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Distinctions between Athletic Training Education Programs at the Undergraduate and Graduate Levels

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Objective: To provide a historical perspective on factors that have shaped the current structure of athletic training education, and to advocate development of a new conceptual framework for a continuum of professional education in athletic training.
Background: Athletic training is a relatively young profession that has undergone significant planned change in education and credentialing to enhance the practitioner knowledge and to promote the credibility of the profession within the healthcare community. However, comparison of the prevailing model for basic and advanced professional education in athletic training to those of other health professions reveals major structural differences. In an effort to promote an integrated approach to the spectrum of athletic training education, and to be consistent with terminology used by other health professions, the term professional education is used to designate entry-level education and the term post-professional education is used to designate post-certification, or advanced, education.
Conclusions: Perceived problems with the current educational structure, along with advocated changes, are presented to clarify issues that will affect the future of the athletic training profession. Although change inevitably generates controversy, a failure to address these issues will almost certainly impede advancement of the profession.
Key Words: Health Professions Education, Residency Programs, Knowledge Levels

The education of athletic trainers has evolved from a strong resemblance to a guild apprenticeship in the middle of the 20th century to the present rigorous standards for accreditation of ***"professional"*** (i.e., entry-level) athletic training education programs. Historically, following completion of an undergraduate curriculum, a large majority of athletic training students have searched for a graduate assistantship position that would provide financial support, opportunities for further development of clinical skills, and the opportunity to earn a master's degree. Prior to the standardization of professional athletic training education program content, some institutions developed graduate programs that combined an athletic training curriculum with a graduate assistantship assignment. Such programs were attractive to students who had completed an undergraduate "internship" in athletic training, and who had a desire to attain a greater level of discipline-specific education in the process of earning a master's degree.

During the 1970s, the first standards and guidelines governing National Athletic Trainers' Association (NATA) approval of undergraduate athletic training education programs were formalized by the NATA Professional Education Committee (NATA-PEC), which was followed by a related endeavor that produced analogous documents for graduate athletic training education programs.[1] Revised guidelines for NATA approval of undergraduate education programs were published in 1980 and 1983, and revised guidelines for NATA approval of graduate education programs were published in 1988.[1] Following creation of the Joint Review Committee on Educational Programs in Athletic Training (JRC-AT), and subsequent development of guidelines for accreditation of education programs, the NATA-PEC discontinued its approval process for undergraduate athletic training education. Although the NATA-PEC adopted a policy in 1996 requiring that graduate education programs offer "advanced" learning experiences for accreditation, the 1997 *Standards and Guidelines for Development and Implementation of NATA Accredited Graduate Athletic Training Education Programs* still included many aspects of the earlier requirements for NATA approval of undergraduate education programs.[2] When completion of an accredited athletic training education program became an eligibility requirement for the Board of Certification examination, much of the "advanced" curricular content of "post-certification" graduate programs became part of undergraduate curricula. The current accreditation standards and guidelines for ***"post-professional"*** (i.e., post-certification) graduate education programs, which were adopted in 2003, reflect a dramatic shift in emphasis that promotes diversity of curricular content and clinical experiences by requiring identification of points of program distinctiveness.[3] Based on the academic model of scholarly development, post-professional master's degree programs in athletic training continue to emphasize development of advanced

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knowledge and skills related to both the practice of athletic training and research.

Master's Degrees and Athletic Training

Although a large majority of certified athletic trainers possess a master's degree (70%),[4] the number of students graduating from an accredited post-professional athletic training program in 2005 is less than 7% of the number of candidates taking the Board of Certification examination for the first time in 2005 (125/1890).[5,6] Athletic training students have often been advised by undergraduate mentors to enroll in any master's degree program available at a given institution that provides a graduate assistantship opportunity as an athletic trainer. This advice has apparently been based on the following interrelated beliefs: 1) that an undergraduate athletic training education program develops all of the discipline-specific knowledge needed for future professional practice, 2) that a graduate assistantship will provide a good opportunity for professional advancement, and 3) that attainment of a master's degree in an area of study other than athletic training will enhance the student's qualifications for future professional opportunities. Thus, a question often asked by athletic training students who are investigating the relative benefits of various graduate school options is: "What will an accredited post-professional athletic training program provide that I have not already learned from my undergraduate education in athletic training?"

The vast majority of professional education programs in athletic training are still delivered at the undergraduate level (greater than 95%), but the number of graduate professional education programs is rapidly increasing. There are now more accredited master's degree professional education programs (15) than accredited post-professional education programs (12).[7,8] Many undergraduate students who are considering pursuit of a career in athletic training are asking: "What is the difference between an undergraduate professional education program and a graduate professional education program in athletic training?" Prospective employers are beginning to ask the question: "Is there a difference in the qualifications of someone who possesses a master's degree in athletic training that was awarded upon completion of a graduate professional education program and someone whose master's degree in athletic training was derived from a post-professional education program?"

