergency equip. &amp; techniques</td>
<td>3.99</td>
<td>1.16</td>
</tr>
<tr>
<td>Task 6 Administering first aid or immediate care techniques</td>
<td>3.93</td>
<td>1.23</td>
</tr>
<tr>
<td>Task 3 Palpation of the involved area</td>
<td>3.83</td>
<td>1.26</td>
</tr>
<tr>
<td>Task 2 Inspection of the involved area</td>
<td>3.76</td>
<td>1.30</td>
</tr>
<tr>
<td>Task 1 Obtaining history from the athlete</td>
<td>3.63</td>
<td>1.35</td>
</tr>
<tr>
<td>Task 8 Referral procedures</td>
<td>3.53</td>
<td>1.28</td>
</tr>
</tbody>
</table>

Note. n = 1040

to the NATA identified tasks, respondents were asked to indicated their sense of need for continuing education for recognition, evaluation and immediate care of various anatomical sites and/or conditions. Respondents indicated considerable perceived need on all listed anatomical areas or conditions. Means for all listed anatomical areas and conditions were greater than 3.81 indicating moderate to substantial need for each area. Subjects in this study indicated the most perceived need for continuing education within the listed anatomical areas as the back and neck. The area of least concern was the foot ankle and lower leg. However, the mean for this area was 3.82 which indicated a higher level of self-perceived need for continuing education than any of the means for individual tasks within Health Care
Administration (Domain 4) and Professional Development and Responsibility (Domain 5). The means for the level of importance of continuing education indicated by the respondents for the anatomical areas were also higher than the overall means of Domains 4 and 5. This indicates a higher level of concern by certified athletic trainers to obtain continuing education that is specific to the evaluation and treatment of certain injuries and/or illnesses rather than continuing education time that is spent on health care administration or on tasks within Domain 5 such as public relations skills, and legal or ethical parameters. This may reflect that the major premise of the athletic trainer's job is to provide the immediate care of injuries. The administrative aspects of the job are not the main focus of most athletic training positions. Means and standard deviations for continuing education needs according to anatomical areas are presented in Table 7.

Rehabilitation and Reconditioning of Athletic Injuries (Domain 3)

This domain showed the highest overall level of self-perceived need with M = 4.15. The task most frequently identified as having the highest level of need was construction of rehabilitation programs for the injured athlete (Task 2). It was followed by identifying injury/illness status, functional tests and measurements (Task 1) and selection of appropriate rehabilitation equipment, techniques and modalities (Task 3). Administering rehabilitation techniques and procedures to the injured athlete (Task 4) and evaluation of readiness and functional status of the athlete (Task 5) rounded out the domain. The means and standard deviations of this domain are listed in Table 8.
Table 7

Self-Perceived Need for CEUs According to Anatomical Sites

<table>
<thead>
<tr>
<th>Anatomical Area/Condition</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck</td>
<td>4.35</td>
<td>0.94</td>
</tr>
<tr>
<td>Back</td>
<td>4.31</td>
<td>0.91</td>
</tr>
<tr>
<td>Emergency Procedures</td>
<td>4.26</td>
<td>1.00</td>
</tr>
<tr>
<td>Shoulder</td>
<td>4.15</td>
<td>1.00</td>
</tr>
<tr>
<td>Head</td>
<td>4.11</td>
<td>1.01</td>
</tr>
<tr>
<td>Systemic Illnesses</td>
<td>4.08</td>
<td>0.96</td>
</tr>
<tr>
<td>Abdomen</td>
<td>4.01</td>
<td>0.96</td>
</tr>
<tr>
<td>Elbow, Wrist &amp; Hand</td>
<td>3.96</td>
<td>1.02</td>
</tr>
<tr>
<td>Hip</td>
<td>3.86</td>
<td>1.03</td>
</tr>
<tr>
<td>Knee</td>
<td>3.86</td>
<td>1.15</td>
</tr>
<tr>
<td>Lower leg, ankle &amp; foot</td>
<td>3.82</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Note.  n = 1040

Health Care Administration (Domain 4)

Domain 4 contains tasks pertaining to health care administration, record keeping and budgeting. Responses for this domain toward continuing education needs indicated less overall concern than the first three domains (M = 3.66). Developing a plan for emergencies, referral and management of injuries (Task 6) was ranked first among this group in need, followed by establishing written protocols for injury management (Task 4) and maintenance of health care records, documentation (Task 1). Compliance with safety and sanitation standards (Task 2), Personnel
Table 8

Self-Perceived Need for Rehabilitation and Reconditioning (Domain 3)

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 Identifying injury status, functional tests, physiological response of the body to therapeutic modalities and exercise.</td>
<td>4.18</td>
<td>.99</td>
</tr>
<tr>
<td>Task 2 Construction of rehabilitation programs</td>
<td>4.19</td>
<td>.99</td>
</tr>
<tr>
<td>Task 3 Selection of appropriate rehabilitation equipment</td>
<td>4.16</td>
<td>.97</td>
</tr>
<tr>
<td>Task 4 Administering rehabilitation techniques and procedures</td>
<td>4.15</td>
<td>1.03</td>
</tr>
<tr>
<td>Task 5 Evaluation of readiness and functional status of the athlete</td>
<td>4.07</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Note. n = 1040

Table 9

Self-Perceived Need for Health Care Administration (Domain 4)

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 6 Developing an emergency plan, referral and management of injuries/illnesses</td>
<td>3.79</td>
<td>1.23</td>
</tr>
<tr>
<td>Task 4 Establishing written protocols for injuries</td>
<td>3.74</td>
<td>1.07</td>
</tr>
<tr>
<td>Task 1 Maintenance of health care records, documentation</td>
<td>3.71</td>
<td>1.18</td>
</tr>
<tr>
<td>Task 2 Compliance with safety and sanitation standards</td>
<td>3.64</td>
<td>1.13</td>
</tr>
<tr>
<td>Task 3 Personnel management</td>
<td>3.50</td>
<td>1.12</td>
</tr>
<tr>
<td>Task 5 Purchasing practices, budgeting</td>
<td>3.23</td>
<td>1.16</td>
</tr>
</tbody>
</table>

Note. n = 1040
management (Task 5), and purchasing practices, bid letting and budgeting (Task 3) rounded out the domain. Means and standard deviations for self-perceived needs in health care administration are listed in Table 9.

**Professional Development and Responsibility (Domain 5)**

Domain 5 includes tasks regarding professional development, communication skills, research and public relations. The respondents indicated the least concern of all domains for continuing education in the area of professional development and responsibility (M = 3.58). This may be due in part to the fact that the tasks in this domain do not deal directly with the health care of the athlete. The tasks within this domain were rank ordered according to mean level of indicated need for continuing education. Obtaining information about state, local and federal regulations regarding athletic training practices (Task 3) ranked first among this domain. It was followed by obtaining current literature about sports medicine issues (Task 1) and developing interpersonal communication skills (Task 2). Tasks 4 & 5, Information on how to conduct sports medicine research and Public Relations were seen as the areas within this domain for which the least need for continuing education was indicated. Means and standard deviations of the indicated level of continuing education need within Domain 5 can be seen in Table 10.

**Other Indicated Needs for Continuing Education**

Following the questions within each domain, space was provided for subjects to identify: "other topics within this domain that you feel continuing education is needed." Very few responses were given for other needs within each domain.
Domain 4, Health Care Administration had the highest response with areas of additional self-perceived continuing education needs listed as personnel management.

Table 10

Self-Perceived Need for CEUs Concerning Professional Development and Responsibility (Domain 5)

<table>
<thead>
<tr>
<th>Task</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulations regarding athletic training practices, ethical and legal parameters, insurance (Task 3)</td>
<td>3.83</td>
<td>1.04</td>
</tr>
<tr>
<td>Obtaining current literature about sports medicine issues (Task 1)</td>
<td>3.73</td>
<td>1.16</td>
</tr>
<tr>
<td>Developing interpersonal communication skills, motivational techniques, etc. (Task 2)</td>
<td>3.61</td>
<td>1.10</td>
</tr>
<tr>
<td>Methods of informing the general public, public relations techniques (Task 5)</td>
<td>3.46</td>
<td>1.09</td>
</tr>
<tr>
<td>How to conduct sports medicine research (Task 4)</td>
<td>3.27</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Note. n = 1040

business management, third party providers and information on outcome studies as well as legal issues. Other predominant themes were “specific conditions as opposed to general themes” indicated for both Domain 1 and Domain 2 by many of the athletic trainers who chose to answer the open-ended questions. Open-ended responses for Domain 2 also contained “eating disorders” and “dermatology.” Respondents that chose to answer the open-ended questions for other topics for continuing education within Professional Development and Responsibility (Domain 5)
indicated: "tenure and promotion issues," "public relations ideas," and "sensitivity training" as areas of interest. No other predominant themes or suggestions were given within any of the domains. It should be noted that the open-ended questions elicited very few responses. Fewer than 300 respondents chose to write anything in the space available for open response to other topics of interest.

Factors Affecting Self-Perceived Continuing Education Needs

Once the self-perceived continuing education needs were identified, the primary research question which was "What factors affect self-perceived continuing education needs among certified athletic trainers?" could be analyzed. Multiple regression analysis was used to determine the influence of each factor: employment setting, years of experience, environment, employer support, age, professional isolation, and education on the perception of need for additional education in each of the domains of knowledge in athletic training.

