ORIGINAL RESEARCH

Educators' Perceptions of Characteristics That Define Athletic Training Student Competence: A Report From the Association for Athletic Training Education Research Network

Cailee E. Welch Bacon, PhD, ATC*; Julie M. Cavallario, PhD, ATC†; Alicia M. Pike Lacy, PhD, ATC‡; Stacy E. Walker, PhD, ATC, FNATA§; Lindsey E. Eberman, PhD, ATC||
*Department of Athletic Training and School of Osteopathic Medicine in Arizona, A.T. Still University, Mesa; †School of Rehabilitation Sciences, Old Dominion University, Norfolk, VA; ‡School of Kinesiology, Physical Education, and Athletic Training, University of Maine, Orono; §School of Kinesiology, Ball State University, Muncie, IN; ||Department of Applied Medicine and Rehabilitation, Indiana State University, Terre Haute

Context: As health professions education continues to transition toward competency-based education, it is essential that educators have an in-depth understanding of student competence and how it is achieved. However, little is known concerning the perceptions of educators regarding student competence in athletic training.

Objective: To explore athletic training educators' perceptions of student competence.

Design: Cross-sectional.

Setting: Online survey with open-ended questions.

Patients or Other Participants: In total, 368 of 1577 athletic training educators accessed the survey (23.3% access rate); 327 were included in data analysis because they indicated they served as an athletic training educator at the time of data collection and completed at least 1 open-ended question. Respondents represented athletic training programs in 47 states, and their average age was 41.5 ± 9.4 years.

Main Outcome Measure(s): We used a 10-item survey, including 5 demographic items and 5 open-ended questions to collect data. Descriptive statistics were used to characterize the demographic variables, while responses to the open-ended questions were coded by a 3-person team following the consensual qualitative research approach. To enhance trustworthiness, an external auditor confirmed the accuracy of the findings following the structured, 4-phase data analysis progression.

Results: Our findings revealed that educators described the meaning of student competence in a variety of ways that ranged between lower-level cognitive learning, midlevel cognitive learning, and high-level cognitive learning. Educators further characterized student competence as being time based or student or skill based or both. Finally, educators perceived that student competence is achieved when a student is ready to practice autonomously yet shared conflicting views on the similarities or differences between student competence and student readiness.

Conclusions: The views and perceptions of student competence varied among athletic training educators. To progress toward competency-based education, our findings highlight the need to establish consensus regarding student competence among educators in athletic training education.

Key Words: competency-based education, clinical education, readiness, autonomous practice

Dr Welch Bacon is currently an Associate Professor of Athletic Training Programs and Research Associate Professor at the School of Osteopathic Medicine in Arizona at A.T. Still University. Please address correspondence to Cailee E. Welch Bacon, PhD, ATC, Department of Athletic Training & School of Osteopathic Medicine in Arizona, A.T. Still University, 5850 E. Still Circle, Mesa, AZ 85206. cwelch@atsu.edu.

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KEY POINTS

- Competence is a continuum of contemporary professional practice abilities that minimally indicates a provider can provide safe and reliable care on a consistent basis without harm to a patient and maximally indicates expertise in a given ability within clinical practice.
- Athletic training educators have a myriad of perceptions regarding how student competence is characterized and achieved, which suggests that how competence is assessed and achieved is not equal across athletic training education.
- Athletic training educators should teach students how to self-assess their own competence as well as how to address areas of weakness, so they are prepared to more appropriately facilitate their own professional development and maintenance of competence needs when they transition to autonomous practice.

INTRODUCTION

The complexity of determining student competence in health professions education has been a difficult challenge for faculty and preceptors for many years. Historically, educators have struggled to differentiate the terms *competence* and *performance*,[1] and consistent evidence of agreement of a true definition of competence has never existed.[2] Many years ago, Butler[2] identified a framework to address the concept of competence that included 4 primary components: (1) performance may serve as a metric for specific behavior competence; (2) competence may encompass thorough appreciation of pertinent knowledge, skills, or both; (3) competence may serve to indicate that the subject has achieved a sufficient degree of proficiency in a given activity; and (4) holistic use of competence encompasses knowledge in the cognitive domain as well as skill performance and attitude in the psychomotor and affective domains. However, one of the primary assumptions that challenges the achievement of competency-based education in health professions education is that competencies are easily identified by both the performer and the assessor.[3]

The literature on competence assessment in athletic training education details written and oral examination, checklists, patient management or case scenarios, simulations and standardized patients, observed clinical performance on real patient encounters, and observed structured clinical examinations.[4] All these assessment measures rely on the subjective opinion of the assessor to identify the competency and the associated level of competence during its performance. The reliance on the subjectivity of assessors has also been reported by residency program directors of accredited athletic training residency programs,[5] which suggests that subjective assessment of competency is common practice across the athletic training education spectrum.

