ATHLETIC TRAINING EDUCATION JOURNAL

www.natajournals.org
ISSN: 1947-380X
DOI: 10.4085/150119080

ORIGINAL RESEARCH

Athletic Trainers' Perceptions of Advanced Clinical Practice: Defining Advanced Clinical Practice in Athletic Training

Barton E. Anderson, DHSc, ATC*; Cailee E. Welch Bacon, PhD, ATC*†; Eric L. Sauers PhD, ATC, FNATA*†
*Athletic Training Programs, Department of Interdisciplinary Health Sciences, A.T. Still University, Mesa, AZ; †School of Osteopathic Medicine in Arizona, A.T. Still University, Mesa

Context: Advanced clinical practice is inherent in contemporary athletic training education, such as residency programs and Doctor of Athletic Training programs; however, as a concept, advanced clinical practice in athletic training has been poorly studied to date.

Objective: To explore athletic trainers' perceptions of advanced clinical practice.

Design: Cross-sectional.

Setting: Online survey with open-ended questions.

Patients or Other Participants: Three hundred fifty of 1992 athletic trainers accessed the survey (17.6% access rate); 321 respondents completed at least 1 open-ended question; and 196 completed the survey in its entirety (61.1% completion rate).

Intervention(s): We used a 13-item survey including demographic items (9 items) and open-ended response questions (4 items).

Main Outcome Measure(s): Guided by the consensual qualitative research approach, a 3-person data analysis team coded the open-ended responses. Each member coded 50 responses and a consensus codebook was developed. Two members of the team coded the remaining responses, which were confirmed by the third member. Emergent data were organized into themes and categories, and frequency counts were determined for each category.

Results: Athletic trainers' definitions of advanced clinical practice were categorized into 4 emergent categories: (1) formal training and education; (2) informal training and education; (3) knowledge, skills, and behaviors; and (4) experience and uncertainty.

Conclusions: The categories of formal and informal training and education focused on athletic trainers acquiring additional knowledge and skills through mechanisms such as postprofessional degree programs, residency programs, or other areas of study. The knowledge, skills, and behaviors category included areas related to specialized skills and the core competencies. These 3 categories aligned with one another to provide both the types of knowledge, skills, and behaviors that define advanced clinical practice, and the specific mechanisms through which an athletic trainer can achieve advanced clinical practice.

Key Words: Clinical expertise, core competencies, specialization

Dr Anderson is currently Associate Professor and Clinical Education Coordinator in Athletic Training Programs at A.T. Still University. Please address correspondence to Barton E. Anderson, DHSc, ATC, Athletic Training Programs, Department of Interdisciplinary Health Sciences, A.T. Still University, 5850 E. Still Circle Mesa, AZ 85206. banderson@atsu.edu.

Full Citation:
Anderson BE, Welch Bacon CE, Sauers EL. Athletic trainers' perceptions of advanced clinical practice: defining advanced clinical practice in athletic training. *Athl Train Educ J.* 2020;15(1):26–34.

Athletic Trainers' Perceptions of Advanced Clinical Practice: Defining Advanced Clinical Practice in Athletic Training

Barton E. Anderson, DHSc, ATC; Cailee E. Welch Bacon, PhD, ATC; Eric L. Sauers, PhD, ATC, FNATA

KEY POINTS

- Athletic trainer's perceptions and definitions of advanced clinical practice align with the Strategic Priorities of Athletic Training Education.
- Accredited athletic training residency programs and Doctor of Athletic Training programs represent viable pathways for development of advanced clinical practice knowledge and skills.
- Athletic trainers associate a variety of skills with advanced clinical practice, including evidence-based practice, patient centered care, and quality improvement.

INTRODUCTION

In 2015, the National Athletic Trainers' Association (NATA) Executive Council on Education introduced the Strategic Priorities of Athletic Training Education during the Athletic Training Educators Conference in Dallas, Texas.[1] These priorities provide a structured framework to guide current and future advancements in athletic training education, focusing on improved patient care through education and clinical research. The 5 Strategic Priorities include (1) Enhancing Professional Education, (2) Facilitating Transition to Practice, (3) Developing Clinical Expertise, (4) Providing a Mechanism for Advanced Practice Leadership, and (5) Serving as Stewards of the Discipline.[1]

Four of these Strategic Priorities focus on the training and education of athletic trainers after their professional education program. This increased focus on moving athletic trainers beyond entry-level education is in alignment with the current development of Commission on Accreditation of Athletic Training Education (CAATE) Athletic Training Residency Programs and the emergence of the Doctor Of Athletic Training (DAT) degree. These postprofessional educational pathways serve the primary goal of developing skills and behaviors associated with advanced clinical practice; however, unlike peer health professions such as nursing,[2] physical therapy,[3] and occupational therapy,[4] the athletic training profession has yet to develop a unified definition and vision for advanced clinical practice.

Advanced clinical practice is not a novel concept; medicine has used specialty certification to denote advanced, specialized areas of clinical practice among physicians since the creation of the American Board of Medical Specialties in 1933.[5] Similarly, physical therapy[6] and occupational therapy[4,7] use formalized postprofessional training, including residency and/or fellowship programs, to provide physical and occupational therapists the opportunity to advance their skills in specialized areas of practice. These additional certifications have been identified as markers for advanced clinical practice within these professions.[3,4,6,7] Nursing has perhaps the most deliberate definition and vision for advanced clinical practice; advanced practice nurses are recognized as advanced practitioners through their completion of postprofessional course work at the master's or doctoral level, and enjoy an expanded and specialized scope of practice.[2,8]

In athletic training, the concepts of expert practice have been briefly explored,[9–12] but the profession has yet to develop a clear definition of advanced clinical practice. Without this clear definition, it is difficult to ensure that all of the identified Strategic Priorities of Athletic Training Education can be met, especially given the upcoming transition of the professional degree to the master's level.[13] Furthermore, the lack of a unified framework for advanced clinical practice in athletic training inhibits the development and advancement of models for promoting advanced clinical practice to optimize patient care provided by athletic trainers. Therefore, the purpose of our study was to explore how athletic trainers currently define advanced clinical practice. We hoped to inform the definition and vision of advanced clinical practice in athletic training, and to determine how well current perceptions of athletic trainers about advanced clinical practice align with the Strategic Priorities of Athletic Training Education and proposed mechanisms for achieving advanced clinical practice.

