

PROFESSIONAL EDUCATION IN ATHLETIC TRAINING

Presented to the National Athletic Trainers' Association Board of Directors

December 2013

*An
Examination
of the
Professional
Degree Level*

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OVERVIEW

The current athletic training education system is composed of two primary components. *Professional* education is concerned with the preparation of the student who *is in the process of becoming* an athletic trainer (AT), and represents the “gateway” to the profession. In athletic training, professional education culminates with BOC certification. In contrast, *post-professional* education imparts advanced clinical knowledge and skill in students who are already athletic training professionals via a successful challenge to the BOC exam. Of these two components, professional education is the largest. Today, there are more than 360 Commission on Accreditation of Athletic Training Education (CAATE)-accredited professional education programs. In comparison, there are 15 CAATE-accredited post-professional programs.

Historically, professional athletic training education has occurred at the baccalaureate level. In 2013 there are 333 baccalaureate-level professional programs. However, since the late 1990s, 27 master’s degree level professional programs have been accredited. These programs impart the same professional knowledge, skills, and abilities, but they do so at the graduate level. The emergence of these “entry-level master’s degree programs” (ELMs) mirror a national trend in peer healthcare professions who increasingly prepare students for professional practice at the graduate level. For example, physician assistants, occupational therapists, physical therapists, and audiologists all receive their professional education at the graduate level.

The reasons for the emergence of graduate level professional education among these professions are varied and will be explored in more detail in subsequent sections of this paper. Regardless of the specific reasons, the trend towards graduate-level education in healthcare professions was predictable and has reached an irreversible critical mass.

In full awareness of the trends in the professional education of healthcare providers, the NATA Board of Directors accepted the *Future Directions in Athletic Training Education* report as submitted by the Executive Committee for Education in late 2012.¹ This report proposed several initiatives for the purpose of advancing various aspects of athletic training education. Not surprisingly, one of these initiatives called for the critical examination of the appropriate degree level for preparation as an athletic trainer (AT) – also known as the professional degree. The examination of the appropriate professional degree has been prompted by several factors. These factors include: 1) the increasing complexity of the current and future healthcare system; 2) the growing need for athletic training-specific patient outcomes research; 3) an expanding scope of requisite knowledge, skills, and abilities while continuing to strive for depth in athletic training-specific knowledge, and; 4) the need to ensure proper professional alignment with other peer healthcare professions. The NATA Board of Directors charged this group to provide a report on the professional degree level. As such, the findings of this group are informational and do not represent formal statements of policy. However, this white paper represents the third investigation of this topic since 1995. The process used throughout the groups’ deliberations is presented in the Appendix.

An investigation of this scope and importance is complex and requires a judicious use of the best available evidence. Admittedly, several of the questions confronting this investigation exist in areas not well supported by existing athletic training research and scholarship. In the absence of direct evidence, we were left to examine theoretical models and to make inferences from relevant data to help us decide whether a professional degree change would benefit the athletic training profession. For example, one particular challenge we encountered is that to date, there are no studies in athletic training that directly compare the outcomes of undergraduate-level professional education programs with those professional programs at the graduate level. Moreover, only a very small number of athletic training programs have made a degree transition to the graduate level and no one has published data examining the effect of the degree change on athletic training patient outcomes. Therefore, a combination of existing literature, expert opinion, data provided by the BOC and CAATE, and a series of polls used to collect data from directors of CAATE accredited programs was analyzed to reach the conclusions represented in this paper.

Human nature forces us to view potential change through our individual filters, influenced by past experiences, current work environment, and perceived consequences. Just like this was a challenge for the work group members, it will be a challenge for the readers as we examine the question of the appropriate professional degree level. When discussing the future direction, and, possibly, the future viability of our profession, we focused on what will best place our profession in a competitive advantage 5, 10, or 20 years in the future.

The data presented in this report represent those that were available to the work group during our deliberations. These data will continue to evolve and change. Where appropriate, we have inserted links to the most recent data.

KEY FINDINGS

#1: Graduate-level professional education will better align ATs as peers to other healthcare professions and should enhance our status and influence in the larger health care arena.

#2: Transition to graduate professional education facilitates continued evolution in the professional competency requirements to better reflect the clinical practice requirements of current and future ATs in a changing healthcare environment.

#3: Factors fundamental to providing quality care are likely improved by professional education at the graduate level.

#4: Professional education at the graduate level enhances retention of students who are committed to pursuit of an athletic training career. Graduate-level education attracts students who are better prepared to assimilate the increasingly complex concepts that are foundational for athletic training practice.

#5: Transition to professional education at the graduate level would increase the likelihood that education programs are better aligned with other health care profession programs within their institution.

#6: Professional education at the graduate level should facilitate interprofessional education.

#7: A strong foundation of health-related basic sciences is increasingly necessary to prepare students for contemporary clinical practice in athletic training.

#8: Professional education should not compete with general education, liberal arts, and foundational science requirements because it detracts from the effectiveness of the professional educational experience.

#9: A transition to professional education at the graduate level will result in a more efficient educational system.

#10: Currently, all state practice acts accommodate graduate-level education in athletic training as meeting the requirements for the state credential. No state practice acts would need to be amended.

#11 The impact of a transition to graduate-level professional education on compensation levels and employment opportunities is complex and difficult to predict. Multiple factors influence compensation and employment patterns in healthcare.

RECOMMENDATION

Based on these findings, it is the conclusion of this group that professional education in athletic training should occur at the master's degree level. To avoid confusion, we recommend that the clinical doctorate degree be reserved for post-professional education, and that this degree should signify advanced practice.

Finding #1: Graduate-level professional education will better align ATs as peers to other healthcare professions and should enhance our status and influence in the larger health care arena.

ATs have rightly chosen to compete for our place as legitimate healthcare providers.² Additionally, the expansion of athletic training practice beyond its traditional roots has broadened our role in the healthcare community. Given these realities, benchmarking the profession’s status against similar health professions is an important and valid decision-making strategy. For example, the degree landscape of similar health professions represents a normative set of goals - at least as perceived by the public - regarding the level of education required of a healthcare professional.³ This is especially true when trying to anticipate the probability of success or failure of decisions to change the professional degree.

Consequently, it is relevant and important to note that many peer health professions to athletic training are currently providing professional education at a master's degree or higher (Table 1). Of those professions with professional preparation at the baccalaureate level, similar discussions regarding transitioning to graduate-level training are underway.