As of July 2020, professional athletic training education programs are required to address a series of athletic training curricular content standards and submit evidence that the program has determined that graduates have achieved an acceptable level of competence for each of the standards therein.[6] Adhering to the aforementioned framework for competency,[2] educators would then be tasked with determining an acceptable level of knowledge and skill on identified individualized tasks as measured by performance of said task. Athletic training educators and preceptors are responsible for determining student competence in the domains of clinical practice to ensure the delivery of safe patient care. As such, it is imperative that a universal understanding of competence exists across those charged with this responsibility. Furthermore, as health professions education continues to shift toward competency-based education and athletic training educators consider the implementation of the Athletic Training Milestones[7] to assess competence and progression of autonomous practice, it is vital that stakeholders are well versed in student competence to ensure learners are equally and objectively assessed. Therefore, the purpose of this study was to explore athletic training faculty perceptions of how student competence is defined and characterized. The following research questions guided this study:

(1) How do athletic training educators define student competence?
(2) According to athletic training educators, what characteristics influence competence among athletic training students?

METHODS

Research Design

We used a cross-sectional, Web-based survey design with open-ended questions to explore athletic training educators' perceptions regarding the characteristics of student competence as well as how they perceived student competence is achieved. Due to the textual data collected in the open-ended questions, we used the consensual qualitative research (CQR) tradition to guide data analysis. The CQR tradition is derived from elements of grounded theory, phenomenology, and comprehensive process analysis and centers around an in-depth descriptive analysis of participants' experiences.[8,9] Furthermore, the CQR tradition incorporates multiple researchers, a rigorous consensus process, and the use of auditors to ensure comprehensive representativeness and credibility of the data.[8,9] We selected the CQR approach for this study to explore educators' perceptions and experiences with how student competence is defined and characterized in athletic training education. This study was deemed exempt research by the A.T. Still University Institutional Review Board.

Figure 1. Flow of open-ended survey items.

Figure 2. Study procedures flow chart.
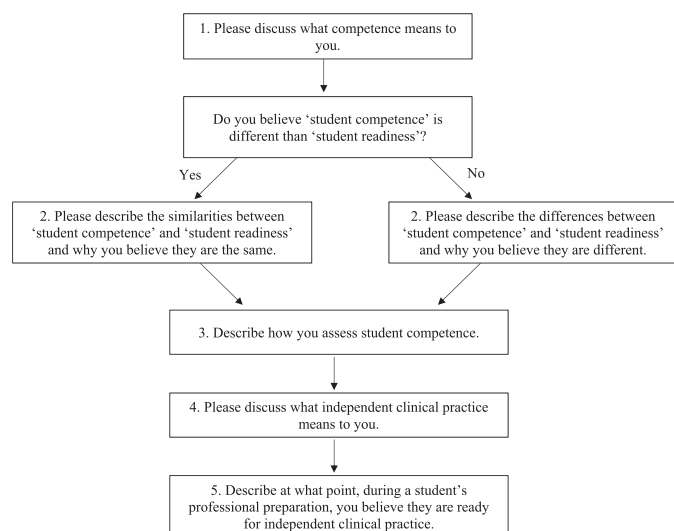
Participants

Athletic trainers (ATs) who were (1) members of the National Athletic Trainers' Association (NATA) in good standing, (2) certified, and (3) identified as being employed in the higher education setting (N = 1577) at the time of this study were recruited for participation in this study.

Instrumentation

Due to the lack of a pre-established survey to achieve the purpose of this study, the research team developed a brief, Web-based survey hosted in the Qualtrics platform (Qualtrics LLC). The survey consisted of 5 demographic questions and 5 open-ended questions (Figure 1). Once developed, the survey was sent to 2 athletic training educators with qualitative and survey research expertise for face and content validation. We used an established validation process[10]; each expert was asked to rate each survey question on a scale of 1 (*question is poor and needs to be removed*) to 3 (*question is good and should remain in the survey as written*). Based on the feedback provided, 1 survey item was revised to enhance clarity and comprehensibility for potential participants. A reliability analysis was not warranted based on the open-ended nature of the survey items. The final survey was pilot tested with a sample of 20 ATs that were not included in the data collection of the study to ensure comprehension and readability of each survey item as well as establish an estimated time of completion. Based on feedback provided during pilot testing, no changes were made to the survey instrument.