Prevention of Athletic Injuries (Domain 1)

The variables tested as predictors of the importance of continuing education in Domain 1 were as follow: employment setting, years of experience, employee support, age, educational background, environment and professional isolation. Step-wise multiple regression was used to analyze the contribution of the predictor values to the self-perceived educational needs in Domain 1. Individual Betas and Standard Errors of the predictor variables are presented in Table 11. During the first step of the multiple regression, the only variable to enter at 95% confidence interval was gender. Gender was a significant factor in predicting the importance of continuing
education for the various tasks dealing with prevention of athletic injuries. The second step on the multiple regression of Domain 1 revealed years of experience as a significant factor and step three of the regression added professional isolation. Although statistical significance was achieved, gender, years of experience and professional isolation accounted for less than 2% of the variance in this domain. This may have been due to several factors. First, due to the large n in the study, statistical significance was obtained, but does not necessarily account for a large percentage of the variance. Secondly, there was very little variance within the

Table 11
Summary of Regression Analysis for Variables Predicting Importance of Tasks Within Prevention of Athletic Injuries (Domain 1) N=1040

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.12</td>
<td>.05</td>
<td>-.07*</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Experience</td>
<td>-.09</td>
<td>.04</td>
<td>.06*</td>
</tr>
<tr>
<td>Gender</td>
<td>-.13</td>
<td>.05</td>
<td>-.08*</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Experience</td>
<td>.09</td>
<td>.04</td>
<td>-.07</td>
</tr>
<tr>
<td>Gender</td>
<td>-.14</td>
<td>.05</td>
<td>-.09</td>
</tr>
<tr>
<td># of ATCs in workplace</td>
<td>-.03</td>
<td>.02</td>
<td>-.06*</td>
</tr>
</tbody>
</table>

Note. R² = .005 for Step 1; R² = .01 for Step 2; R² = .02 for Step 3 (p < .05).
domain itself across all subjects. The mean for Domain 1 was 3.67 with a standard deviation of .82. This small variance across all subjects may be due to the fact that CEUs are required by the NATA; therefore, they are deemed important or because these tasks are already defined by the NATA as being important.

Recognition, Evaluation, and Immediate Care of Athletic Injuries (Domain 2)

The same analysis was performed as above using employment setting, years of experience, gender, professional isolation and employer support as the independent variables and self-perceived need for continuing education in recognition, evaluation and immediate care of athletic injuries (Domain 2) as the dependent variable. Gender was the only variable to enter the regression at the .05 level (B = -0.32, SE B = 0.067, β = -0.15) p < .05. As in Domain 1, statistical significance was achieved, however, R^2 is only .02, thus gender accounts for only 2% of the variance in self-perceived need for continuing education in the knowledge of the tasks within Domain 2.

Rehabilitation and Reconditioning of Athletic Injuries (Domain 3)

Multiple regression analysis again revealed gender to be a significant contributor to the self-perceived continuing education needs of the Certified Athletic Trainers in this study. The first step of the regression equation revealed gender as a significant variable (B = -0.18, SE B = 0.057, β = -0.09) p < .05. Again, R^2 was considerably low at .01. Employment setting entered the regression analysis on the second step increasing the R2 to .02. The Betas for Employment setting are as follows: B = -.05, SE B = .02, β = -.09 (p < .05). When means are examined in relation to the
multiple regression results, it can be interpreted that Certified Athletic Trainers
working in the clinic setting, whether full time or in conjunction with another setting,
see less need for continuing education in rehabilitation techniques than athletic
trainers in the traditional settings of the high school or college (see Table 12).
Generally, Certified Athletic Trainers in the clinic setting are performing numerous
and thorough rehabilitation programs with athletes for the majority of their work
day. Certified Athletic Trainers in other settings, however, may be performing a
smaller number of rehabilitation programs during the course of their job.

Table 12

Mean Level of Need for Continuing Education for each Domain by Employment

<table>
<thead>
<tr>
<th>Employment Setting</th>
<th>Domain 1</th>
<th>Domain 2</th>
<th>Domain 3</th>
<th>Domain 4</th>
<th>Domain 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>3.85 (.73)</td>
<td>3.96 (.95)</td>
<td>4.24 (.71)</td>
<td>3.68 (.96)</td>
<td>3.52 (.88)</td>
</tr>
<tr>
<td>College</td>
<td>3.52 (.81)</td>
<td>3.67 (1.14)</td>
<td>4.29 (.91)</td>
<td>3.55 (.98)</td>
<td>3.60 (.85)</td>
</tr>
<tr>
<td>Clinic</td>
<td>3.67 (.82)</td>
<td>3.97 (1.03)</td>
<td>4.13 (1.0)</td>
<td>3.56 (.98)</td>
<td>3.59 (.87)</td>
</tr>
<tr>
<td>Industrial</td>
<td>3.50 (1.21)</td>
<td>4.06 (1.19)</td>
<td>4.40 (.86)</td>
<td>3.65 (.92)</td>
<td>3.65 (.92)</td>
</tr>
<tr>
<td>Professional</td>
<td>3.79 (.84)</td>
<td>4.15 (1.07)</td>
<td>4.26 (1.07)</td>
<td>3.65 (.92)</td>
<td>3.59 (.93)</td>
</tr>
</tbody>
</table>

Note. n = 1040

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Health Care Administration (Domain 4)

Gender again was the only independent variable in this set to enter the multiple regression equation at the .05 level. Beta for gender was -.28 with $SE_B$ of .06 and $\beta$ of -.14. As in the above domains, although statistical significance was achieved, the $R^2$ was .02. Therefore, gender accounted for only 2% of the variance in responses within Health Care Administration (Domain 4). As in other areas that have had fewer administrative positions held by women, female athletic trainers may see a greater need for continuing education than male athletic trainers in the area of administration for possible career advancement into those areas.

Professional Development and Responsibility (Domain 5)

Employer support contributed significantly to the self-perceived need for continuing education in Professional development and responsibility (Domain 5). Employer support was significant, $p < .05$ ($B = -.12$, $SE_B = .04$, $\beta = -.10$). $R^2$ for Domain 5 was .01. The negative beta indicates that those athletic trainers who received full or partial employer support for continuing education did not perceive this domain to be as critical as those who did not receive employer support. Perhaps athletic trainers who received employer support for continuing education activities viewed attendance at these activities as part of their job requirement. Those who did not receive support from their employer to attend the continuing education duties may view continuing education in the professional development and responsibility domain as part of professional growth. Perhaps those who did not receive employer support for continuing education see attending continuing education activities as a

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chance to further the profession or their own career through developing interpersonal communication skills (Task 2).

**Participation Factors**

The second area of interest in this study was an understanding of those factors which influence certified athletic trainers current participation in continuing education. Reported attendance at continuing education activities was analyzed for all respondents. In addition, the analysis was done by employment setting, years of experience, gender, influence of minor children at home and employer support. Perceived importance of various reasons to attend continuing education activities was also analyzed in this section.

**Attendance at CEU Activities**

Athletic Trainers in the study indicated attendance at national meetings the most popular, with greater than 40% of the respondents indicating they obtained more than three CEUs from the National symposium and 22% indicating they obtained more than six CEUs at that source. District meetings and conferences offered through NATA providers were also popular choices among Certified Athletic Trainers to fulfill continuing education requirements. Greater than 30% of respondents received more than three CEUs at those activities. College courses, publication and home study were the least popular methods of attaining CEUs in the last reporting period.

Step-wise multiple regression analysis was performed to determine the contribution of personal characteristics to the total number of CEUs received during the last reporting period. The set of personal characteristic variables contained...
employment setting, temporal convenience, geographical convenience, educational background, professional isolation, employer support, and cost. Professional isolation was the most significant factor in determining the total number of CEUs obtained during the past three year reporting period. Those who worked with fewer Certified Athletic Trainers and fewer health professionals indicated they attended more CEU opportunities than their colleagues who were not as professionally isolated. Employer support was also a significant indicator of total number of CEUs obtained as it entered on the second step of the multiple regression. Years of experience entered on the third step. Betas and Standard Errors for the significant variables may be seen in Table 13. The fact that professional isolation is a good predictor of total CEUs obtained, indicates that there may be a concerted effort by those Certified Athletic Trainers who work alone to attend CEU opportunities. It is also not surprising that employer support is a good predictor of total CEUs obtained. If the athletic trainer has assistance with the cost of the activity and travel expenses, there would be one less barrier to attending continuing education activities.

Importance of Factors in Determining Attendance at CEU Activities

There are potentially many reasons why certified athletic trainers chose to participate in continuing education. This section analyzes why athletic trainers attend continuing education. The survey asked the respondents to rate on a five-point Likert-type scale, the importance of each of the listed reasons. When asked to
Table 13

Multiple Regression Analysis of Factors Affecting Total CEU Attendance

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step one</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of ATCs in workplace</td>
<td>-.22</td>
<td>.03</td>
<td>-.25*</td>
</tr>
<tr>
<td>Step two</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer support</td>
<td>.26</td>
<td>.05</td>
<td>.15*</td>
</tr>
<tr>
<td># of ATCs in workplace</td>
<td>-.18</td>
<td>.02</td>
<td>-.20*</td>
</tr>
<tr>
<td>Step three</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Experience</td>
<td>.30</td>
<td>.07</td>
<td>.13*</td>
</tr>
<tr>
<td>Employer Support</td>
<td>.26</td>
<td>.05</td>
<td>.15*</td>
</tr>
<tr>
<td># of ATCs in workplace</td>
<td>-.19</td>
<td>.03</td>
<td>-.21*</td>
</tr>
</tbody>
</table>

*R² for Step 1 = .06; R² for Step 2 = .08; R² for Step 3 = .10; *p < .05

Respond to importance of various factors in attending continuing education, the statement that “CEUs are required to maintain certification” had the highest percentage of “somewhat important” and “very important.” Ninety-four percent of all respondents indicated it was at least “somewhat important.” The mean for the perceived importance of “required to maintain certification” was 4.58. Table 14 presents the means and standard deviations of the importance of the listed reasons in determining attendance at CEU activities for all subjects.