Table 1. Minimum Degree Designations

Profession	Minimum Degree Requirement
Occupational Therapy	Master’s degree
Physical Therapy	Doctorate degree
Speech & Language Pathology	Master’s degree
Nursing	Associate’s degree*
Registered Dietitian	Bachelor’s degree
Physician Assistant	Bachelor’s degree (Currently 91% of programs are at the master’s level with a mandate for 100% by 2020)

*In nursing, the associate’s degree is the current minimum requirement; however, the overwhelming majority of programs are delivered at the baccalaureate level.

How athletic training is perceived and classified by governmental and other agencies is an important consideration. For example, a move to graduate level professional education would make athletic training less like those professions identified as “frontline & auxiliary work force,”⁴ a subset of the broader healthcare workforce with a status lower than the peer professions identified above. The athletic training profession currently resembles the professions in this category of the health workforce (eg, nurse’s aide) in education levels, salary, employment dynamics, and qualitative professional descriptions. Because professions in these categories are considered to have the least amount of training and preparation,⁴ we should avoid being affiliated with:

Frontline Workers The defining criteria used in the report are that the education is generally at the bachelor’s degree-level or below, with annual wages below \$40,000, and considerable direct patient contact.

Auxiliary Workers The auxiliary workforce is characterized by certain distinguishing issues: relatively low wages and benefits; subcontracting and temporary workers; multi-skilling; high stress levels; lack of empowerment; and, in some instances, unionization. With diverse skills, work settings, and training levels, the frontline workforce as a group is experiencing shortages, high turnover, and projected high growth. Home health aides, medical assistants, and nursing aides are in this category.

Reimbursement for services, another hallmark of established peer health professions, has long been an unrealized goal of the athletic training profession. Perceptions about the training and education of the profession are an important component of our success in this effort, and it is our opinion that a transition to professional education at the graduate level would potentially eliminate an obstacle in positioning athletic training services as worthy of reimbursement on the national level. For example, the National Uniform Claim Committee (NUCC), created to develop a standardized data set for use by the non-institutional health care community to transmit claim and encounter information to and from all third party payers, identifies ATs as Level III providers, under the “specialist / technologist” category.

As another example, the US Department of Labor classifies athletic training as an “Other Healthcare Professional and Technical Occupation.” In contrast, occupational therapists, physical therapists, and speech and language pathologists have Level II recognition. While this ranking does not impact the profession’s ability to become credentialed for the purposes of private payer reimbursement, the symbolic importance of classifying ATs with other professions who serve in aide and assistant roles demonstrates a systemic lack of recognition of ATs as significantly educated, qualified clinicians with direct decision-making authority.

Centers for Medicare and Medicaid Services (CMS) provider taxonomy codes also omit athletic training. However, most healthcare professions that are recognized by CMS provide professional education at the master's degree or higher (exceptions are registered dietitians, certified nurse midwives, and orthotists / prosthetists).

While a transition to graduate-level professional education may not have an immediate positive impact on our standing in the healthcare arena, it is one important step in gaining recognition. Perception is often based on reality. If AT is perceived (even defined) as being part of the frontline and auxiliary workforce, it will be limited in its efforts to elevate its status in the broader healthcare community. Elevating the degree may help change the perception of athletic training as a legitimate healthcare profession, and assist the profession in its strategic effort toward professional advancement.

Finding #2: Transition to graduate professional education facilitates continued evolution in the professional competency requirements to better reflect the clinical practice requirements of current and future ATs in a changing healthcare environment.

Since the original athletic training “Education Reform” in 1997, we have seen the knowledge, skills, and abilities expected of entry-level ATs increase. This changing expectation occurred concurrently with expanded work settings and a diversification of our patient population. External to the profession, several healthcare policy bodies have proposed general competencies that should be common to all health professionals.^{5,6} These competencies are quickly becoming interwoven into the United States healthcare system as standard expectations for healthcare professions. Similarly, the Patient Protection and Affordable Care Act includes ensuring cost effective and appropriate care, an emphasis on prevention, use of technology of information management, and racial and cultural competence.

**Institute of Medicine Core Competencies
for Health Professionals**

- Delivering patient-centered care
- Working as part of interdisciplinary teams
- Practicing evidence-based medicine
- Focusing on quality improvement
- Using information technology

Most health professions have taken steps to integrate many of these competency areas into both their professional education and into their patient care practices. Consequently, over time these skills are likely to be perceived by both the public and by peer health professions as indications of competence and medical authority. Professional education that does not incorporate these foundational components of practice risk being perceived as not meeting professional expectations. Our current knowledge, skills, and abilities incorporate some of these competencies but expansion would be required to fully incorporate them into our professional programs.⁷ For example, the need for interdisciplinary practice is identified in the Foundational Behaviors of Professional Practice yet there are no requirements that students actually gain experience in collaborating with other healthcare providers.

While the expectations of entry-level ATs have changed, there has been little change in the model in which they are prepared. In the American higher education system, it is generally accepted that a higher degree means a higher level of learning, and therefore a higher level of expertise in a given discipline. Consequently, a graduate level professional degree naturally suggests a level of expertise beyond what can be provided at the baccalaureate level. In fact, for many professions professional education occurs at the graduate level because of the level of complexity and sophistication of the subject matter.

In addition, where professional content is taught at a graduate level, the assumption is that education in a discipline requires a more advanced student with a more stable foundation of basic and general knowledge requirements upon which the more “advanced” content at the graduate level can be taught. (See Finding #8.) There is anecdotal and research evidence to suggest that this dynamic exists in current professional graduate programs in athletic training (Scott Bruce, written communication, October 2013).⁸

Concerns about degree inflation, or *degree-creep*, are partly a reaction to the perception that academic degrees are elevated by professions for symbolic prestige.⁹ However, these concerns are unsubstantiated for medical and health science disciplines where an expanding and complex science base is obvious. In these disciplines, “basic” science requirements crowd out professional knowledge, which leads to longer curricula, requiring higher degrees.^{5,10}

A bifurcation has been identified in the health professions workforce, a divergence caused by the increased number of health professions training at higher degree levels. Technical skills are assigned to technicians to free up practitioners who are in decision-making roles. While this trend has benefits for the US healthcare system, one obvious result is a decline in the number of professions training at the baccalaureate level.¹⁰ Most professions previously at the baccalaureate degree level (eg, physician assistant) have transitioned or are in the process of transitioning to a master’s degree or higher. Providers who currently train at the associate’s degree level, such as physical therapy assistants, are discussing the possibility of moving to a baccalaureate requirement.¹¹

The combination of expanding competencies that are specific to athletic training with the global expectation of integrating the Institute of Medicine core competencies illustrates the need for graduate-level professional education that can accommodate the expanding body of knowledge and associated changes in clinical practice that are expected in outcomes-oriented healthcare.