Procedures

In April 2019, an e-mail was sent by the NATA survey research service on our behalf to all individuals who met the inclusion criteria (Figure 2). The e-mail included a brief introduction and the purpose of the study, the estimated time to complete the survey (ie, 10 minutes), and a URL link to the online survey. Upon distribution, 6 e-mails were returned as undeliverable. Therefore, an initial recruitment e-mail was sent to 1571 athletic training educators. Participants were given 4 weeks to voluntarily complete the survey, and 3 reminder e-mails were sent to individuals who had not yet
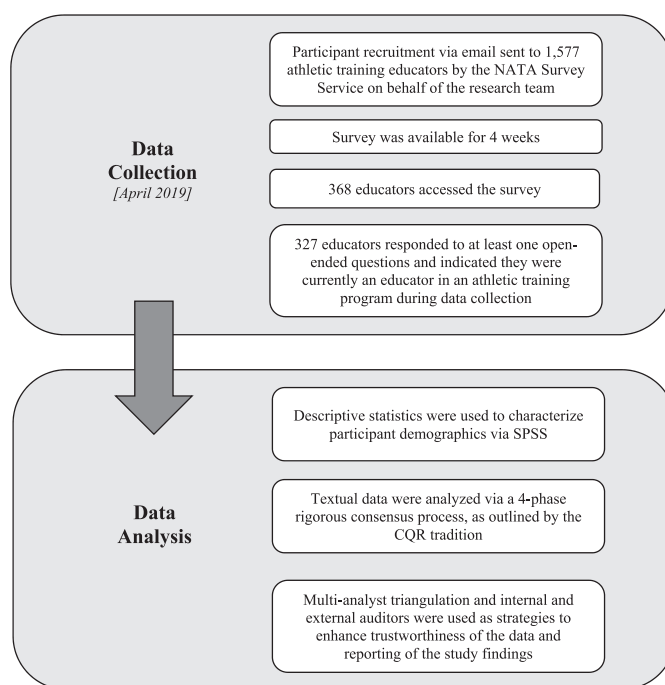
completed the survey. Due to the exempt nature of this study, participant consent was implied upon voluntary completion of any portion of the survey.

Data Analysis

To ensure compliance with exempt research and maintain survey best practices, participants were not required to answer every question.[11,12] For the purposes of this study, all participant responses were included in data analysis if the participant responded to at least 1 of the open-ended items. Descriptive statistics were analyzed to characterize participant demographics using SPSS Version 27 (IBM Corporation). All textual data were analyzed using a rigorous qualitative research approach.

The CQR tradition[8,9] was used as a guiding framework for analysis of the qualitative data collected. The CQR tradition requires the use of a research team to analyze data via a consensus process. For this study, we used a 5-person data analysis team (C.W.B., J.M.C., A.M.P.L., S.E.W., and L.E.E.) to minimize researcher bias and establish consensus. All members of the team are experienced qualitative researchers, each with at least 8 years' experience conducting qualitative research, and have previously been trained using the CQR method. Three members of the team (C.W.B., J.M.C., and A.M.P.L.) were involved in every phase of data analysis, while 2 members served as the internal auditor (S.E.W.) and external auditor (L.E.E.). As the internal auditor, the fourth team member was involved in the first phase of data analysis and then was asked to provide an audit of each subsequent phase of analysis. Once all phases of data analysis were completed, the external auditor conducted a comprehensive review of all phases of data analysis to ensure the final themes and categories that emerged were representative of the collective participant voice.[8,9]

To begin data analysis, the 3 members of the data analysis team (C.W.B., J.M.C., and A.M.P.L.) as well as the internal auditor individually coded the first 20 participant responses

Figure 3. Years of experience among respondents.