Notice the large standard deviation associated with the importance of “participation paid by employer.” This variable accounts for almost 20% (R² = .196) of the variance among the reasons to attend continuing education opportunities.
when subjected to regression analysis. Cost accounts for another 8% ($R^2 = .079$) of the variance. To further analyze the relationship among the reasons for attending CEU activities, simple correlations were performed among the variables. When correlations among the variables were examined, it was noted that cost ($r = .38$) and location ($r = .50$) were positively correlated with time. Content ($r = .23$), obtaining new skills ($r = .54$), improving skills ($r = .55$), opportunity to network ($r = .15$) and reputation of faculty ($r = .20$) were correlated with the need to remain current. Cost, location and time may all be seen as factors of convenience. Alternatively, the factors of content, obtaining new skills, improving skills.

Table 14

<table>
<thead>
<tr>
<th>Reason</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required to maintain certification</td>
<td>4.58</td>
<td>.86</td>
</tr>
<tr>
<td>Need to remain current</td>
<td>4.54</td>
<td>.75</td>
</tr>
<tr>
<td>Opportunity to obtain new skill</td>
<td>4.46</td>
<td>.80</td>
</tr>
<tr>
<td>Opportunity to improve skill</td>
<td>4.39</td>
<td>.86</td>
</tr>
<tr>
<td>Content</td>
<td>4.35</td>
<td>.86</td>
</tr>
<tr>
<td>Convenient time</td>
<td>4.17</td>
<td>.97</td>
</tr>
<tr>
<td>Cost</td>
<td>3.70</td>
<td>1.17</td>
</tr>
<tr>
<td>Participation paid by employer</td>
<td>3.35</td>
<td>1.44</td>
</tr>
<tr>
<td>Opportunity to network</td>
<td>3.24</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Note. n = 1040

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opportunity to network and the reputation of faculty would be a way of remaining current in the profession and may point to the quality or relevancy of a continuing education activity.

Factors in determining importance of reasons. The independent variables (personal characteristic factors) were also examined for correlations among the group. Among the variables in the personal characteristics group were employment setting, environment, employer support for continuing education opportunities, gender, years of experience, children at home, and professional isolation. There was a negative correlation between gender ($r = -.21$) and salary as mentioned before due to female athletic trainers making less than their male counterparts. Employment setting ($r = .18$) and the number of athletic trainers with whom the respondent works ($r = .19$) also correlated with salary. Certified athletic trainers in clinic, industrial and professional settings earn more than those in the high school or college ranks and it is possible that salary increases as the number of professionals in the practice setting increases. The number of professional colleagues and salaries are greater in the non-school settings.

Interaction of the reasons to attend CEU opportunities and the personal characteristics. Multiple regression analysis was performed to determine the extent to which personal characteristics contributed to the importance of reasons for participating in continuing education. Each of the standardized regression coefficients is presented in Table 15. Trying to compare so many variables is quite cumbersome and gives a very fragmented view of the extent to which the personal
characteristics contributed to the importance of reasons for participating in continuing education. Several personal characteristics variables contribute significantly to the importance of reasons for attending continuing education activities. Employment setting and minor children at home both have a significant relationship with location. Professional isolation has a significant relationship with faculty and importance of having participation paid by employer. However, even with these individual relationships seen in Table 15, it is difficult to get a real understanding of the inter-relationships among these variables. In order to get a more holistic view of the inter-relationships and interactions among the variables, a canonical correlation was performed to determine if any patterns existed among the variables.

Canonical correlation. Canonical correlation is a technique for analyzing the relationship between two sets of variables. In this particular instance, the reasons for participation were the dependent variables while the personal characteristics of the respondents served as the independent variables. Canonical analysis generates pairs of linear combinations of variables, one linear combination from each of the two sets. These linear combinations are called canonical variates. According to Tabachnick & Fidell (1996):

The first pair of canonical variates maximizes the correlation between a linear combination of one set and a linear combination of the other. A second pair of canonical variates, if calculated, is uncorrelated with the first pair and maximizes the correlation between linear combinations of variables after the variance due to the first pair of canonical variates has been removed. (p. 146)

Canonical correlation was run with SAS CANCORR Statistical Analysis Software (Release 6.08) on a Microvax 3100-80 computer. SAS was used because of its
Table 15

Standardized Regression Coefficients for Importance of Reasons to Participate in Continuing Education Activities by Personal Characteristic Factors

<table>
<thead>
<tr>
<th>Personal Charact.</th>
<th>Require</th>
<th>Time</th>
<th>Location</th>
<th>Content</th>
<th>Faculty</th>
<th>Network</th>
<th>Paid</th>
<th>Cost</th>
<th>Current</th>
<th>Improve</th>
<th>New</th>
<th>Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emp. Set</td>
<td>-.03</td>
<td>-.08</td>
<td>-.11*</td>
<td>.03</td>
<td>.09*</td>
<td>-.07</td>
<td>.07</td>
<td>-.15*</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>Emp. Sup.</td>
<td>-.02</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
<td>.08</td>
<td>.02</td>
<td>.15*</td>
<td>-.01</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Envir.</td>
<td>-.04</td>
<td>-.05</td>
<td>.01</td>
<td>-.01</td>
<td>-.02</td>
<td>.06</td>
<td>-.06</td>
<td>-.02</td>
<td>-.02</td>
<td>-.05</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>Years</td>
<td>.04</td>
<td>.01</td>
<td>-.01</td>
<td>-.01</td>
<td>-.02</td>
<td>.06</td>
<td>-.06</td>
<td>-.02</td>
<td>-.02</td>
<td>-.05</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.07*</td>
<td>.03</td>
<td>.08*</td>
<td>.14*</td>
<td>.09*</td>
<td>.01</td>
<td>-.03</td>
<td>.03</td>
<td>.04</td>
<td>.05</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Salary</td>
<td>-.09*</td>
<td>-.07</td>
<td>-.02</td>
<td>.10*</td>
<td>.09*</td>
<td>.01</td>
<td>-.01</td>
<td>-.09*</td>
<td>.06</td>
<td>.05</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td># of ATCs</td>
<td>-.04</td>
<td>-.03</td>
<td>-.12*</td>
<td>.13*</td>
<td>.13*</td>
<td>.09*</td>
<td>.18*</td>
<td>.06</td>
<td>.06</td>
<td>.05</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Child Factor</td>
<td>.01</td>
<td>-.09*</td>
<td>-.16*</td>
<td>.05</td>
<td>.05</td>
<td>.02</td>
<td>-.06</td>
<td>-.10*</td>
<td>.01</td>
<td>-.01</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>

Note. *p < .05
ability to run a canonical correlation with greater ease than SPSS and its capability of handling the large number of variables in this study. In this study canonical correlation was performed between the set of reasons to participate variables and the set of personal characteristics variables. Increasingly larger numbers in the reasons set indicated greater self-perceived importance of the reason. Within the personal characteristics set, employment setting was treated as high school, college, clinic, industrial, professional as one through five, respectively. Years of experience, salary, professional isolation, and employer support were all categorized using ascending scales (one though five). Males were represented by a number one and females number two. Employment environment was categorized by urban (1), small community (2), and rural (3). No within-set multivariate outliers were identified at \( p < .01 \), and cases with missing data were deleted leaving \( n = 936 \) for this analysis.

The first canonical correlation was .40 (16% of the variance); the second was .21 (3% of the variance). The remaining canonical correlations were not significant. The first two pairs of canonical variates, therefore, accounted for the significant relationships between the two sets of variables. Data on the first two pairs of canonical variates appear in Tables 16 and 17. Shown in the table are correlations between the variables and the canonical variates, standardized canonical variate coefficients, within-set variance accounted for by the canonical variates (percent of variance), and redundancies. With a cut-off correlation of .30, the variables in the reasons set that were correlated with the first canonical variate were location (-.50), content (.38) and reputation of faculty (.51), participation paid by employer (.42)
and cost of the activity (.52). Among the personal characteristics variables, employment setting (.64), salary (.52) and number of ATCs with whom the respondent works (.73) correlated with the first canonical variate. The first pair of canonical variates indicated that there is a significant relationship among content, participation paid by employer, cost of activity, employment setting, salary and number of athletic trainers in the workplace as well as a negative relationship with location. This relationship may mean that the athletic trainers who work in a “non-traditional” setting (clinic, industrial and professional) also tend to have higher salaries and work with more athletic trainers. Those athletic trainers perceive a higher level of importance of content, and reputation of the faculty than athletic trainers from the traditional settings of high school and college (who generally make less and work with fewer athletic trainers). An additional interpretation may be that location is not important as long as financial support is provided by the employer. For those athletic trainers for whom employer support is not received, the opposite may hold true.

The second canonical variate in the reason set included time (.41), location (.72), content (.68), and reputation of the faculty (.48) while the corresponding canonical variate from the personal characteristic set comprised gender (.55) and minor children at home (.67). There is apparently a relationship between gender and responsibility for children and the importance of time, location, content and reputation of faculty. Being female or being responsible for children at home are predictive of placing greater importance on time, location, content and reputation of
the faculty. The combinations of these variables might indicate a cost/benefit tradeoff that determines the participants perceived importance of various reasons to attend CEU activities depending on their personal situation. Those certified athletic trainers who have minor children at home may have to be more selective in their continuing education activities and thus feel that time and location as well as content and reputation of the faculty are important in their reason to attend. It seems reasonable that if opportunity to attend CEUs is limited by family responsibility or financial situation (perhaps in the case of many of the female athletic trainers who make less than their male counterparts), one must be selective in weighing the cost versus the benefits of attending various continuing education activities.