Finding #3: Factors fundamental to providing quality care are likely improved by professional education at the graduate level.

As the discussion regarding the appropriate professional degree for athletic training has progressed, the lack of evidence demonstrating improved patient outcomes could be interpreted as a variable supporting remaining at the baccalaureate level.^{12,13} However, to imply that a lack of evidence of an effect is the same as evidence demonstrating the lack of efficacy is incorrect. To date, no comprehensive patient data for the clinical care provided by ATs (regardless of degree) is available in the literature. Without athletic training-specific patient outcomes data, there is no baseline for comparison. With that said, few, if any, in our profession would suggest that this lack of data is evidence that ATs fail to produce good outcomes.

In the absence of direct evidence, we are left to examine theoretical models and indirect data to help us decide if a degree change is likely to affect the quality of patient outcomes. When studying available research on quality of care in other health professions it becomes obvious that there is not a universally accepted single quality of care metric. In general, the perceived quality of care appears to be multifactorial with the three most common themes in the literature being 1) Credentialing and licensure examination performance; 2) Perception of patients or other providers; and 3) Actual patient outcomes.

Several factors have been identified as affecting knowledge and skills represented by performance on credentialing examinations. Distilling these factors, recurrent themes that positively predict credentialing exam performance include academic aptitude (pre-program GPA & standardized tests), quality of the individual program, total program length (longer is better), and student age,¹⁴⁻²⁰ whereas, level of degree obtained did not seem to be a useful predictor of exam performance for physician assistants.¹⁸ Interestingly, however, this appears to be different in athletic training education. BOC exam data (2010-12) suggests that current professional masters programs are more likely to meet the passing rate standard and obtain higher total scores than undergraduate programs. Additionally, the master's students outperform the undergraduate students on the exam itself. This finding holds true even at institutions offering athletic training professional education at both the undergraduate and master's levels. The increased length of the educational process and increased student age would be expected to positively influence exam performance.

A second factor influencing quality care is the perception of the provider by patients and colleagues. This is hardly new. A 1978 study identified that personal characteristics more highly correlate with clinical success than do academic ones.²¹ Maturity, rapport, non-academic achievement, and motivation were stronger predictors of clinical success than GPA or admissions tests (MCAT) scores.²¹ Other studies have since been conducted that validated these findings.²²⁻²⁵ Similarly, in our own profession care, communication, commitment, and integrity are also essential traits of quality ATs; knowledge is not enough.²⁶ These qualities are more easily developed in older, more mature, focused, patient, self-confident students who can draw upon a larger set of life experiences and more readily identify with patients than in undergraduate students who are just beginning to form their adult personalities and skillsets.

Patient outcomes are the most direct and important indicators of quality care. As already indicated, athletic training simply does not have an established base of literature from which we can draw conclusions in the degree discussion. In other healthcare professions most outcomes are based on patient satisfaction rather than actual clinical outcomes. Factors such as greater staffing levels, lower patient loads and length of stay positively influenced outcomes; years of experience, specialty certifications, and professional degree level appear not to

affect outcomes.^{20,27-29} The literature regarding patient outcomes is not well established and it is difficult to draw conclusions about the potential impact of a degree change on this aspect of quality care.

Clearly, quality of care is multi-factorial and likely there is no definitive answer as to whether a degree change will have a positive impact until the question is studied directly. Based on proxy evidence, however, a degree change is likely to have a positive effect on the knowledge and technical competence aspect of quality as evidenced by the existing BOC exam data. There is considerable reason to expect that older, more mature students will fare better in developing the personal qualities that patients and providers alike consider to be vital to providing quality care. The influence of a degree change on direct patient outcomes is difficult to predict from the existing literature since there are little to no published references. On the whole, a degree change is likely to positively impact many factors that influence quality care, but not all of them. However, there is no compelling evidence that a change would be detrimental to the quality of care provided.

Finding #4: Professional education at the graduate level enhances retention of students who are committed to pursuit of an athletic training career. Graduate-level education attracts students who are better prepared to assimilate the increasingly complex concepts that are foundational for athletic training practice.

A survey of baccalaureate-level professional education programs suggests that approximately 25% of graduates do not intend to practice as an AT.^Y Similar polling conducted with directors of master’s-level professional education programs demonstrated that almost all (98%) graduates intend to practice as an AT (Table 2). Undergraduate students’ decision not to pursue employment or additional education in athletic training following completion of a baccalaureate degree is based on a perceived lack of respect for the athletic training profession, the perceived time commitment required of the job, and the intentional use of their athletic training undergraduate degree as a conduit into another profession at the post-baccalaureate level.³⁰

Table 2. Summary of Program Director-Reported Data for 2010-11 and 2011-12 Graduates

	# of Graduates	# (%) of Graduates Taking BOC Exam	# (%) of Grads Who Intend to Practice Athletic Training
Bachelor’s degree (n = 134)	2767	2468 (89.2%)	2053 (74.2%)
Master’s degree (n = 11)	183	183 (100%)	179 (97.8%)

Note: All program directors of professional programs in AT were asked to provide the above data via an electronic survey. The overall response rate was 39%, with 42% (11/26) of graduate programs responding and 39% (134/343) of undergraduate programs responding.

While all three reasons are concerning, the use of athletic training knowledge and skill as preparation for success in another profession is particularly problematic. These students use their athletic training education to gain academic advantage during their graduate-level education in disciplines such medicine, physical therapy, or physician assistant studies. Although the primary goal of professional preparation as an AT (and the related program accreditation process) is for the eventual practice of athletic training, it is common for institutions to promote the athletic training program as a pre-professional program for entry into post-baccalaureate health professions programs. Historically some ATs have been flattered into thinking that this situation demonstrates the true value of the athletic training knowledge base. However, we find great concern in this situation because it represents a

^Y Data regarding the extent to which graduates go on to actually practice athletic training is not available. The CAATE’s new reporting procedures will provide this data and should be examined.

significant “brain drain” that saps the profession of unique knowledge and skills, and more importantly, of trained clinical personnel.