Years Experience as an Athletic Trainer / Years Experience as an Athletic Training Educator
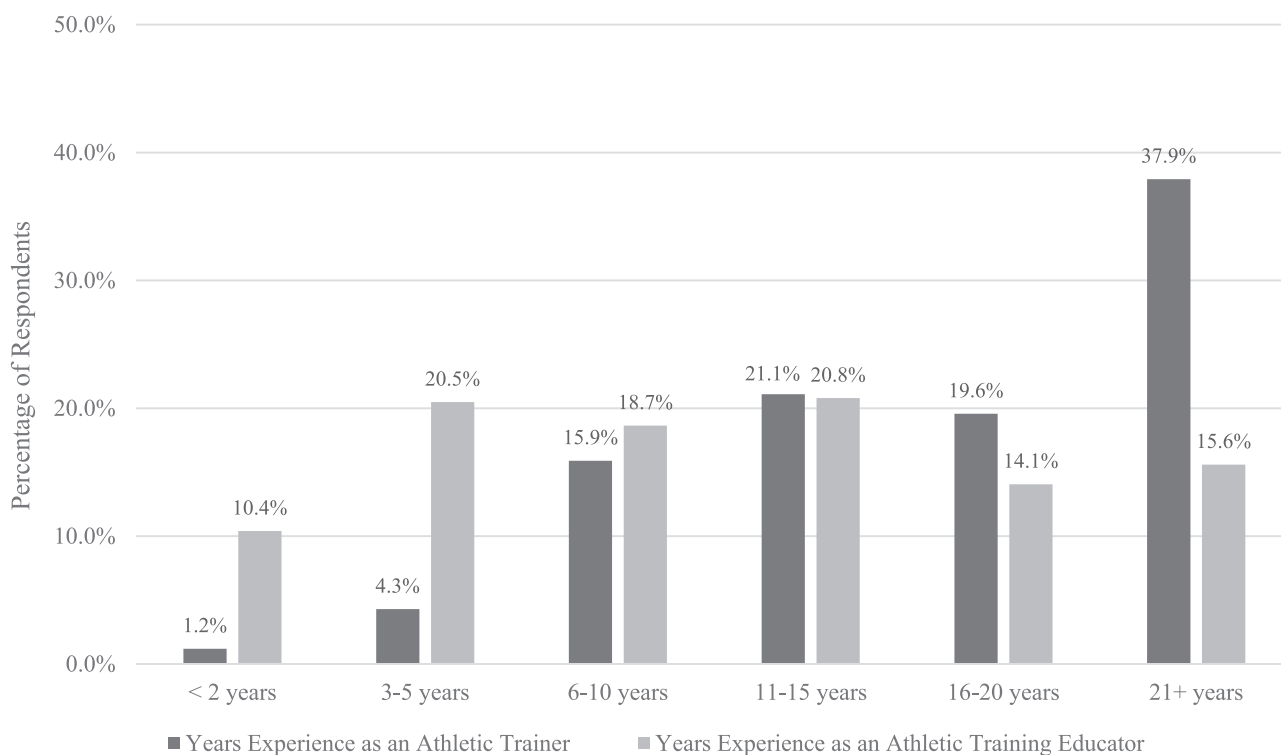
and developed a codebook. The research team then met to discuss the individual coding and developed a consensus codebook of themes and categories. The consensus codebook was then established by coding the next 20 responses. From there, 3 members of the team coded all remaining responses and met to confirm the codes. If a disagreement occurred, it was settled upon review by the internal auditor. Once all participant responses were coded and then separated into individual themes and categories, the findings were reviewed by the internal auditor followed by the external auditor.

Once the findings were reviewed and approved by all team members, frequency counting of responses occurred to capture the representativeness of participants within each theme and category. For this study, a *general* frequency was assigned if more than 245 participant responses were coded within the respective category, a *typical* frequency was assigned if 163 to 244 participant responses were coded, a *variant* frequency was assigned if 82 to 162 participant responses were coded, and a *rare* frequency was assigned if 81 or fewer participant cases were coded. We use the Consolidated Criteria for Reporting Qualitative Research to ensure the findings from this study were comprehensively reported.[13]

RESULTS

Of the 1571 potential participants, 368 accessed the survey for an access rate of 23.4%. Of those, 352 participants completed at least 1 open-ended question, and 254 respondents completed the survey in its entirety (completion rate = 72.2%). During data analysis, responses from 25 respondents were removed because they did not serve as athletic training educators during the time of data collection. Therefore, complete, or partial responses from 327 athletic training educators employed in 47

states were included in final analyses. Respondents' years of experience as an AT and educator are displayed in Figure 3.

The 4 themes that emerged from data analysis were *meaning of competence*, *characteristics of competence*, *achievement of competence*, and *assessment of competence*. For the purposes of this study, we will discuss the meaning, characteristics, and achievement of competence themes, as findings from those themes directly address the research questions. The frequency of participant responses per category within each theme is displayed in the Table.

Meaning of Competence

The meaning of student competence was described by athletic training educators in a variety of different ways. In general, participants described student competence as a minimal standard needed to perform specific tasks related to the profession without causing harm to a patient. Upon deeper analysis, 3 categories emerged from participants' responses to the meaning of student competence: *lower-level cognitive learning, midlevel cognitive learning,* and *higher-level cognitive learning*.

Lower-Level Cognitive Learning. According to the cognitive domain within Bloom's taxonomy of educational objectives,[14] lower-level cognitive learning involves a learner's ability to have knowledge and comprehension of a topic. Descriptions of student competence that related to knowledge, understanding, and comprehension, which fall within lower-level cognitive learning, emerged from 144 participant responses. One participant described student competence as "the ability to understand and apply a principle that has been learned and being able to understand a skill without help from others." Similarly, another participant commented that student competence is "understanding the knowledge of a

Table. Participant Cases by Theme and Category

Theme	Category	Frequency	Number of Participant Cases
Meaning of competence	Lower-level cognitive learning	Variant	144
	Midlevel cognitive learning	General	282
	Higher level cognitive learning	Rare	45
Characteristics of competence	Time based	Variant	161
	Student or skill based	Variant	151
Achievement of competence	Competence versus readiness	General	271
	Readiness first	Rare	60
	Competence first	Variant	116
	Both are similar	Rare	19
	Independent clinical practice	Typical	230

topic but not necessarily having the skill or ability to perform a task."