**Decision to Attend/Not Attend a Particular CEU Activity**

The previous section examined the reasons why athletic trainers attend continuing education. Once the athletic trainer has made the decision to attend continuing education, what structural characteristics of a specific offering are important to the athletic trainer in his/her decision to attend or not to attend that particular activity? Several questions were asked of the respondents on the importance of various factors in their decision to attend or not to attend specific continuing education activities. Canonical correlation was again performed between a set of attendance factors including: (a) travel cost, (b) number of CEU hours obtainable at activity, (c) location (city, resort, etc), (d) reputation of presenters, (e) distance, (f) registration fee, and (g) relevance of topic. Table 18 presents the means and standard deviations of each of the variables in the attendance group.
Table 16

**Correlations, Standardized Canonical Coefficients, Percent of Variance, and Redundancies for Importance of Reasons to Attend CEU Opportunities and Their Corresponding Canonical Variates**

<table>
<thead>
<tr>
<th>Reason Set</th>
<th>First canonical variate</th>
<th>Second canonical variate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correlation</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Required</td>
<td>-.19</td>
<td>-.08</td>
</tr>
<tr>
<td>Time</td>
<td>-.28</td>
<td>.06</td>
</tr>
<tr>
<td>Location</td>
<td>-.50</td>
<td>-.36</td>
</tr>
<tr>
<td>Content</td>
<td>.38</td>
<td>.26</td>
</tr>
<tr>
<td>Faculty</td>
<td>.51</td>
<td>.42</td>
</tr>
<tr>
<td>Network</td>
<td>.03</td>
<td>-.07</td>
</tr>
<tr>
<td>Paid</td>
<td>.42</td>
<td>.45</td>
</tr>
<tr>
<td>Cost</td>
<td>.52</td>
<td>-.41</td>
</tr>
<tr>
<td>Current</td>
<td>.21</td>
<td>-.15</td>
</tr>
<tr>
<td>Improve Skill</td>
<td>.13</td>
<td>-.15</td>
</tr>
<tr>
<td>New Skill</td>
<td>.21</td>
<td>.10</td>
</tr>
<tr>
<td>% of variance</td>
<td>.16</td>
<td>.17</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.02</td>
<td>.01</td>
</tr>
</tbody>
</table>

**Note:** $R_c$ for first variate = .40, $R_c$ for second variate = .21
Table 17

Correlations, Standardized Canonical Coefficients, Percent of Variance, and Redundancies for Personal Characteristics and Their Corresponding Canonical Variates

<table>
<thead>
<tr>
<th>Personal Characteristics</th>
<th>First canonical variate Correlation Coefficient</th>
<th>Second canonical variate Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empset</td>
<td>.64</td>
<td>.52</td>
</tr>
<tr>
<td>Empsup</td>
<td>.06</td>
<td>.11</td>
</tr>
<tr>
<td>Envir</td>
<td>-.25</td>
<td>-.07</td>
</tr>
<tr>
<td>Experience</td>
<td>-.04</td>
<td>-.05</td>
</tr>
<tr>
<td>Gender</td>
<td>-.08</td>
<td>.04</td>
</tr>
<tr>
<td>Salary</td>
<td>.52</td>
<td>.33</td>
</tr>
<tr>
<td># of ATCs</td>
<td>.73</td>
<td>.62</td>
</tr>
<tr>
<td>Child Factor</td>
<td>.17</td>
<td>.13</td>
</tr>
<tr>
<td>% Variance</td>
<td>.35</td>
<td>.04</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.06</td>
<td>.01</td>
</tr>
</tbody>
</table>

*Note.* Empset = Employment Setting; Empsup = Employer support for CEU activities

The group of attendance factors was analyzed with the group of personal characteristics used in the earlier analysis. The correlations, standardized canonical coefficients, canonical correlations, percent of variance and redundancies among attendance factors and personal characteristics and their corresponding canonical variates are presented in Table 19.
Table 18

Importance of Factors in Decision to Attend/Not Attend CEU Activities, All Respondents

<table>
<thead>
<tr>
<th>Factors</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEU Credit Hours</td>
<td>4.31</td>
<td>.93</td>
</tr>
<tr>
<td>Travel Cost</td>
<td>4.33</td>
<td>.94</td>
</tr>
<tr>
<td>Reputation of presenters</td>
<td>3.87</td>
<td>.89</td>
</tr>
<tr>
<td>Location (resort, city)</td>
<td>3.96</td>
<td>1.04</td>
</tr>
<tr>
<td>Relevance of topic</td>
<td>4.44</td>
<td>.74</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>4.05</td>
<td>.98</td>
</tr>
<tr>
<td>Time of year</td>
<td>4.19</td>
<td>.97</td>
</tr>
<tr>
<td>Distance</td>
<td>4.03</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. n = 1040

There were two significant canonical variates which arose from these two groups of variables. The first canonical correlation was .31 (10% variance), with the second canonical correlation at .20 (4% of the variance). The factors from the attendance reasons that correlated with the first canonical variate ($r > .30$) were travel costs ($r = .65$), distance ($r = .66$), registration costs ($r = .63$) and time ($r = .39$). The reputation of the presenters negatively correlated with the canonical variate ($r = - .37$). Employer support ($r = .67$) and environment ($r = .28$) from the personal characteristics group also correlated with the canonical variate. Employment setting correlated negatively with the same variable ($r = -.81$). The positive correlations in both groups and their canonical variate are all related in some way to the personal...
Table 19

Correlations, Standardized Canonical Coefficients, Canonical Correlations, Percent of Variance, and Redundancies Between Attendance Factors and Personal Characteristics and Their Corresponding Canonical Variates.

<table>
<thead>
<tr>
<th>Factors and Personal Character</th>
<th>First Canonical Variate</th>
<th>Second Canonical Variate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>Coefficient</td>
</tr>
<tr>
<td><strong>Attendance Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Cost</td>
<td>.65</td>
<td>.36</td>
</tr>
<tr>
<td># of CEUs</td>
<td>-.04</td>
<td>-.27</td>
</tr>
<tr>
<td>Location</td>
<td>.28</td>
<td>.04</td>
</tr>
<tr>
<td>Distance</td>
<td>.66</td>
<td>.33</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>.63</td>
<td>.33</td>
</tr>
<tr>
<td>Relevancy of Topics</td>
<td>-.26</td>
<td>-.29</td>
</tr>
<tr>
<td>Re. of Presenters</td>
<td>-.37</td>
<td>-.35</td>
</tr>
<tr>
<td>Time</td>
<td>.40</td>
<td>.26</td>
</tr>
<tr>
<td>% Variance</td>
<td>.23</td>
<td>.15</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Personal Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emp. Setting</td>
<td>-.81</td>
<td>-.67</td>
</tr>
<tr>
<td>Emp. Support</td>
<td>.67</td>
<td>.56</td>
</tr>
<tr>
<td>Envir.</td>
<td>.28</td>
<td>.16</td>
</tr>
<tr>
<td>Experience</td>
<td>-.12</td>
<td>-.12</td>
</tr>
<tr>
<td>Gender</td>
<td>.13</td>
<td>.04</td>
</tr>
<tr>
<td># of ATCs</td>
<td>.15</td>
<td>.11</td>
</tr>
<tr>
<td>Child Factor</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>% variance</td>
<td></td>
<td>.40</td>
</tr>
<tr>
<td>Redundancy</td>
<td>.04</td>
<td>.01</td>
</tr>
</tbody>
</table>

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cost of receiving continuing education. The negative correlation of employment setting to these other factors indicates that athletic trainers in the high school and college settings see these as the more important issues concerning the attendance or non-attendance at specific continuing education activities. The athletic trainers in more rural settings fit the model for this canonical variate more so than their colleagues in more urban settings, therefore perceiving the economical or cost factors as having significant importance in their decision to attend/not attend specific continuing education activities. It is often more expensive, if not also more difficult for persons living in rural environments to get to continuing education activities than it is for their counterparts in urban settings; therefore the “personal cost” may be higher with regards to both time and economical cost for those working in the more rural environments. To achieve the most continuing education value for their personal cost, athletic trainers working in more rural environments may have to chose more carefully their continuing education activities.

It was expected that minor children at home would be a bigger factor in the decision to attend specific CEU activities. This was not the case, however, since the variable of children did not correlate with either canonical variate. It may be that the reasons that may limit an athletic trainer with children at home from attending certain continuing education activities may have been covered by the cost, time and distance factors. An alternative explanation may be that given the general influence of children at home on the reasons for attending continuing education, this variable does not influence which opportunity the athletic trainer chooses to attend.

The second canonical variate had high loadings of relevance ($r = .51$), distance ($r = .57$), and reputation of presenters ($r = .32$). Although still correlated, distance ($r = .57$) and registration fee ($r = .38$) were less closely correlated with the first canonical variate. Time was negatively correlated with the second canonical variate ($r = -.48$). The personal characteristics group showed high correlations from gender.
(r = .78) and the number of athletic trainers with whom the respondent works (r = .53). Although distance and registration fee are indicated as important in both canonicals, (r = .66 and .63 with the first canonical and r = .57 and .38 with the second) clearly, they are more important in the first canonical than the second. The second canonical indicates a tendency towards the importance of “quality” of the CEU opportunity with higher correlations of relevance and reputation of the presenters. It is interesting to note that female athletic trainers were more highly associated with the second canonical variable than the first and may indicate a preference by the female athletic trainers to attend activities that they see as more relevant to their daily jobs. The fact that distance and registration fees are still important even though the main focus is on relevance may indicate a cost/benefit assessment that the athletic trainer must perform to make their decision to attend or not attend various continuing education opportunities.

To allow the respondents to expand on other factors that might not have been included in the questions of the survey, respondents were asked to reply to the statement: “Other factors in determining your attendance at the continuing education activities you chose.” Hence, as elsewhere, the overlying theme was expense and time. The cost of registration fee and travel was the most predominant theme throughout the open-ended questions as was the number of CEUs required. Many of the answers were almost hostile in nature, with complaints about the high due structure of the NATA and the “unrealistic” requirement for athletic trainers to achieve eight CEUs in three years. Thus coupled with the high registration fees for many of the continuing education activities offered both by the NATA and commercial providers was disproportionate to the average athletic trainers salary. To illustrate this theme, one respondent replied, “The abhorred need to have eight CEUs is ridiculous when some athletic trainers have to pay all their expenses. The ‘gods of the NATABOC’ never consider the expenses to the athletic trainer at the secondary
level.” Undoubtedly there is some underlying tension and alienation felt by some of the athletic trainers towards those providing continuing education opportunities and especially against the NATA. This statement was not the only one that indicated underlying tension as many of the respondents who wrote the open-ended questions hinted at displeasure with the cost of continuing education relative to their own salary. Another particularly interesting statement was made by one of the respondents: “For those of us in lower paying rural areas, CEUs are expensive and meetings hard to attend. In the last 3 years my CEUs have cost between 15% and 20% of my Athletic Trainers salary!” Many athletic trainers expressed the desire to have continuing education opportunities offered locally or through the use of technology to make attendance easier for those who work alone. One athletic trainer responded, “There are basically three concerns for most high school athletic trainers in attending continuing education activities. Time of the year (interferes with athletic seasons), economics and the program itself.”