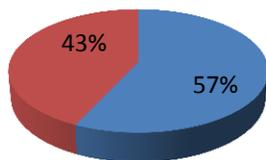
Allowing the student to opt into professional education at the graduate level provides a more deliberative and intentional choice to pursue athletic training as a “destination profession” - that is, the profession to which they are committed for making their living. While developing foundational science and analytical skills, students can use their undergraduate experiences to fully explore their career options and then commit to athletic training at the graduate level.

In contrast, the reasons students give for entering the AT profession at the undergraduate level have not been widely examined, although anecdotal evidence suggests that students are often exposed to the profession through interaction with ATs while participating in athletics or when they are injured. One small study found that the primary attractor for undergraduate students to the athletic training profession is the relationship with sports and the desire to feel like part of a team.³¹ If this is true, undergraduate students may be selecting athletic training as a major with a false assumption of being part of “sports” rather than to become health professionals. In fact, a common reason that undergraduate AT students change their major is because they lacked an accurate and thorough understanding of the profession prior to their choice, and they did not fully appreciate the time commitment associated with the clinical portion of the major.^{30,32}

It is commonly accepted that regardless of discipline, graduate students are more mature, self-directed, and independent learners than undergraduate students. Chronological age and simple maturation likely accounts for greater levels of self-directed learning, lesser levels of procrastination, and greater use of critical thinking strategies reported by graduate students in general.³³

Differences in critical thinking and clinical decision making in undergraduate and graduate students enrolled in professional athletic training programs have not been specifically examined. However, the Board of Certification (BOC) examination data offer unique insight into the readiness and preparedness of AT students who take the examination. For example, current CAATE standards³⁴ state that programs must have a minimum aggregate (3 year) first-time BOC examination pass rate of 70%. When the first-time pass rate is examined on a program-by-program basis, 43% of undergraduate professional programs *fail to meet the standard*, compared to only 3.7% of graduate professional programs (Figure 1).

Undergraduate Programs



■ Met the CAATE Standard
■ Did Not Meet the CAATE Standard

Graduate Programs

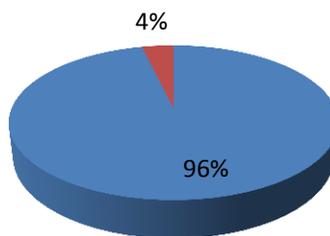


Figure 1. First-time BOC Examination Pass Rates by Program Type. Aggregate data from 2010-11 through 2012-13 test years (n = 358 undergraduate and 28 graduate programs). Source: Board of Certification.

Postscript: The most recent BOC exam data available (exam years 2010-11 through 2012-13, ie, graduation cohorts 2010 – 12) were used to prepare this report. On the eve of distribution of the report, CAATE annual report data for graduation cohorts 2011-13 became available. The percentage of baccalaureate programs below the 70% pass rate standard improved from 43% to 28%. The percentage of post-baccalaureate remained the same at 4%. Current information can be accessed at: <http://caate.occutrain.net/accredited-programs/>

Finding #5: Transition to professional education at the graduate level would increase the likelihood that education programs are better aligned with other health care profession programs within their institution.

Professional athletic training programs are often housed in traditional, non-health science, or generic academic units such as physical education, kinesiology, or exercise science. These arrangements reflect the historical evolution of athletic training in higher education rather than a strategic decision reflecting contemporary health professions education. Recognizing the inherent disadvantages of this arrangement, the NATA Board of Directors approved recommendations in 1996 that professional athletic training programs align with schools of health professions.³⁶

To determine the current administrative location of professional programs, we performed an analysis of the organizational alignment of all programs, which revealed a wide range of structural models. Our analysis revealed that the realignment recommended by the NATA BOD 17 years ago has not occurred. The key findings of this analysis are that 21% (74) of the 355 professional programs are administratively housed in colleges/schools with other peer health professions programs. Another 13% (45) programs are located in multidisciplinary departments, but are the sole health professions discipline. Athletic training is the only health profession at 16% (57) of institutions. In all cases, graduate-level professional programs are more frequently located in favorable administrative units, though the difference between the levels is modest.

In contrast to these findings, the education programs of peer health professions (eg, physical and occupational therapy; physician assistant) tend to be in schools or colleges of health professions or health sciences, in departments or divisions organized around a single profession (eg, physical therapy department). Some disciplines, such as physician assistant programs, commonly align with schools of medicine. These arrangements facilitate a host of administrative and environmental benefits to both students and faculty.

It is the opinion of the task force that *it is more likely* that large-scale administrative realignment will occur with a profession-wide transition to graduate-level professional education because the structure and function of traditional graduate-level academic units are different from undergraduate programs, and that difference will facilitate a realignment. We find that the needs of professional programs at the graduate level are largely incompatible with the current structure and resources of many of the academic units in which baccalaureate programs are currently located in three key areas:

First, the business models employed in schools of health professions are different from those of non-health professions academic units, especially at the graduate level where tuition remission and assistantships are common. Student enrollment, tuition revenue, and state subsidies (in public institutions) are the primary source of revenue in most health professions colleges or schools. This is in direct contrast to an emphasis on research or grant-generated revenues on which many traditional, or non-health professions academic units, rely. Consequently, student enrollment in graduate-level health professions programs tends to be much larger than the enrollment of non-health professions graduate programs like kinesiology and exercise science, which in turn has a significant

impact on space and personnel resource requirements and allocations. For example, it is more difficult to argue for needed medical supplies and clinical lab space, when that argument is being made to a non-health professions administrator, in a non-health professions department and/or school who is unfamiliar with the customized lab and instructional space needs of health professions education.

Second, health professions programs require administrative and faculty structures that are uncommon to traditional academic units. Administratively, health professions programs require a central administrator responsible for the conduct of the program and for compliance with national accreditation standards. In fact, the presence of national accreditation requirements in health profession education is one of the most significant differences between health professions education programs and most traditional academic units.^α This can lead to complications if academic administrators under-value or misunderstand the structural and resource requirements of a contemporary accreditation process, or fail to provide the necessary support infrastructure to assist with ongoing program evaluation requirements. This is further complicated by the complex state and federal profession-specific regulatory requirements that impact various aspects of program administration, such as clinical education and faculty instruction.

Third, faculty designations are often different in health professions units to reflect the unique requirements of program delivery. For example, “clinical faculty” positions (not to be confused with clinical preceptors) may co-exist with traditional tenure-track and instructor-level faculty positions. Clinical faculty have different work expectations in terms of teaching load, length of contract, clinical practice requirements, and scholarship obligations. Additionally, most health professions programs must have a clinical education coordinator, a faculty position that is foreign to non-health professions academic units. Lastly, the research and service activities health professions program faculty may be poorly understood and/or under-valued by non-health professions faculty. This can have a significant and negative impact on faculty promotion and tenure decisions. Additional faculty-specific considerations, such as accommodating continued clinical practice and continuing education requirements, are best understood in academic units familiar with health professions education.