Midlevel Cognitive Learning. In addition to lower-level cognitive learning, participants described student competence as a learner's ability to apply knowledge and perform skills (ie, midlevel cognitive learning). This category emerged from 282 participant responses and related to the students' ability to apply knowledge and perform skills in a supervised environment. One participant described student competence as "the ability to efficiently perform a skill, but it usually takes place in a supervised and/or controlled setting." Similarly, another participant noted that "after [a student] has learned about the task and practiced it, they need to be able to perform it in the appropriate environment at the appropriate time. If they can do so, then they are competent in that skill."

Higher-Level Cognitive Learning. Although rare, this category emerged from 45 participant responses and captured responses from participants that related student competence to higher-level cognitive learning, which involves the ability to analyze, interpret, and reflect. One participant described student competence as:

> ... the ability of a student to perform skills and demonstrate reasoning and critical thinking for the skills at the same level as a certified [AT]. It can relate to any domain of athletic training, not just hands-on portions. If someone can perform a skill but does not know why, they are not competent. If someone knows what they should do but cannot fulfill the task, they are also not competent.

In addition to discussing student competence as the ability to analyze and reflect, some participants also clearly distinguished a difference between competence and proficiency. One participant commented:

> A person who is competent possesses the required skills and knowledge to perform the duties associated with a specific job or task. In the context of athletic training, the competent [AT] possesses discreet skills sets and schema for addressing patient care needs and enhancing patient quality of life/performance without endangering or harming the patient. Competence is not synonymous with proficient. A proficient [AT] is one who is able to utilize and apply their skills and knowledge efficiently and effectively by transferring information and drawing on prior experiences to develop deeper understandings and connections.

Characteristics of Competence

Characteristics of student competence emerged as an overarching theme, whereby participants characterized student competence as being *time based* or *student* or *skill based* or both.

Time-Based Characteristics. Some participants characterized student competence as being time based. This category emerged from 161 participant responses and related to participants' views that student competence is attained after a certain time point in a student's learning journey. One participant commented:

> I think student competence doesn't always come until that final step of executing the technique or skill by the [AT] themselves. This many not come for 2–5 years after certification and they are in clinical practice.

Similarly, another participant noted that student competence occurs "after passing the Board of Certification exam and getting state credentialed." Other participants remarked that student competence occurred at specific time points within the professional program such as "senior year" or "the last semester of their clinical experience."

Some participants connected student competence with independent clinical practice, suggesting that the 2 concepts are related. One participant noted, "[A] student may be ready for independent clinical practice during their senior year or last year of a master's program when they demonstrate they have the necessary clinical competence." Another participant remarked, "[A] student is competent when they demonstrate the ability to act independently." Other participants spoke more broadly about student competence, such as one participant who commented:

> Our profession measures a student as competent to practice as soon as they pass the Board of Certification exam. Although all students still need some form of mentorship, the ability to complete the exam and demonstrate competence within the curriculum of education proves they are ready for clinical practice.

Student- or Skill-Based Characteristics. Although variant, 151 participant responses described student competence as being student or skill based or both, suggesting that competence is characterized based on the individual. One educator remarked:

Competence is the capacity of an individual to complete the tasks required of them in a specific setting. Competence involves the possession of skills and character traits that allow the individual to complete their tasks with success and minimal or no mistakes.

Similarly, one educator noted that competence "entirely depends on the student" and that "individualized student clinical education plans are needed since some [students] may be ready for [competence] before others." Other educators more specifically commented on the skills entailed and that, depending on the student, could affect when competence is achieved. One educator noted:

It depends on the student, the setting, and the task assigned to them. Some of the tasks may be achievable independently in their first year (ie, taking a patient's history), while other may not be achievable until the student is ready to graduate— or after!

Likewise, another educator remarked that "students may be competent in some areas but not other areas, based on the curriculum and their clinical rotations." Finally, numerous educators commented that, due to the complexity of student competence as it relates to individual students or progression of skills, "having objective indicators of both competence and readiness to practice independently is critical."

Achievement of Competence

In addition to the meaning and characteristics of student competence, educators' also discussed markers of success related to student competence. During data analysis, the achievement of student competence theme emerged and focused on educators' perceptions of *competence versus readiness* and indicators for *independent clinical practice*.