In contrast to undergraduate education in general, graduate education is more focused on a specific area of interest, including development of specialized skills needed to practice a given profession. Although the clinical competencies and proficiencies that must be developed by an accredited professional athletic training education program do not differ for undergraduate and graduate programs, post-professional graduate programs should demonstrate that the curricular content is more advanced than the corresponding discipline-specific content delivered at the undergraduate level. A key distinction between graduate programs and undergraduate programs is the requirement for active participation in research activities, or internships to practice professional skills, or both.[9]

Hierarchy of Knowledge Levels

Noyes et al.[10] presented a model of knowledge levels, previously described by Brodie,[11] that provides a good representation of the purpose for graduate athletic training education, regardless of whether it is a professional or post-professional program. This model identifies three levels of medical knowledge that correspond to the manner in which physicians tend to make clinical decisions. Level III knowledge relates to basic information about the proper methods for performance of a procedure, or "how to do it". Level II knowledge relates to the ability to evaluate a set of circumstances and make decisions concerning the appropriateness of a procedure, or "when to do it". Level I knowledge reflects a thorough understanding of foundational scientific concepts, fundamentals of the discipline, and theories that are supported by research evidence, or "how it works and why it should be done".

Undergraduate athletic training education programs are necessarily focused on provision of classroom and clinical experiences that will ensure acquisition of very specific competencies and clinical proficiencies, which are primarily based on Level III and Level II knowledge. Credit hour limits imposed at most institutions preclude establishment of basic science courses (i.e., biology, chemistry, physics) as prerequisites for admission to the athletic training professional program. Because preparation of students for success on the Board of Certification examination is a primary concern, development of Level III and Level II knowledge predominates, and Level I knowledge is developed to a lesser extent. Our experience teaching in a "***post-professional"*** athletic training education program for the past seven years is that relatively few students have demonstrated sufficient knowledge in basic sciences to readily comprehend Level I concepts pertaining to the delivery of preventive and therapeutic healthcare services. Further, over the past three years, we have observed that accelerated learning of both basic and advanced discipline-specific concepts is common for those students who have received an extensive undergraduate preparation in basic sciences prior to enrollment in our graduate "***professional"*** education program.

Despite a profound difference in students' discipline-specific knowledge and clinical skills upon admission, graduate professional education programs in athletic training and graduate post-professional education programs in athletic training should both emphasize the importance of research for clinical decision-making and development of new knowledge within the discipline. Unfortunately, the volume of curricular content that must be delivered during a two-year graduate professional program, and the large number of clinical competencies and proficiencies that must be developed, makes simultaneous completion of a master's thesis project unfeasible. In this respect, graduate professional education programs in athletic training are similar to those of other health professions, which place greater emphasis on development of clinical skills than scholarship. Unless post-professional education beyond a master's degree is pursued, a potentially negative long-term consequence of a shift from undergraduate to graduate professional education would be a reduction in the number of clinicians who are capable of conducting research that will increase knowledge in our profession.

The Future of Athletic Training Education

We seem to be at a crossroads in terms of the future model for athletic training education. Professional education at the undergraduate level cannot accommodate an adequate amount of ***"pre-professional"*** preparation in basic sciences. Almost all health professions now require completion of a pre-professional

curriculum at the undergraduate level, prior to admission to a professional education program that grants either a master's degree or a clinical doctorate. A potentially attractive option for many athletic training students is a 3 + 2 program that combines a 3-year pre-professional undergraduate curriculum with a 2-year graduate professional program. Although this clinical model of graduate education sacrifices some degree of the scholarly development that characterizes the academic model of graduate education, attainment of a master's degree within a 5-year period is perceived as a major advantage to students who are concerned about the cost and time required for attainment of a professional degree. One possible solution to the problem of limited opportunity for development of research skills is creation of post-professional residency programs that require completion of a clinical research project. Virtually all health professions recognize advanced-practice qualifications that are acquired by education beyond that which is required for the most basic credential in the professional discipline. Although a clinician who has graduated from an accredited professional program should be highly competent to perform a wide range of clinical procedures, the clinician who has completed an advanced-practice residency or a post-professional graduate program is likely to possess greater critical thinking skills that enhance clinical decision-making. Perhaps the future availability of an advanced-practice credential will prove to be an effective mechanism for expanding our unique body of knowledge, thereby advancing evidence-based practice and the long-term interests of our profession.

Without question, the issues raised by this discussion are highly controversial. Avoidance of controversy will not solve the problems we face as a profession. Currently there are over 300 accredited professional programs at the undergraduate level and only 12 accredited post-professional programs. We often promote the fact that 70% of athletic trainers have a master's degree, but a very small number have received graduate education that is specific to the practice of athletic training. To protect the viability of our professional roles within a changing healthcare market, we must critically and strategically evaluate the strengths and weaknesses of our current model of pre-professional, professional, and post-professional education in relation to those of other health professions. Hopefully, the discussion presented here will stimulate debate that will ultimately produce a consensus among members of the athletic training profession concerning the best model for combining basic professional preparation with development of advanced knowledge and skills. Maintenance of the status quo might be very attractive to a large segment of our profession, but the prevailing model is unlikely to promote athletic training in the eyes of the medical community or advance the knowledge base and of the profession.

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