For these reasons, we believe the long-term success of graduate-level programs will require realignment in a way that has not been necessary for baccalaureate level professional programs. Professional programs in athletic training would be well served with alignment in schools/colleges of health professions, regardless of the degree required. The nature of graduate-level education provides additional justification for this alignment.

Finding #6: Professional education at the graduate level should facilitate interprofessional education.

The ability “to learn with, from, and about each other,” interprofessional education (IPE) necessitates connecting students studying in different disciplines. Increasingly recognized as an essential component in the education of health professionals, the benefits of IPE include improved critical thinking and professional socialization leading to a workforce that is “collaborative practice-ready.”^{5,35} Training professionals “isolated by discipline” is an obstacle to achieving the teamwork necessary for high quality health care.⁵ The 2012 *Future Directions in Athletic Training Education*¹ document also emphasized the need to create IPE opportunities in professional athletic training education.

^α Voluntary accreditation in Exercise Science is available via the Commission on Accreditation of Allied Health Education Programs. Fewer than 40 Exercise Science programs are accredited.

Professional education at the graduate level removes many barriers to IPE. On a practical level, the ability to develop IPE courses and experiences is more feasible at the graduate level because, with the notable exception of nursing, peer degree programs in the health sciences are also offered at the graduate level providing a more homogenous group in terms of IPE opportunity. This reflects the fact that most peer health professions are professionally educated at the graduate level. Currently, a potential barrier to implementing IPE at some institutions is that it is often difficult to create IPE courses that can award both undergraduate credit for AT students and graduate credit for health professions students in other disciplines. In addition, coordinating IPE activities is simplified by fewer competing courses and obligations, and greater scheduling flexibility in graduate programs.

The nature and extent of IPE depends on the presence of health disciplines on campus. Implementing IPE activities may be simplified if multiple healthcare professions are housed in the same academic unit. A greater percentage of graduate level programs have this arrangement as compared to undergraduate programs. For the 127 (33%) of programs that are housed in units separate from the other health professions on campus, IPE presents a logistical challenge. For the 58 programs with no other health professions at their institution, meaningful IPE will require academic artistry.

Interprofessional education is essential to providing high quality healthcare, which can only be accomplished when health professionals act in cooperation for the delivery of patient care. IPE within athletic training professional education is likely easier to achieve at the graduate level because the majority of peer professional programs are at the graduate level. Developing relationships with other health professionals at the start of the professional education process may enhance professional working relationships.

Finding #7: A strong foundation of health-related basic sciences is increasingly necessary to prepare students for contemporary clinical practice in athletic training.

Students with a broader and deeper base of scientific knowledge foundational to health professions practice should be better prepared for professional education. As discussed in Finding 8, current baccalaureate-level curricular demands often make it impossible for the student to obtain a strong science foundation before the beginning of professional content. The need for this foundation persists in the education of all health professionals. In their 3rd report *Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century*, the Pew Health Professions Commission discussed four important education and workforce issues.⁶ The first PEW recommendation emphasizes the need for a science foundation:

A1 Scientific Base of Educational Programs: The demands on systems of care are growing. The scientific base of all health professions must grow to accommodate these changes. ^(p. 30)

In addition to the general education requirements described in Finding #8, preparation in basic science disciplines such as biology, physics, and chemistry, provides a foundation upon which theoretical understanding and clinical application is built. This foundation should make it easier it is for students to connect new knowledge to current understanding, and then adapt this knowledge to specific clinical situations. For example, students with a foundation in physics will better understand the biomechanics of movement, injury, rehabilitation, therapeutic agents, and recovery.

Separating the foundational content from the professional content makes it easier to design a professional curriculum that emphasizes the progression from basic understanding of foundations to advanced clinical application of specifics. Students have the opportunity to learn one piece at a time and build on what they know rather than having to digest the foundation and application simultaneously.

Similar to a problem described in Pharmacy professional education,³⁷ our current baccalaureate model minimizes the opportunity to expand foundational knowledge. At the baccalaureate level, students often spend 1 or 2 years in preparatory study before entering professional education. Ideally, athletic training students should complete general coursework in areas such as biology, chemistry, physics, anatomy, and physiology prior to beginning their professional education. Many other healthcare professionals with whom we will work in a team approach to healthcare require such background coursework prior to beginning their professional preparation. Athletic training students completing baccalaureate-level programs may not be provided the pre-professional foundation they will need to be on an equal footing or to meet the expectations of the current and future healthcare system.

Science courses represent a necessary component of pre-professional preparation for students in health professions. Professional education at the graduate level allows more time to complete these core requirements and acquire this foundation before beginning athletic training-specific coursework.

Finding #8: Professional education should not compete with general education, liberal arts, and foundational science requirements because it detracts from the effectiveness of the professional educational experience.

The value of general education (including liberal studies) requirements in developing well-rounded, critically thinking graduates is essential. However, within baccalaureate-level professional education programs, these same general education requirements impede the student's ability to complete required profession-specific coursework and the clinical experiences necessary for BOC examination eligibility. For a typical 120 semester credit hour bachelor's degree offered by a public institution, general education requirements typically account for 40 to 50 credit hours (33% to 42% of the degree). In some liberal arts institutions, general education requirements can constitute an even larger proportion. While the foundational knowledge from the general education curriculum is valuable, the time required for it becomes a constraint on students' professional preparation. Students' time and effort are divided between their professional (ie, athletic training) and non-professional coursework, diluting their focus for each. Likewise, athletic training students are frequently limited in their ability to enroll in elective coursework, to complete academic minors, participate in athletics, and/or to study abroad because of course work and clinical education conflicts. These constraints are made more burdensome by the commonly-cited institutional goal of having undergraduates complete their degrees in four years.

The Association of American Colleges and Universities defines essential learning outcomes of liberal arts education to include: 1) knowledge of human cultures and the physical and natural world (e.g., science, math, social sciences, humanities, histories, languages, and the arts); 2) intellectual and practical skills (eg, critical thinking, communication, problem solving); 3) personal and social responsibility (eg, ethics, cultural competence); 4) integrative and applied learning (eg, synthesis across general and specialized studies).