Competence Versus Readiness. This category emerged from 271 participant responses and included educators' perceptions of the key distinctions between student competence and student readiness. In general, participants believed student competence was different than student readiness. One participant noted:

We expect students to be competent when they graduate from professional education, but competence outside of athletic training means something along the line of effective performance of normal function. Competence in athletic training is not that. Competence in athletic training is a basic understanding of the concepts, knowledge, and skills of athletic training. I think that differs from student readiness as well as career readiness.

Another participant remarked:

Competence means that a student is ready to fulfill the role of an [AT] in practice. This is more than readiness. Competence means that someone is able to effectively perform all aspects of the job at a level consistent with best practices, not simply minimally acceptable practices. Competence is a repeatable and consistent demonstration of ability.

Similarly, a participant commented:

Competence and readiness may be used interchangeably at times. However, I feel that competence refers to specific skills, knowledge, and ability. Readiness is more of a mindset that may reflect maturity and confidence. If we are preparing competent [ATs], I hope we are preparing them as "ready" to practice at the entry level as well.

In addition to highlighting distinctions between competence and readiness, some participants went on to further explain the order in which these concepts are achieved. Sixty participant responses suggested that student readiness must come before student competence, while 116 participant responses indicated that student competence must come before student readiness. In only 19 instances did participant responses suggest that student competence and readiness are similar.

Independent Clinical Practice. Markers for independent clinical practice were discussed in 230 participant responses and centered around educators' perceptions of when a student was ready for autonomous practice. One educator highlighted that a student is prepared for independent clinical practice when they can "independently make clinical decisions including who to involve, when to refer, how to treat, and are able to determine what the next steps are." Similarly, another educator commented that independent clinical practice involves

... [the] ability to be an [AT] without needing someone to supervise your methods and decisions. Independent clinical practice indicates that a clinician is able to function alone but also knows their limitations. It does not imply that they cannot bounce ideas off of mentors, but it does indicate that the clinician can make an independent decision as to when a case exceeds their knowledge base.

One educator discussed how the term *independent clinical practice* is "misleading because it implies that we can do things in isolation." They further went on to describe what numerous other responses captured regarding the ethos of independent clinical practice by remarking:

To me, the goal of independent clinical practice is equipping students to feel comfortable making clinical decisions and being able to work autonomously but knowing when it is appropriate to refer and/or collaborate with other providers.

DISCUSSION

Our findings indicate a wide range of perceptions of student competence exist in athletic training education. Ultimately, the themes that emerged in our study highlight that, while working to ensure students are competent, educators do not agree on what competence means, its characteristics, or how it can be achieved. Considering that educators in athletic training, like other health professions education programs, spend most of the curricular time educating students with the intent of achieving and assessing competence, it is alarming that agreement on what competence is does not exist among the participants in our study. Commonalities will need to be identified to ensure programs are graduating students with similar levels of competence.

Theoretical Approach to Learning and Competence

A multitude of theoretical frameworks and taxonomies have been developed to characterize and describe different types of learning behaviors. The oldest and therefore likely most

recognized framework is Bloom's taxonomy.[14] Though revisions and alternative frameworks have been developed since Bloom's taxonomy was first published in 1956, the original taxonomy provided educators a guide to write increasingly complex learning objectives.[15] In short, Bloom's taxonomy[14] identifies 6 levels of cognition: knowledge, comprehension, application, analysis, synthesis, and evaluation. The hierarchical nature of this taxonomy posits that cognitive processes become increasingly difficult as one progresses from knowledge to evaluation. Similarly, it presents learning as a linear process, in that knowledge is an essential prerequisite to comprehension, which is an essential prerequisite to application, and so on. Despite widespread use of Bloom's taxonomy by educators over the years, it is because of these structural characteristics that the original taxonomy has faced criticisms from other educational theorists.[15]

Identified shortcomings of Bloom's original taxonomy include a heavy focus on the cognitive domain, the hierarchical structure of the framework,[15] and an overall simplified depiction of the learning process.[16] To address these shortcomings, educational theorists have developed newer models and theories that incorporate domains of learning beyond cognition (ie, affective and psychomotor domains). In the early 2000s, Marzano et al[15] proposed a new taxonomy that is composed of 3 systems of thought (cognitive, metacognitive, and self-system) and 3 domains of knowledge (information, mental procedures, and psychomotor procedures). This 2-dimensional model posits that information processing starts with the self-system. Marzano et al[15] writes, "In the New Taxonomy, [the self-system] is placed at the top of the hierarchy because it controls whether or not a learner engages in a new task and the level of energy or motivation allotted to the task if the learner chooses to engage."[(p18)] The flow of information then proceeds to the metacognitive system where goals are established related to the task, then to the cognitive system where information is retrieved, comprehended, analyzed, used, or all of the above, and finally to the domains of knowledge where the task is carried out.[15]