Other popular responses to the open-ended questions asking for other reasons to attend continuing education were “to see old friends, to socialize,” “to seek employment,” and “scheduling and budget.” When asked “What could continuing education providers do to facilitate your attendance at continuing education programs?” again cost was the overriding theme on 70-80% of those who answered the question. Providing CEUs on a more local level was the second theme that emerged from the open-ended responses. The majority of those indicating the desirability of locally available continuing education activities worked in a rural environment.

Factors That Affect Preference in Program Format

The final question of the study was “What factors affect preference in program format of continuing education among certified athletic trainers?” The respondents were asked to indicate their preference for program format by using the same five-
point Likert-type scale with a "1" indicating "least desirable, through "5" indicating "most desirable." Program format preferences included conferences, intensive study sessions, college or university classes, home study materials (both print and audio/video), workshops, research, poster presentations. The means and standard deviations of the responses for program format are presented in Table 20.

Table 20
Preference in Program Format All Respondents

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conferences/Seminars</td>
<td>4.40</td>
<td>.71</td>
</tr>
<tr>
<td>Activity Oriented Workshops</td>
<td>3.88</td>
<td>1.00</td>
</tr>
<tr>
<td>Intensive Study Workshop</td>
<td>3.63</td>
<td>1.08</td>
</tr>
<tr>
<td>Home Study Printed Material</td>
<td>3.11</td>
<td>1.24</td>
</tr>
<tr>
<td>Home Study video &amp; audio tapes</td>
<td>2.96</td>
<td>1.17</td>
</tr>
<tr>
<td>Research &amp; Publication</td>
<td>2.63</td>
<td>1.13</td>
</tr>
<tr>
<td>College Courses</td>
<td>2.70</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Note. n = 1040

Within group relationships were recorded showing high correlations between home study printed material ($r = .76$) and home study video and audio material. It appears that those athletic trainers who prefer home study printed material also have a preference for other material that can be used at home such as video and audio tapes. Other correlations included preference for college courses ($r = .35$) and poster presentations ($r = .38$) with preference for research. Those athletic trainers who prefer more scholarly activity such as college courses, also prefer poster presentations (which are actually presentations of research) and publishing and research for fulfilling their continuing education needs. Another correlation was
found among workshops and intensive study activities ($r = .41$). Many workshops are actually intensive study of a particular injury, rehabilitation or anatomical area; therefore, it is not surprising that these methods of delivery were correlated.

When between group correlations were examined, there was a significant correlation between number of ATCs with whom the respondents worked and their preference for program format. There was a negative correlation between number of ATCs and printed or home study material ($r = .12$ and .17) indicating that those ATCs who worked alone or with few other athletic trainers or health professionals preferred home study. This was surprising in that the literature indicated that those professionals who were professionally isolated needed the networking obtained at continuing education activities. There may be other factors that led these athletic trainers to prefer home study. The convenience and cost of the continuing education activity may outweigh the desire to network. It also may be that athletic trainers who work alone see more of a need to hear the most pertinent and relevant information in the shortest amount of time, thus making home study attractive. The home study courses are cheaper than most other forms of continuing education because there is no travel cost involved. Thus, more money may be spent on the course itself. A third possibility may be that often athletic trainers who work alone are employed in the school setting which often requires travel to competitions with the athletic teams. This quite often provides the athletic trainer with the opportunity to network with other athletic trainers before and after the competition. There was, however, a positive correlation between number of athletic trainers with whom the respondent worked and preference for intensive study (.15) and research (.10). This correlation indicates that the more ATCs in a work place, perhaps the more specialized each one can be and the more research interests they may have.

When subjected to canonical analysis, only one significant (and thus interpretable) canonical variate was revealed. A canonical correlation of .27 (7% of the variance)
was determined between the set of program format preferences and the set of personal characteristics. The canonical variate that surfaced had high loadings in preference for intensive study (.48), research (.43), poster presentations (.31) and conferences (.30). Negative loadings were presented from home study printed material (.70) and home study video/audio material. The positive loadings from the personal characteristic group included number of athletic trainers with whom the respondent worked (.87) and minor children at home (.31). Again the positive correlation on the child factor was due to the coding of the variable. The positive correlation indicates an association between those for whom minor children are not a factor and a preference for the intense study, research and conference format included in this canonical variate. A negative correlation was found with gender (-.41) and the canonical variate, indicating that male athletic trainers preferred the above mentioned modes of delivery for continuing education. It stands to reason that many male athletic trainers may not be the primary care givers for the minor children at home, therefore, resulting in a higher correlation with this canonical variate. The canonical correlation also indicated that those athletic trainers who worked with more than athletic trainers and health professionals had a preference for intensive study, research and conferences and did not feel a preference for home study. One can then interpret this as also meaning that those athletic trainers who worked alone may have the opposite preferences perhaps due to the monetary or time constraints mentioned in the previous analyses. The correlations, standardized canonical coefficients, canonical correlations, percent of variance and redundancies between preferred program format, personal characteristics and their corresponding canonical variates are presented in Table 21.

As in the previous questions, respondents were given the opportunity to respond in the form of open ended questions in this area. When asked about preference in program format, or other program formats that respondents would
prefer, respondents indicated that “computer assisted instruction,” “hands-on lab work,” and “CEUs offered over the world-wide web” as desirable program formats. Several of the athletic trainers who responded to the open-ended questions indicated that quality of the presentation was more important than the method of delivery. Response to this question was minimal. Less than 5% of all those who answered any of the open-ended questions provided any additional information on this question.

This chapter presented the results and brief interpretation. Chapter 5 will expand on the interpretation of the data as well as provide implications for practice and suggestions for further research.
Table 21  
Correlations, Standardized Canonical Coefficients, Canonical Correlations, Percent of Variance, and Redundancies Between Preferred Program Format, Personal Characteristics, and Their Corresponding Canonical Variates.

<table>
<thead>
<tr>
<th>First Canonical Variable</th>
<th>Format and Personal Character.</th>
<th>Correlation</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preferred Program Format</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensive Study</td>
<td>.48</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>Home Study Print</td>
<td>-.70</td>
<td>-.80</td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>.43</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>Home Study Video</td>
<td>-.45</td>
<td>.10</td>
<td></td>
</tr>
<tr>
<td>Workshop</td>
<td>-.02</td>
<td>-.27</td>
<td></td>
</tr>
<tr>
<td>Poster Presentations</td>
<td>.30</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td>College Course</td>
<td>.13</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Conference</td>
<td>.31</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>% variance</td>
<td>.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redundancy</td>
<td>.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Personal Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emp. Setting</td>
<td>.25</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td>Emp. Support</td>
<td>-.13</td>
<td>-.10</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>.09</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.41</td>
<td>-.34</td>
<td></td>
</tr>
<tr>
<td>Isolation</td>
<td>.87</td>
<td>.82</td>
<td></td>
</tr>
<tr>
<td>Child Factor</td>
<td>.31</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>% variance</td>
<td>.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redundancy</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 5
DISCUSSION AND CONCLUSIONS

There has been little investigation of the continuing education needs of athletic trainers. This study attempted to examine not only the self-perceived continuing education needs of Certified Athletic Trainers, but also the factors that affect those needs. This final chapter presents and analyzes the findings from the survey research instrument. The results are used as the basis for discussing implications of the study and making recommendations for further research.

The stated purpose of the study was to investigate the self-perceived continuing education needs of Certified Athletic Trainers. Additional research questions were as follows:

1. What factors affect the self-perceived continuing education needs of Certified Athletic Trainers?

2. What factors affect participation in current continuing education programs for Certified Athletic Trainers?

3. What factors affect preference in program format of continuing education among certified athletic trainers?

The sample in this survey, once weighted for the over-representation of male to female Certified Athletic Trainers, seemed to be representative of the athletic training population. The responses by district were fairly even with the majority of the districts returning approximately 50% of the surveys. District 8 had a return rate of only 38% so may not be represented as adequately as the rest of the districts.
These minor discrepancies may not be important due to the fact that the sample size was quite large and results should be generalizable to the general athletic training population.

The data from this study substantiated the previous discrepancy noted by the NATA in the salaries between male and female certified athletic trainers. Female athletic trainers in the study averaged several thousand dollars less in salary than their male counterparts. The NATA last year reported that male athletic trainers on the average made $7,000 more than their female counterparts. Beside the issue of the inequities between genders in salary, this discrepancy may have been a factor in the self-perceived continuing education needs of athletic trainers in this study. The salary discrepancy between male and female athletic trainers may have directly influenced the differences discovered in this study in the self-perceived continuing education needs of athletic trainers due to the importance of cost in determining the decision to attend or not to attend a specific continuing education activity. This phenomenon will be discussed later in this chapter.

This study also confirmed the NATA data on race inequities amongst certified Athletic Trainers. The disproportionate numbers of white athletic trainers (95%) to minority athletic trainers in this study reflect the approximate proportions shown by the NATA demographic data and the need to further explore potential solution to this situation.