Of greatest concerns is the impact of non-professional degree requirements on the students' available time and attention for clinical education. Among the most frequent concerns voiced by practicing athletic training clinicians is that the current students are more knowledgeable than their predecessors, but are less prepared for autonomous

clinical practice. One frequently cited factor for this is the decrease in the amount of time students spend in the clinical setting brought about by changing education practices and accreditation processes.

A 2013 survey of professional athletic training program directors indicated that graduate-level athletic training programs reported a higher minimum time requirement (1067 ± 210 hr.) for clinical education as compared to undergraduate programs (906 ± 293 hr) (Cavallario J, written communication, 2013). In addition, graduate-level programs had a higher ceiling of maximum time allowed for clinical education (graduate = 2011 ± 296 ; undergraduate = 1660 ± 528). While graduate-level professional programs are shorter in the amount of time required to complete the degree than baccalaureate programs (2.33 ± 0.8 years vs 2.91 ± 0.5 years), the minimum amount of time required in clinical education is higher, indicating more opportunity for clinical education. A prolonged, immersive clinical experience is easier to obtain at the graduate level where students do not have to balance their time between professional and non-professional courses. The latter often occur at the time of day when critical clinical education experiences are most constructive because of high patient volume.

The distraction caused by the competition between general education and professional education requirements interferes with the students' ability to fully benefit from both. The focused nature of professional education at the graduate level allows students to maximize the benefits of both undergraduate and professional education. Rather than being a distractor from other obligations, graduate level clinical education is facilitated by classroom education (and vice-versa) and removes the barriers presented by other undergraduate education needs.

Finding #9: A transition to professional education at the graduate level will result in a more efficient educational system.

The capacity of the profession to produce practicing ATs is a function of 1) the number of professional programs, 2) the number of graduates, and 3) the proportion of educated graduates who choose to practice as ATs.

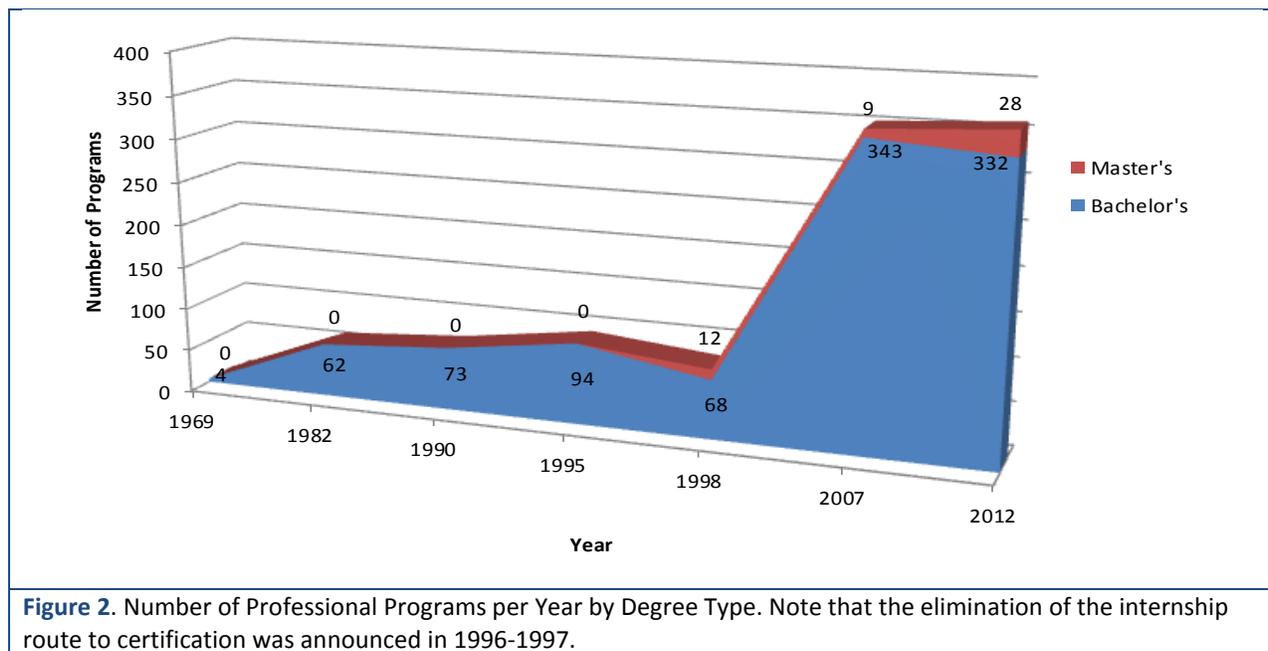
The number of professional programs in athletic training is large and the enrollments are small in comparison to other healthcare professions (Table 3). Only nursing exceeds athletic training in the number of accredited programs. Since the announcement of the elimination of the internship route to certification in 1996, there has been an exponential growth in the number of accredited athletic training programs. Likewise, the past 5 years have shown an increased trend in the number and percentage of master's-level programs (Figure 2). A transition to graduate-level professional education would likely reduce the number of professional athletic training programs.

Table 3. Number of Programs of Various Health Professions and Program-Wide Enrollment.

Program	Number of Programs	Average Total Enrollment in Professional Program
Athletic Training	360	34
Physical Therapy	218	119
Occupational Therapy	149	108
Physician Assistant	181	108
Nursing	604	280
Medicine	171	483

Note: Average enrollment data are based on the most current available and are provided only for comparative purposes.

Twenty-two institutions that currently sponsor baccalaureate professional programs do not offer any graduate degrees, making a transition to the graduate-level professional degree difficult or impracticable. Six institutions currently sponsor programs at both the baccalaureate and graduate levels, so a change eliminates one program at each. Finally, some institutions will simply elect not to offer professional education at the graduate level. It is possible that these reductions could be offset by new program development. The addition of a graduate-level professional program may be appealing to some institutions that do not currently sponsor an athletic training program.



Athletic training programs typically have very small enrollments, often not by choice. Results from an April 2013 survey of athletic training program directors (44% response rate) indicated that only 19 programs (6% of survey total) were at their enrollment capacity. The large number of programs and small number of students (many who will not choose to pursue a career in athletic training) dilutes the pool of focused students, dilutes the faculty pool, and limits the amount of scholarship that can be performed by faculty.