Our results show an interesting dichotomy between Bloom's taxonomy and Marzano's taxonomy as it relates to meaning, characteristics, and achievement of student competence. Participants described the meaning of competence in terms of lower-level, midlevel, and higher-level cognitive learning, alluding to the hierarchical nature of the cognitive domain in Bloom's original taxonomy. Bloom's taxonomy at the forefront suggests a general perception that competence is applied specifically to cognitive knowledge. However, when looking closely at participant responses and overall findings for characteristics of competence and achievement of competence, an increasing emphasis appears to be placed on the psychomotor and affective domains of learning (ie, Marzano's taxonomy). For example, regardless of whether characteristics of competence were described as time, student, or skill based, our sample of educators largely focused on successful execution of a technique, skill, or procedure (psychomotor). In terms of achievement of competence, participants highlighted the importance of student readiness, which involved portraying maturity and confidence (affective).

Taken together, the ways in which educators defined competence (cognitive domain) are incongruent with the hoped-for student outcomes and goals of program completion (psychomotor and affective domains). To obtain congruence between meaning, characteristics, and achievement of competence, we suggest an approach to curricular design that integrates cognitive, psychomotor, and affective domains of learning throughout the curriculum. For example, instead of a curriculum designed to address content mastery first and application of knowledge later in the program, Marzano et al[15] suggest the integration of all learning domains (cognitive, psychomotor, and affective) within each course in the curriculum. As opposed to halting a students' application of knowledge until cognitive mastery is achieved, opportunities that promote application of content can instead be used to reinforce cognitive knowledge. This approach to curricular design and instruction may better progress students toward competence in professional education and overall career readiness.

Student Competence Versus Student Readiness

Our participants primarily indicated in their responses that they viewed competence as a dichotomous outcome; either one has it, or they do not. Binary models of competence historically have emphasized the qualities health care providers should possess and what they have been taught or trained to do.[17] Assessment of binary models of competence have taken the form of checklist or behavioral evaluations in which the assessor decides whether the student has performed as taught or demonstrated the quality expected.[18] This ultimately leads to students who may perform the majority of a given skill, passing such an assessment without garnering detailed feedback on the minor omissions or mistakes that ultimately did not affect the patient's outcome but may not have been performed at the highest level possible. It is especially important to note that dualistic approaches to competency also do not accommodate varying time points in a learner's or provider's career, instead determining the single time point of achievement of competency at the point of passing an assessment.[19]

Binary viewpoints of competence are no longer supported in the literature and instead have largely been replaced in medical education with outcomes-based models of competence.[17] Outcome-based models of competence give emphasis to desired performance goals at a provider's current level of skill and in the future.[17] This creates a progression of competency that occurs on a continuum and addresses competence at varying stages of performance expectations based on an individual's experience, knowledge, and point in their career. A continuum of competence is needed in athletic training to recognize that the goal of an athletic training education is to prepare ATs who are ready for autonomous practice but have not yet reached a pinnacle of competence in patient care at the time of professional program completion. If established, such a continuum would allow practicing professionals to continue to self-evaluate their own areas of competence and take pointed steps to address areas of practice in which their competence has regressed.

A proposed model exists for viewing competence in athletic training along a continuum of practice, and while this may not be the only model in existence, it does provide a stepwise progression of competence for providers, both those in education programs progressing toward autonomous practice and those in clinical practice beyond the point of credentialing. The Athletic Training Milestones[7] correlate 5 stages of

skill acquisition and performance with the Dreyfus model of knowledge development,[20] ranging from a beginning learner to that of an expert clinician in a given area of practice.[7] For example, in efforts to address cultural competency in the delivery of health care, we would expect a learner newly enrolled in a professional program to be able to define and describe how differences in cultures, races, ethnicities, and religions affect health care. The same student, when ready for unsupervised practice, will recognize these differences in their patient population and will be able to modify their plan of care accordingly to account for such differences. Using this same example, we would expect a seasoned clinician that achieves the aspirational expertise in this area to be capable of establishing policies and best practice guidelines in the delivery of health care that accounts for patients' differences.[17] However, the application of a continuum model of competency, such as the Athletic Training Milestones,[17,19] in athletic training education, requires that educators, including preceptors, be familiar with competency-based education that occurs on a spectrum rather than in a binary model, and previous literature has identified that athletic training educators are not as familiar with such an approach to competence.[19]

The Meaning of Student Competence

Our participants are not alone in their difficulty to consistently define competence, as it has been acknowledged that a consistent definition of competency or competence in health care does not exist.[19,21] Therefore, to accurately capture the true essence of student competence in athletic training, we propose the following definition:

> Competence is a continuum of contemporary professional practice abilities that minimally indicates a provider can provide safe and reliable care on a consistent basis without harm to a patient and maximally indicates expertise in a given ability within clinical practice.