Another interesting finding in the demographic data is that 31% of all respondents in this survey indicated they do not have daily contact with other
athletic trainers. As more athletic trainers are employed in rural settings, this number will no doubt increase. As shown in Chapter 4 and discussed later in this chapter, professional isolation was a significant factor in determining continuing education preferences. With such a large percentage of athletic trainers indicating that they are professionally isolated, this factor needs to be taken into consideration by continuing education providers.

**Continuing Education Needs of Athletic Trainers**

Athletic trainers in this study perceive “some to moderate need” for continuing education within each of the defined areas of knowledge and skills expected of athletic trainers. Rehabilitation of athletic injuries (Domain 3) was indicated as the area in which continuing education was seen by the respondents as requiring more need than the others with a mean of 4.15. The other domains all had means between 3.62 and 3.88. Athletic trainers in this study indicated greater need for continuing education when asked to identify need by anatomical area. The back and neck were the areas perceived by the athletic trainers with the highest level of need for continuing education ($M > 4.3$). High level of need was also indicated by the respondents for information on emergency procedures, the shoulder, head, systemic illness and abdominal injuries ($M > 4.0$).

Tasks within each of the domains are quite general in nature. Sample tasks from recognition, evaluation and immediate care of athletic injuries (Domain 2) included statements such as: palpation of the involved area and performing special tests on the involved area. Athletic trainers in this study may have felt less need for
these tasks because evaluation of injuries, regardless of anatomical area, follows general procedures which are taught throughout the athletic training education programs. However, when specific anatomical areas are considered, the procedures to assess an injury become more specific. This may have lead the athletic trainer in this study to indicate that he/she perceives more need for continuing education when these anatomical areas are considered. There also may be a relationship with the athletic training educational programs in which general evaluative procedures are taught earlier and more often in the course of study while specific anatomical evaluation may be covered in a short amount of time and generally only once during the formal education program. Often, because of time constraints of the educational program, and the frequency of injuries to those areas, the knee, foot, and ankle are covered in depth, traditionally at the beginning of the semester, while the entire back, neck, and hip may be covered during the last two weeks of the semester.

The desire for additional education on specific injuries, illnesses and anatomical areas was also expressed in the open-ended questions. The respondents who chose to answer the open-ended questions stressed that specificity was important and that information was desired on new ways of testing specific body parts. Desire for hands-on practice of specific evaluative tests and in-depth study of specific anatomical areas were also addressed in the open-ended questions.

Emergency procedures and information on systemic illness were also indicated by the respondents as an area of greater perceived need. This may be in part due to the potential seriousness of those injuries and the infrequency with which
they occur in the normal athletic setting. If an athletic trainer is not exposed to a situation on a regular basis, he/she may feel greater need to seek “practice” situations or up-to-date procedures through continuing education.

Overall, athletic trainers in this study perceived each of the tasks within the domains to be at least “somewhat important.” The fact that the NATA BOC has indicated that these are the tasks that athletic trainers should be able to perform, and the knowledge that athletic trainers should possess may have affected the response to these questions and resulted in the small variance amongst the responses. Because of the small variance, however, the results substantiate the NATA BOC’s role delineation study by showing that the athletic trainers in this study perceived the tasks described by the role delineation study to be important, therefore reinforcing the validity of that instrument in regard to the importance of specific athletic training knowledge and skill.

Factors Affecting Self-Perceived Continuing Education Needs

It was hypothesized that employment setting, years of experience, environment, employer support, age, professional isolation and education contribute to the perception of need within each domain of athletic training. Gender was a significant factor in the importance of continuing education within each domain with the exception of professional development (Domain 5). Although gender was not originally one of the variables predicted as being a significant factor in the self-perceived continuing education needs of athletic trainers, it appears to be of greater influence than other individual variables on the self-perceived need across several of
the questions in this study. Gender has been rarely investigated in the continuing education literature but appears to be of greater influence than other individual variables on the self-perceived need for continuing education within the domains of athletic training as well as on the reasons for attending continuing education activities. This finding is particularly interesting because little research has been conducted on difference in professional practice and professional career patterns by gender, although some research (Cafferella & Olson, 1986) has identified differences in more general career patterns for men and women. To date, this researcher is unaware of any studies within athletic training that have addressed gender issues in regards to professional preparation and practice.

By contrast, this study found that some individual variables seem to have less influence than expected. The literature on professions emphasizes the development of a career through several stages (Slotnick et al., 1994) and the influence of this psychological development on attendance and preferences for continuing education. Yet, age and years of experience showed little influence on the self-perceived continuing education needs amongst the respondents in this study. The only domain in which years of experience was a significant factor was prevention of athletic injuries (Domain 1) where it, along with gender and professional isolation proved to be a predictor for the importance of continuing education. However, within Domain 1, gender, years of experience and professional isolation together only accounted for 2% of the variance in self-perceived need.
The only other factors to enter the multiple regression analysis at the 95th percentile were employment setting for rehabilitation of athletic injuries (Domain 3), and employer support for professional development and responsibility (Domain 5).

The inability of the variables in this study to account for a larger percentage of the variance may be due to several reasons:

1. All athletic trainers in the study deemed the tasks within each domain to be important. This resulted in very little variance among the domains so that when multiple regression analysis was run, mathematical significance was achieved because of the large N in the study.

2. A number of researchers have suggested that "selection of continuing education material by other health professionals is highly individualistic or may even be idiosyncratic" (Williams, Davis, Hale & Collins, 1989, p. 136). There may be other variables, perhaps unmeasurable, that affect the perception of need within the domains.

**Participation Factors**

The second area of interest in this study was an understanding of those factors which influence certified athletic trainers' current participation in continuing education. Reported attendance at continuing education activities was analyzed by employment setting, years of experience, gender, minor children at home and employer support. Amongst all respondents, greater than 60% indicated that they received more than three CEUs from the NATA National Symposium. Greater than 30% indicated that they received more than three CEUS at district meetings and
conferences through NATA approved providers. When total CEUs were analyzed by the demographic factors previously mentioned, professional isolation proved to be the most significant factor in determining the total number of CEUs obtained during the past three year reporting period. It may be interpreted that athletic trainers who work alone may be putting forth a concerted effort to attend CEU opportunities to keep in touch with the profession and to remain current with their skills.

Another factor in determining total CEUs received during the last reporting period was employer support. The athletic trainers who received employer support to attend continuing education activities attended more than those who received no employer support.

Importance of Factors in Determining Attendance at CEU Activities

While there are potentially many reasons why certified athletic trainers chose to attend continuing education opportunities, this survey asked the respondents to rate the importance of each of the listed reasons. Interestingly enough, most athletic trainers indicated “the fact that CEUs are required” as being the most important reason to attend continuing education activities. This was followed closely by the “need to remain current” and the “opportunity to obtain new skill” or to “improve existing skill.” Cost and employer support were slightly less important to the respondents as a whole when means were compared but varied the most among the respondents. For the athletic trainers who had employer support, cost was less of a factor than those who did not receive support. For the athletic trainer who did not
have employer support, the economic difficulties of attending continuing education was a major factor. The open-ended responses again reflected the importance of cost in continuing education. Those people who indicated that they did not receive employer support had very strong feelings about the high cost of continuing education. Those who did receive support, did not respond as often to this question.

Through multiple regression analysis and canonical correlation using the "reasons for attending continuing education" and the group of personal characteristics including gender, salary, employment setting, minor children at home, environment, years of experience and professional isolation, several interpretations can be made. First, there is a significant relationship among content, participation paid by employer, cost of activity employment setting, salary and number of athletic trainers in the workplace. This relationship suggests that the athletic trainers who work in a "non-traditional" setting also tend to have higher salaries and work with more athletic trainers. Those athletic trainers perceive a higher level of importance of content and reputation of the faculty than athletic trainers from the traditional settings of high school and college (who generally make less and work with fewer athletic trainers). There was also a relationship shown through canonical correlation among time, location, content, and reputation of the faculty with gender and minor children at home. Being female or being responsible for children at home is predictive of placing greater importance on time, location, content and reputation of the faculty. Those certified athletic trainers who are female or who have minor children at home may need to be more selective in their
continuing education activities and thus feel that time and locations, as well as content and reputation of the faculty are important in their reasons to attend. It is reasonable to propose, if opportunity to attend CEUs is limited by family responsibility or financial situation (perhaps in the case of many of the female athletic trainers who make less than their male counterparts) that one must be selective in weighing the cost versus the benefits of attending various continuing education activities.

**Decision to Attend or Not Attend Continuing Education Activity**

Once the decision has been made by the athletic trainer to attend continuing education (for whatever reason), the athletic trainer must then make decisions on which continuing education activities to attend. The question was asked of the respondents to indicate the importance of various factors on their decision to attend or not attend a particular event. These factors included structural characteristic of the activity as well as economic geographic and temporal factors.

A canonical correlation of the responses allowed some patterns to be noted from the relationship between the demographic factors that were explored and the importance of the reasons to attend continuing education activities. The most prevalent pattern deals with the economics or convenience of attending continuing education. Those variables that had to do with cost, location, time, and registration fees were deemed highly important in the decision to attend or not to attend continuing education activities. These factors were important even when the athletic trainer was receiving employer support for their participation in continuing
education. The economic factors seemed to outweigh the content or relevance factors when deciding to attend or not attend. This is in contrast to the Tassone and Speechley (1997) study of physical therapists' continuing education needs that indicated that content, followed by presentation quality and method of presentation are more important than cost or timing factors. This difference may be due to the inherent difference in the working conditions of the two professions. Physical therapists traditionally have a higher income than athletic trainers and work a more traditional work-week. Because athletic trainers need to be at athletic events which are typically held on weekends and evenings, the athletic trainer does not have the flexibility concerning time to attend or travel time as most physical therapists. The combination of the lower salary and the time factor may account for the difference between this study and the Tassone and Speechley study. The canonical correlation also suggests a much higher level of importance for the cost and convenience factors for athletic trainers in the high school and college settings than for athletic trainers in the clinic, industrial or professional settings. This may be due to the greater similarity of salary and schedule of athletic trainers in clinics and physical therapists. Previous discussion in this study indicated that athletic trainers in the high school and college settings have a lower salary than those in the other settings. Time is also more of a factor with many of the athletic trainers in the high school and the college settings because of the time demands of those specific jobs.
Preferences in Program Format

Athletic trainers in this study preferred conferences and seminars to any other type of delivery method for continuing education. Activity oriented workshops and intensive study workshops were also popular. Least popular were research and publication and college courses. These findings are similar to those of Karp (1992) who studied continuing education preferences amongst physical therapists. Karp found that physical therapists were most interested in conferences or seminars and preferred lecture/slide and workshop formats.