There also appears to be a relationship between the size of the program and the success of candidates on the BOC examination. BOC exam data for the 2010-11 through 2012-13 examination years shows that 66% of programs produce fewer than 10 first-time candidates per year. More than half of these small programs failed to meet the CAATE 70% first-time pass rate standard. Only 18.9% of programs with 10 or more candidates failed to meet the standard (Table 4). Based on these data, consolidation of students and faculty into fewer but larger programs may benefit students' performance on the BOC exam.

Table 4. BOC Examination Data on First-Time Pass Rates Based on Program Size.

Program Size*	Percentage of total accredited professional programs	Percent of these programs below the CAATE 70% pass-rate standard	Average 1 st attempt pass rate
<10 candidates/year (N = 246)	65.1%	51.6 (N = 127)	64.6%
≥ 10 candidates/year (N = 132)	34.9%	18.9% (N = 25)	81.4%

*Program size = 1st attempt BOC candidates from 2010 - 2012

Board of Certification data for the 2010-12 exam years indicates that the number of graduates taking the exam averages 8.3 per program per year, and that number is similar for both undergraduate (mean = 8.6) and graduate (mean = 8.3) programs. However, as described in *Finding #4*, the number of graduates who intend to practice athletic training does vary by professional degree. Two separate surveys completed by program directors indicated that 76 to 81% of graduates of baccalaureate professional programs intend to practice athletic training, while 98% of those who complete graduate professional programs intend to practice athletic training. While these data do not capture the reality of who actually practices, the program directors' indicate that students in graduate-level professional programs have a stronger commitment to athletic training practice and are more likely to enter the workforce.

In the event that there are fewer programs, the profession should be able to meet the predicted increase in workforce demand. The US Bureau of Labor Statistics (BLS) estimates a 30% increase (an additional 5,400 ATs) in athletic training jobs by 2020.³⁸ This demand should help drive enrollments in existing programs to their capacity. Consequently, graduate-level professional education appears to be a more efficient mechanism for educating future ATs.

Finding #10: Currently, all state practice acts accommodate graduate-level education in athletic training as meeting the requirements for the state credential. No state practice acts would need to be amended.

A thorough review was conducted of each state's laws athletic training practice acts, including the language of the law, rules and regulations, and application requirements. The language used currently indicated that applicants for a state credential must have a degree in athletic training from an accredited program and possess a minimum of a bachelor's degree (many states require both a degree in athletic training and a minimum of a bachelor's degree). If the professional degree were to transition to the graduate level, graduates from these programs would still meet these requirements and would be eligible for a credential in each state.

Finding #11 The impact of a transition to graduate-level professional education on compensation levels and employment opportunities is complex and difficult to predict. Multiple factors influence compensation and employment patterns in healthcare.

There is no direct empirical evidence that a graduate-level professional degree will result in enhanced employment opportunities or salary levels for ATs. There is also no evidence that it will not.

However, some insight can be gained by studying the impact of degree changes on employment dynamics, including employer preference and salary impact, in peer health professions. For example, there is some evidence that higher degree levels lead to expectations of higher salaries among members of the profession. In the late 1990s, 40% of practicing physical therapists responding to a survey about the professional impact of the Doctor of Physical Therapy (DPT) degree believed that earning the DPT would result in a higher salary.³⁹ Similarly, graduates with the clinical doctorate in occupational therapy (OTD) had higher salary expectations than master's degreed occupational therapists.⁴⁰

Determining the actual impact of degree level on hiring practices and salary levels is more difficult, and the available evidence is inconsistent at best. In the early 1980s when physical therapy was contemplating a transition from a baccalaureate to master's level professional education, an APTA membership survey demonstrated a direct relationship between degree level and salary.⁴¹ In 1988, clinical administrators were surveyed about the impact of the pending transition to post-baccalaureate professional education.⁴² Two-thirds of respondents did not believe that the master's degree would produce higher salaries. A survey of employers regarding the impact of the DPT on their employment and salary preferences found that employers were more likely to hire and pay a higher salary to a DPT than to a physical therapist with a bachelor's degree.⁴³ Interestingly, these differences disappeared when comparing the DPT to the master's degreed physical therapist. However, others have been unable to demonstrate a convincing connection between the professional degree level and salary in that discipline.⁴⁴ More recent evidence suggests that higher degreed physical therapists do not make more than PTs with lower academic degrees and that experience was a more significant factor than degree as a salary determinant.⁴⁵ However, respondents to this survey also noted that salary levels previously accelerated in the wake of the profession's move from a baccalaureate to a master's professional degree, and so anticipated a similar phenomenon with the DPT degree. Finally, employers noted that the amount of reimbursement does not differ depending on the level of the academic degree. It should also be noted that PTs already had third party reimbursement prior to moving their academic programs to the graduate level. ATs ability to bill third party payors is limited, but it is anticipated that a graduate degree could aid in these efforts.

Available empirical evidence provides valuable insight into the current athletic training employment market (eg, the anticipated 30% expansion in job opportunities by 2020).³⁸ In addition, the BLS finds a 2010 median salary of \$41,600 a year, across 18,200 athletic training jobs. In comparison, the 2011 NATA Salary Survey Report demonstrates that the average total annual income for an NATA member with a bachelor's degree is \$46,176. In contrast, the average total annual income for a member with a master's degree is \$51,144. As the salary survey does not differentiate professional from post-professional master's degrees in its salary data, it is impossible to account for any difference between the two and may be confounded by the number of years of work experience. Nevertheless, a difference in total annual income of approximately \$5,000 exists between the two degree levels.⁴⁶

AT compensation, relative to the number of hours worked and the extent of job responsibility, has long been anecdotally cited as a reason for both student and clinician attrition.⁴⁷ Consequently, the impact of a degree change on total compensation, as well as employment configuration and job responsibility is of interest. According to the same NATA salary data cited above, compensation patterns for entry-level ATs (0-1 years) have experienced moderate increases over a 3-year period of time (2008-2011), keeping pace only with the rise in the cost of living. Table 5 compares annual salary increases in the professions of AT, PT, OT, and PA over a 5-year period from 2007-2011, while also accounting for the average inflation rate during the same annual period. These data demonstrate several things.

First, the salary discrepancy between athletic training and the peer professions of physical and occupational therapy is in sharp relief. Second, while the percentage of athletic training salary increase was competitive relative to PT, OT, and PA salaries and inflation prior to the start of the recession in 2008, growth in AT salaries stalled more significantly, and has recovered more slowly, than the salaries in the other professions. In fact, growth in AT salaries has barely kept pace with inflation since the 2008-09 period. While reasons for this are unclear, we hypothesize that it is the result of: 1) the lack of athletic training engagement with systems of healthcare service reimbursement, which despite recession-related slowdowns, were relatively robust compared to other sectors, and; 2) the AT profession's exposure to public sector jobs, primarily in public high school and college/university settings, all of which were negatively financially impacted in the economic downturn.