We postulate that contemporary professional practice abilities require up-to-date knowledge and understanding, demonstration of appropriate skill performance, an ability to contextualize patient circumstances in the delivery of patient care, and some level of practice experience. Based on findings from our participants, it appears that athletic training educators ascribe to these components but may not recognize the totality of each of them together to ensure a comprehensive view of student competence. Our proposed definition of competence is consistent with previous works that address the characteristics that a competent AT should embody. Eberman et al[22] detailed that a competent clinician can identify situational aspects that are important and those that can be ignored to facilitate understanding and decision making. They identify that a competent clinician practices in an efficient manner that promotes critical thinking and considers contextual factors and appropriate skill application.[22]

In addition to having a comprehensive understanding of competence, it is also important to emphasize that achieving competence is not synonymous with maintenance of competence. That is, just because an individual achieves competence, it does not automatically mean they will maintain that competence. While competence is something that can be achieved, it can also be lost if neglected. For example, while a learner may have achieved competence for a particular skill during Year 1, it cannot be assumed they will maintain competence of that skill unless they continue to use that ability and maintain contemporary understanding of the skill. This is also true for clinical practice. To maintain competence, it is essential that clinicians ensure they sustain both skill and contemporary understanding of a given area of practice. Concussion diagnosis and management is a prime example of the importance of maintaining contemporary understanding. Several years ago, a competent concussion evaluation included an understanding that a concussion diagnosis considered whether loss of consciousness occurred. However, loss of consciousness for concussion diagnosis is no longer the contemporary understanding, and a clinician who was not aware of that contemporary knowledge would therefore not be competent in concussion diagnosis and management. This is just 1 example of the need to maintain competence, not merely achieve it.

Several of our participants characterized student competence as being time based, suggesting that competence is attained after a certain time point in a student's learning journey. However, competence is a more fluid framework, and time does not necessarily equate to increasing levels of competence unless that time is specifically dedicated on that skill or area. Therefore, physical time is an irrelevant characteristic of student competence, even if time is a critical metric of higher education. The achievement of competence must be viewed on a continuum. As a student learns a new skill, it is logical that they would progress continuously from novice to advanced beginner to competent, with the intent that they will then progress to proficient and aspire toward expert.[20] The loss of competence, however, should be viewed on a spectrum. It is possible that an individual can go from being proficient in a skill area back to an advanced beginner if deskilling or lack of contemporary understanding occurs. However, with appropriate professional development, that individual can once again progress on the competence continuum. The application of the continuum of competence within athletic training programs is necessary to not only identify when competence is achieved but also to recognize when competence regression has occurred.

Limitations and Future Research

Survey research presents an inherent limitation related to self-selection. Participation in and completion of this survey was voluntary; it is possible that potential participants chose not to respond to the survey or any items within because they are uncomfortable sharing their views on student competence. Additionally, while open-ended questions were included within the survey, the researchers were unable to follow up with respondents to clarify responses, if necessary. Researcher bias is also a potential limitation when conducting qualitative data analyses. To minimize research bias, we employed several strategies to ensure trustworthiness of the data, as described in the CQR approach.[8,9] The use of multiple researchers during each rigorous phase of data analysis ensured that multiple perspectives and interpretations were considered, and that multi-analyst consensus was achieved before progressing to the next phase. Additionally, the use of an external auditor ensured the themes and categories identified by the research team fairly and accurately represented the participant cases.

Further study of student competence in athletic training is warranted. As a cornerstone of competency-based education, it is essential that all educators have a solid understanding of student competence to ensure all students are assessed fairly and objectively. However, while some participants of this study may also serve as preceptors, our focus was educators directly involved in didactic curricula. Therefore, to ensure a comprehensive understanding of student competence in athletic training, future researchers should explore preceptors' and students' perceptions of competence.

CONCLUSIONS

Collectively, athletic training educators are expected to graduate students that are competent and prepared for safe and effective autonomous clinical practice. However, our findings revealed a myriad of perceptions regarding student competence among educators, which suggests that how student competence is assessed and achieved is not equal across athletic training education. Without a consistent understanding of competence in athletic training education, it will continue to be difficult to implement tools, such as the Athletic Training Milestones,[7] equally and objectively as a measure of clinical practice progression of learners and practicing clinicians. Furthermore, while accredited athletic training program administrators are responsible for identifying didactic and clinical assessments to demonstrate competence among students, it is possible that students are graduating despite having regressed on the competence spectrum. Therefore, it is increasingly important that athletic training educators teach students how to self-assess their own competence as well as how to address areas of weakness, so they are prepared to more appropriately facilitate their own professional development and maintenance of competence needs when they transition to autonomous practice.

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