It is interesting to note that although cost and time have been identified as major factors in the decision to attend a continuing education activity, respondents in this study as well as studies of other allied health professions (Harvey, 1983; Karp, 1992; Tassone & Seechley, 1997) showed a preference for delivery systems that may require travel. The athletic trainers in this study also showed their willingness to travel. More than 60% of the respondents indicated that they received more than three CEUs at the NATA National Symposium (which would require going to more than one national symposium in the past three years). It may be that the national symposium offers the greatest chance to obtain a larger number of CEUs for the rather limited time and cost commitment. The four day symposium is generally awarded about 2.0 CEUs, equivalent to 20 contact hours. Many athletic trainers take their families to the national symposium. It may be that although the symposium is rather costly (e.g., $185 for registration and $80-90 per room each night in 1997), athletic trainers with limited resources for continuing education choose to use this...
time as a family vacation and are willing to spend the extra money since they are on
time as a family vacation and are willing to spend the extra money since they are on
vacation and get their CEUs at the same time. The national symposium is also a
time for athletic trainers to socialize, attend state and district business meetings and
vacation and get their CEUs at the same time. The national symposium is also a
sightsee. It could be that athletic trainers see the national symposium as a way to
sightsee. It could be that athletic trainers see the national symposium as a way to
meet many of their stated “reasons for attending continuing education” in one place.

Factors in Preference of Program Format

The canonical analysis indicates that male athletic trainers who worked with
The canonical analysis indicates that male athletic trainers who worked with
more athletic trainers and for whom minor children at home were not a factor in
more athletic trainers and for whom minor children at home were not a factor in
their continuing education participation also preferred intensive study and research
their continuing education participation also preferred intensive study and research
as means of obtaining their continuing education credits. Conversely, the second
as means of obtaining their continuing education credits. Conversely, the second
canonical variable indicates a relationship between younger athletic trainers from the
canonical variable indicates a relationship between younger athletic trainers from the
high school and college settings as well as women with a preference for activity
high school and college settings as well as women with a preference for activity
oriented workshops.

From the importance of time/convenience measures previously discussed, it
From the importance of time/convenience measures previously discussed, it
is reasonable to assume that the same group of athletic trainers for whom time and
is reasonable to assume that the same group of athletic trainers for whom time and
cost are of greatest importance also prefer continuing education opportunities that
cost are of greatest importance also prefer continuing education opportunities that
are most pertinent to the performance of their duties. Activity oriented workshops
tend to be very practical and applicable to the daily skills that an athletic trainer
tend to be very practical and applicable to the daily skills that an athletic trainer
performs. This finding agrees with Kicklighter’s (1984) review of continuing
performs. This finding agrees with Kicklighter’s (1984) review of continuing
education for the health professions in which she recommends that more emphasis
education for the health professions in which she recommends that more emphasis
should be placed on continuing education in practical settings, since learning needs
should be placed on continuing education in practical settings, since learning needs
and the motivation for learning often arise from the practice of the profession. In
adults, motivation for learning is often based on the need for immediate and relevant information to solve practical problems (Kicklighter, 1984).

**Suggestions for Practice**

1. Given the finding that economics seemed to be a driving factor in the preferences and perception of need for the athletic trainers in this study, continuing education providers as well as the NATA itself should make every effort to provide quality continuing education activities at a reasonable cost. Cost was a factor in many of the decisions athletic trainers make in regards to continuing education and should be considered when planning a continuing education program. Many athletic trainers seem to use a “cost-benefit” analysis when determining which continuing education programs to attend. If the program is costly, providers should make sure that they also offer a significant number of CEUs and that the program is pertinent to their audience. Because the national symposium is such a popular way to obtain continuing education for athletic trainers, efforts should be made to offer “travel packages” or “economy rates” for those attending. Currently, the high housing expense as well as the high registration costs at the national symposium are large obstacles for those with limited economic resource.

2. Because economics seems to be such a factor in the decisions of athletic trainers regarding attendance of continuing education opportunities, the profession should look at ways to increase the salaries in many of the settings in which the lower paid athletic trainers are employed. It is not atypical for an athletic trainer in a high school or college setting to work 50-70 hours per week, holidays and
weekends included, for $20,000-30,000 per year. The working conditions and salaries of athletic trainers must be improved. The animosity expressed by some of the athletic trainers in this study towards the profession and towards the NATA reflects dissatisfaction with their current status. The NATA, through its influence with public relations campaigns, legislation and education, must continue to promote the profession and the value of the athletic trainer to the current and potential employer. Although obtaining recognition as a profession is an extremely long process, immediate public relations efforts might be presented to the employers of athletic trainers on the importance of those athletic trainers attending continuing education activities. Because continuing education is mandatory for athletic trainers, employers should be encouraged to absorb some of the expenses of the athletic trainer's attendance at the activity.

3. With the increasing numbers of athletic trainers in the rural settings, it is suggested that continuing education providers try to provide local or regional opportunities for athletic trainers who have a difficult time attending a workshop or conference away from home.

4. Distance education through electronic media should be explored to provide ample opportunities for those athletic trainers who live in the rural environment or because of time or cost cannot travel. The national and district symposiums could be broadcast or videotaped and played either simultaneously or at a later date to regional or state sites for view by those athletic trainers who were unable to attend. Currently, the national symposium is audio recorded with the
tapes available for purchase. Often times, however, audio tape cannot adequately capture the session and has become less popular since multimedia presentations have been implemented. Continuing education through the Internet and other electronic sources should be developed for athletic trainers to provide an alternative to current programming in continuing education.

5. Continuing education providers should attempt to provide practical information that athletic trainers can apply in their daily service programs. If continuing education is to improve or enhance performance, it must be related to practice. It has to build on previous education, address professionals’ entire scope of practice, improve performance, and update knowledge. Many of the respondents in this study indicated they attended continuing education activities searching for answers to daily problems they see in their own athletic training rooms.

6. Given the finding that gender was a significant factor in the self-perceived continuing education needs and format preference of the athletic trainers in this study, and the finding of salary differences between genders the profession of athletic training and the NATA should make every effort possible to narrow the salary gap between male and female athletic trainers. Part of the variance between male and female athletic trainers in this study was due to economic factors. With these eliminated or at least decreased, further exploration of actual gender differences might be made.

7. Continued efforts should be made by the NATA and athletic training employers to hire female athletic trainers into positions that have been traditionally
held by their male counterparts. As female athletic trainers become more
commonly employed in the same capacity as male athletic trainers, the differences
between male and female athletic trainers' perceived needs about their continuing
education needs should become less varied.

8. The fact that such a low percentage of athletic trainers are persons of
color presents a disturbing inequity. The NATA should continue its efforts to
promote the minority athletic trainer to the employer. The efforts of the Minority
Athletic Trainers Committee are applauded and should continue to be a central focus
for the profession

Suggestions for Further Research

Survey research was used in this study to purposefully obtain a broad set of
data from a large group of athletic trainers. By design, survey research does not
reveal possible underlying explanations for the way subjects responded. Because of
this, further research is needed in the area of continuing education needs for athletic
trainers. Of particular benefit would be qualitative studies to get an in-depth view
of what athletic trainers think is important in continuing education and the factors
that affect their attendance, needs and preferences. The open-ended questions
revealed some underlying tension and animosity toward the NATA. The open-
ended questions also suggested a possible split between the feelings of "traditional"
athletic trainers in the high school or small college setting and other athletic trainers
who work in larger universities as well as the clinic, industrial and professional
settings. Hard feelings have also been prevalent on the athletic training listserv
through the internet suggesting that what is important to many of the high school
athletic trainers may not be considered important by those athletic trainers employed
in other settings. Further investigation of perception of athletic trainers of their
profession and their leadership should be pursued.

Although not an original purpose of this study, data regarding gender
revealed some interesting differences between the way male and female athletic
trainers responded to various questions. Investigation of the salary discrepancy, and
the perception of the level of need for continuing education in various areas
explored in this study is certainly warranted. More research is needed in the area of
gender differences in professional development of athletic trainers. Research also
could be directed to gain a better understanding of the gender related discrepancies
and perhaps gender differences by employment setting.

Because this research used topics that were already identified by the
NATABOC as those activities and knowledge that athletic trainers use on a daily
basis, further investigation should be performed on possible other topics that athletic
trainers see as useful in continuing education opportunities. The reluctance of
respondents in this study to provide additional information about topics may have
been in part to the length and depth of the survey.
REFERENCES


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APPENDIX A

SURVEY OF ATHLETIC TRAINERS’ CONTINUING EDUCATION NEEDS
Appendix A: Survey of Athletic Trainer’s Continuing Education Needs

Part I: Continuing Education Participation
Please blacken the appropriate circle on the answer sheet. For open ended questions, follow instructions for that question.

Please indicate how many continuing education units you obtained in each of the following activities over the past 3 years:

A. < 1, B. 1 - 3, C. 3.1 - 6, D. 6.1 - 9, E. > 9

1. State Association/Conference
2. District Meeting/Conference
3. National Symposium
4. Publications
5. College or University Credit Course
6. Home Study
7. NATA Approved Provider Conference
8. CPR/First Aid
9. Other _________________________ (fill this blank if obtained CEUs in other area. Indicate how many CEUs on answer sheet).