These findings are generally consistent with past peer-reviewed publications on the preferences of the athletic training employment market.^{48,49} In general, these studies suggest that employer preferences differ by setting (ie, high school, college/university, and clinic), resulting in mixed opinions about the value of the educational degree level. Master's degrees are important to college/university and professional sport employers but are not important for high school and clinic employers.⁴⁸ Experience is a higher priority than degree level in the clinical and high school settings.⁴⁹

Table 5. Salaries in Athletic Training, Physical Therapy, Occupational Therapy, and Physician Assistant as Compared to the Inflation Rate

Date Range	Profession	Beginning Salary*	Ending Salary*	Salary Increase*	Avg. Inflation Rate During Same Period†
2007-2008	AT	38,360	39,640	3.3%	3.3%
	PT	69,760	72,790	4.3%	
	OT	63,790	66,780	4.7%	
	PA	78,450	81,230	3.4%	
2008-2009	AT	39,640	41,340	4.3%	1.7%
	PT	72,790	74,480	2.3%	
	OT	66,780	69,630	4.3%	
	PA	81,230	84,420	3.8%	
2009-2010	AT	41,340	41,600	0.6%	0.6%
	PT	74,480	76,310	2.5%	
	OT	69,630	72,320	3.9%	
	PA	84,420	86,410	2.3%	
2010-2011	AT	41,600	42,400	1.9%	2.4%
	PT	76,310	78,270	2.6%	
	OT	72,320	73,820	2.1%	
	PA	86,410	88,660	2.5%	

*www.myfuture.com
† www.usinflationcalculator.com/inflation/historical-inflation-rates/

As we have described in more detail elsewhere in this paper, the arguments for a graduate-level professional degree depend on the consideration of several factors that are similar to those that peer healthcare professions made in support of their own degree transitions. Specifically, these factors included the facilitation of changes in patterns of healthcare delivery, scope of practice, and related need for greater depth of knowledge in athletic training, societal demands for increased accountability and its approval of a graduate degree as a symbol of professional status. If these are satisfied by a graduate-level professional degree, we believe that employment opportunities and wages will benefit. We also believe that closer alignment of our professional degree with those professions with which we compete in the marketplace cannot hurt, and may help, with both employment opportunity and wages.

At a minimum, two long-term trends about the athletic training employment marketplace are clear: 1) some employers are apathetic about the value of academic degrees and 2) salaries remain stagnant, barely keeping pace with inflation in recent years, and lagging far beyond the wage levels of peer professions. The status quo, to the degree that it has tolerated and/or facilitated this situation, should not be acceptable to a profession striving to become a destination profession for its students and clinicians.

Ultimately, the wage earned is dependent on the individual. So long as ATs accept low-paying positions there will be low-paying positions.

Implications of a Transition to Professional Education at the Graduate Level

A transition to professional education at the graduate level would have multiple effects that were considered during the development of this paper:

- The total cost to the student will increase.
- Traditional graduate assistantship positions, where athletic trainers provide care while obtaining a master's degree, would no longer be a viable work force strategy.
- A transition to professional education at the graduate level would increase the demand for doctorally-trained faculty who are prepared to meet the needs of the academy.
- When a profession increases its degree requirements, a common result is decreased minority representation in the student population and a resulting decline in practitioners. A 2013 Quick Strike poll of athletic training program directors showed that the average number of minority students is roughly the same in undergraduate (average = 5.29) and graduate programs (average = 5.06).
- Careful consideration should be given to the degree awarded. Having the discipline acknowledged in the degree designation rather than just the degree level (eg, MS) is common in healthcare disciplines (eg, DPT, MD) and provides recognition that one has studied in a specific profession.

These implications should warrant further investigation.

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APPENDIX – The Process

In June 2012, the *Future Directions in Athletic Training Education* document was developed by the NATA's Executive Committee for Education (ECE) and approved by the NATA Board of Directors. This document included a recommendation to critically examine the appropriate degree level for athletic training professional education. The Professional Degree Work Group determined that the most effective way to meet the NATA Board of Directors' charge was to develop a white paper that critically examined the appropriate degree level for athletic training professional education. It is important to note that a white paper is not an opinion paper but rather an authoritative document used to guide and inform discussion about an issue.

In January 2013, the ECE requested applications for volunteers to serve on the work group to examine this issue. The ECE received approximately 40 applications from all across the country including faculty, preceptors, administrators, and clinicians. A conscious effort was made to have representation from different regions of the country, as well as various backgrounds to include both educators and practicing clinicians. Primary and consultant working groups were appointed in order to capitalize on the expertise of a broader swath of athletic trainers. In addition to the eight athletic training volunteers, the NATA President and a CAATE Commissioner served on the primary work group. The BOC provided input and data as necessary throughout the process. A consulting workgroup was comprised of 36 members, also chosen from the original pool of applicants. Three original members withdrew from this group.

The primary work group participated in weekly conference calls to assign tasks, discuss issues, and review data. The consultant group was used to help validate the direction of the primary group, providing their initial thoughts on the issue as well as reviewing summary data and reports.

To frame our discussions, the working groups examined external influences, intra-organizational influences, and internal influences which are thought to impact the professional preparation environment, educational processes, and professional preparation outcomes (Stark, 1986). It is important to note that we recognized that it is a multi-faceted, complicated issue and that the educational degree does not directly impact every challenge currently facing our profession.

In the spirit of evidence-based decision making we employed "the conscientious, explicit, and judicious use of current best evidence" (Sackett) to help inform the recommendations of the working group. Evidence-based decision making is not blind adherence to the literature. It requires judgment in applying the evidence to the situation at hand and using it as a tool to help make a decision. We must also judiciously use what little evidence is available and exercise judgment about how it applies and how it does not. In the absence of direct evidence, we are left to examine theoretical models and indirect data to help us decide whether a degree change is likely to produce desired outcomes for the athletic training profession. We attempted to examine the best evidence available however evidence-based approaches are inherently limited by the quality and availability of evidence. Therefore, a combination of existing literature, expert opinion, data provided by the BOC and CAATE, along with a series of quick-strike polls used to collect data from directors of CAATE accredited programs was analyzed to reach the conclusions represented in this paper.

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