10. Total CEUs obtained over the past three years
A. < 9
B. 9
C. 10-11
D. 12-13
E. > 13

11. Did your employer financially support your attendance at continuing education programs?
A. Yes
B. Partial
C. No
D. Not applicable

12. If yes or partial, indicate all that apply.
A. Paid time off
B. Paid registration
C. Paid travel
D. Paid meals
E. Paid housing

Indicate the importance of the following factors in determining your attendance at the continuing education activities you chose. A=very important, B = somewhat important, C= don’t know or undecided, D= not very important, E=not important at all. Please mark all answers on answer sheet.

13. Required to maintain certification
14. Convenient time
15. Convenient location
16. Interest in program content
17. Interest in program faculty
18. Opportunity to network
19. Participation paid by employer
20. Inexpensive
21. Need to remain current
22. Improve skills
23. Obtain new skills

Other factors in determining your attendance at the continuing education activities you chose______________________________________________________________
Indicate your preference in program format. A = most desirable, B = desirable, C = undecided or no difference, D = somewhat undesirable, E = least desirable.

24. Conferences/Seminars
25. Intensive Study workshop
26. Activity oriented workshop
27. University or College Courses
28. Research & Publication
29. Home study video or audio tapes
30. Home study printed material

Other program formats that you prefer
________________________________________________________________________________

Indicate your preference for learning when attending conferences/seminars. A = most desirable, B = desirable, C = undecided or no difference, D = somewhat undesirable, E = least desirable.

31. Keynote address/speaker
32. Small group discussion
33. Hands-on workshop
34. Exhibits
35. Intense topic areas (entire conference on one topic)
36. poster sessions
37. Round table discussion
38. informal networking

How important is each of the following factors to your decision to attend/ not attend continuing education activities?
A = very important, B = somewhat important, C = don’t know or undecided, D = not very important, E = not important at all.

39. travel cost
40. CEU credit hours
41. location (resort, city, etc)
42. reputation of presenters
43. distance
44. time of year
45. registration fee
46. relevance of topic

What could continuing education providers do to facilitate your attendance at continuing education programs?
________________________________________________________________________________

Part 2: Continuing Education Needs

In 1989 and again in 1993, the NATABOC produced the Role Delineation to describe the knowledge and skill that athletic trainers must use daily in their work. The tasks have been paraphrased for the purposes of this study. For each task in each of the five domains, please indicate your perceived need for continuing education in that area with “A” indicating substantial need, “B” moderate need, “C” some need, “D” little need, “E” no need. Please blacken the appropriate circle on the answer sheet.

Domain 1: Prevention of Athletic Injuries

47. Task 1: Identification of physical conditions predisposing the athlete or physically active individual to increased risk of injury/illness in athletic activity.
   - pre-participation examinations
48. Task 2: Information on conditioning programs and testing for athletes or physically active individuals.
   -Use of mechanical and/or other techniques in order to ensure readiness for safe participation.

49. Task 3. Information on environmental conditions and guidelines for safe participation
   -physiological responses to extreme conditions

50. Task 4: Athletic Facility inspection and maintenance records
   -maintenance process for athletic apparatus and facilities
   -recognizing hazardous conditions

51. Task 5: Construction of custom protective devices
   -selecting, designing, fabricating, applying and fitting custom protective devices

52. Task 6: Taping, wrapping techniques
   -selecting proper material
   -application and removal techniques

53. Task 7: Inspection and fitting of protective devices and athletic equipment
   -current professional standards regarding use and maintenance of protective devices
   -proper selection and fitting of protective devices and equipment

54. Task 8: Education of parents and athletes about the risks associated with participation
   -unsafe practices associated with participation
   -documentation of informed consent

Other topics associated with Prevention of Athletic Injuries you feel you need:

Domain 2: Recognition, Evaluation and Immediate Care of Athletic Injuries

55. Task 1: Obtaining history from the athlete
56. Task 2: Inspection of the involved area
57. Task 3: Palpation of the involved area
58. Task 4: Special Tests on the involved area
59. Task 5: Determining appropriate course of action
60. Task 6: Administering first aid or immediate care techniques
61. Task 7: Selection and application of emergency equipment and techniques
62. Task 8: Referral procedures

To further depict areas of need, please indicate your need in the recognition, evaluation and immediate care of athletic injuries by body part using the same scale as above.

Body Part or Topic Area

63. Foot, Ankle and Lower Leg
64. Knee
65. Hip and Thigh
66. Back
67. Abdomen, Thorax
68. Shoulder
69. Elbow, Wrist & Hand
70. Head & Face
71. Neck
72. Emergency Situations
73. Systemic Conditions (disease processes, mono, heat illnesses, etc)

Other topics you feel you need associated with Recognition, Evaluation and Immediate Care of Athletic Injuries:
Domain 3: Rehabilitation and reconditioning of athletic injuries

74. Task 1: Identifying injury/illness status, functional tests and measurements, physiological response of the body to therapeutic modalities and exercise.

75. Task 2: Construction of rehabilitation/re-conditioning programs for the injured athlete using therapeutic exercise and modalities.

76. Task 3: Selection of appropriate rehabilitation equipment, techniques and modalities. Knowledge of theory and use of above to enhance recovery.

77. Task 4: Administering rehabilitation techniques and procedures to the injured athlete by applying accepted standards of care and protocols to enhance recovery.

78. Task 5: Evaluation of readiness and functional status of the athlete to return to play.

Other topics you feel you need associated with Rehabilitation of Athletic Injuries:

Domain 4: Health Care Administration

79. Task 1: Maintenance of health care records, documentation.

80. Task 2: Compliance with safety and sanitation standards.

81. Task 3: Personnel management.
   -development of job descriptions, organization structure, etc.

82. Task 4: Establishing written protocols for injury/illness management

83. Task 5: Purchasing practices, bid letting, inventory, & budgeting

84. Task 6: Developing a plan for emergencies, referral and management of athletic injuries/illnesses.

Other topics you feel you need associated with Health Care Administration:

Domain 5: Professional development and responsibility

85. Task 1: Obtaining current literature about sports medicine issues.

86. Task 2: Developing interpersonal communication skills, motivational techniques, etc.

87. Task 3: Obtaining information about state, local and federal regulations regarding athletic training practices. Ethical and legal parameters. Insurance

88. Task 4: Information on how to conduct sports medicine research, information available, etc.

89. Task 5: Methods of informing the general public, public relations techniques

Other topics you feel you need corresponding to professional development and responsibility
Part 3: Demographics

90. What is your employment setting? (Choose all that apply)
   A. High School
   B. College/ University or Community College
   C. Sports Medicine Clinic (including hospital based)
   D. Industrial
   E. Professional

91. Which type of environment best describes where your place of employment is located?
   A. City/urban
   B. Small community
   C. Rural

92. How many years have you been certified as an athletic trainer?
   A. Less than 3
   B. 3-5
   C. 6-10
   D. 11-15
   E. > 16

93. With how many athletic trainers are you in daily contact?
   A. 0
   B. 1
   C. 2
   D. 3-5
   E. > 5

94. How many other health professionals are you in daily contact with (excluding the athletic trainers you identified in previous question)
   A. 0
   B. 1
   C. 2
   D. 3-5
   E. > 5

95. What is your salary?
   A. $15,000-20,000
   B. $20,000-30,000
   C. $30,000-40,000
   D. $40,000-50,000
   E. over $50,000

96. Gender:
   A. male
   B. female

97. Age:
   A. 20-29
   B. 30-35
   C. 36-40
   D. 41-50
   E. 51 and over

98. Race:
   A. African-American
   B. Asian-American
   C. Caucasian
   D. Hispanic
   E. Other

99. Marital status:
   A. single
   B. married

100. Do you have minor children living at home?
   A. Yes
   B. No

101. Are your minor children at home a factor in continuing education choices?
   A. Yes
   B. No
   C. Not applicable

102. Please indicate the highest educational degree you have earned.
   A. Associate
   B. Bachelors
   C. Masters
   D. Doctorate

103. Are you currently pursuing an additional degree?
   A. Yes
   B. No

Please send the completed questionnaire and answer sheet in the pre-stamped, pre-addressed envelope to:

Micki Austin, ATC
Department of Physical Education
United States Military Academy
West Point, NY 10996
APPENDIX B

COVER LETTER FOR

SURVEY OF ATHLETIC TRAINERS’ CONTINUING EDUCATION NEEDS
February 7, 1997

Dear Colleague:

As part of your continued certification as an Athletic Trainer, you are required by the NATA to obtain continuing education hours. With the changing nature of the health field and the expansion of employment settings in athletic training, it is important for continuing education providers to know what athletic trainers need and want in regard to continuing education activities.

Enclosed you will find a questionnaire about continuing education activities, delivery format, topic areas and perceptions of continuing education activities. Would you please take a few moments to fill out this questionnaire as part of a study to assess the continuing education needs of athletic trainers? Your input as a professional is needed to determine what types of continuing education should be offered and if different groups of athletic trainers have different continuing education needs.

Your participation in this study is completely voluntary and completion of the questionnaire implies your consent to participate. The questionnaire should take about 10-15 minutes to complete. The numerical code on the answer sheet will only be used for the follow-up mailing for athletic trainers who do not respond by March 1. Once questionnaire is received, the code will no longer be used. All data will be coded and reported as a group. No individual data will be used. Please do not put your name on the questionnaire or the answer sheet.

Please complete this survey as honestly and completely as possible. When asked about continuing education needs in the various areas of athletic training, please indicate your need, not what you feel all Athletic Trainers need. Please return the questionnaire by March 1, 1997 to the address on the enclosed envelope. If you have questions, please feel free to call me at (914) 938-2352. Your participation in this survey is essential to this study and could provide valuable information to the NATABOC and to continuing education providers. Thank you for your time.

Sincerely,

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