METHODS

Design

We used a cross-sectional survey design with open-ended questions to explore athletic trainers' perceptions of advanced clinical practice, as well as the characteristics they perceived an athletic trainer engaged in advanced clinical practice should embody. This study was deemed as exempt research by the A.T. Still University Institutional Review Board.

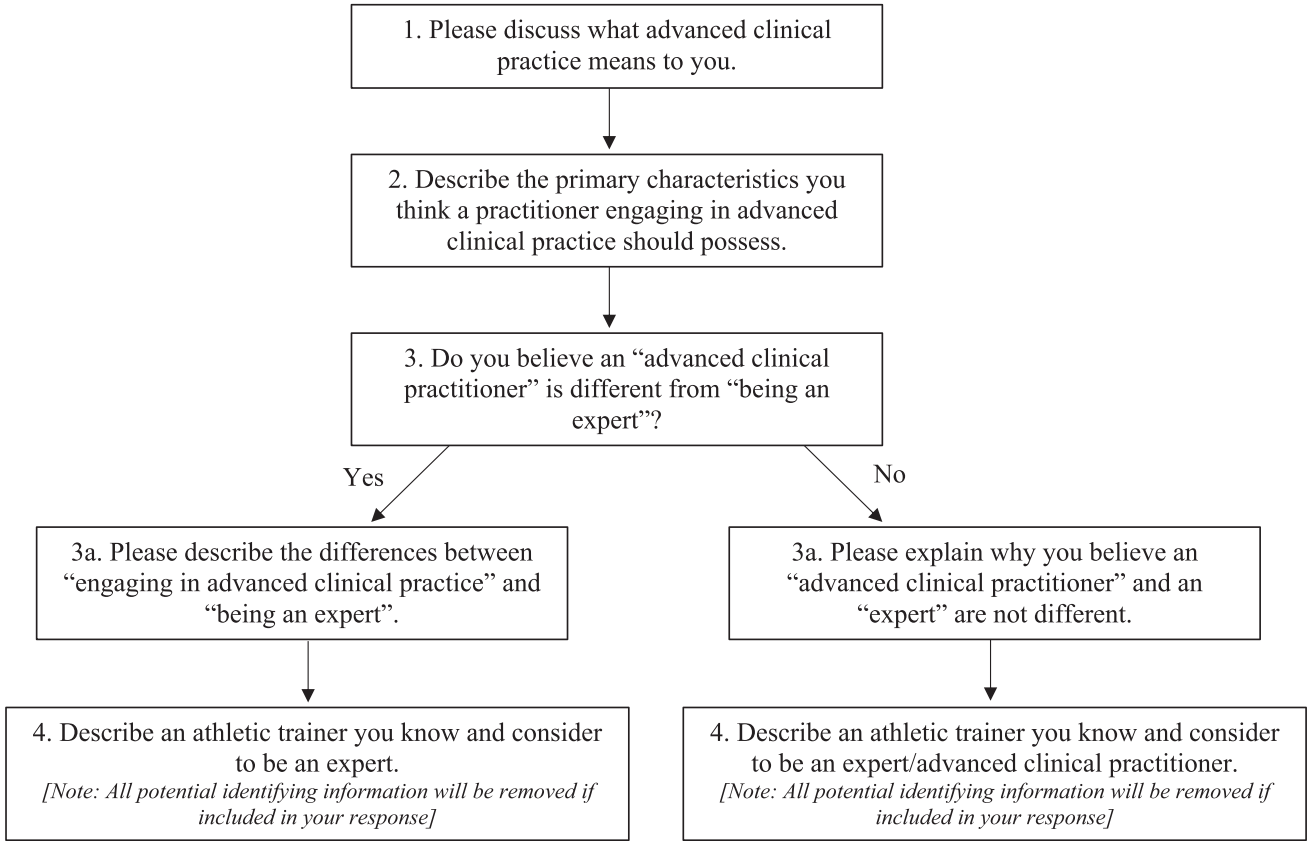
Participants

Athletic trainers who were (1) in good standing with NATA, (2) certified, and (3) employed in the college/university, secondary school, or clinic setting within the United States only at the time of data collection were recruited for this study. These practice settings were chosen specifically because they represented the 3 largest practice settings within athletic training. We purchased a list of randomly selected email addresses for athletic trainers who met the inclusion criteria from the NATA office via the survey list request form. Email addresses for 2010 athletic trainers were provided, and the list was stratified by setting to promote even representation among the 3 settings (ie, 670 email addresses per setting).

Instrumentation

Due to the lack of a preestablished survey to achieve the study purpose, the research team developed a brief online survey, hosted on the Qualtrics platform (Qualtrics LLC, Provo, UT), to explore athletic trainers' perceptions of advanced clinical practice. The survey consisted of 9 demographic questions and 4 open-ended questions (Figure 1). Once developed, the

Figure 1. Flow of open-ended survey items.



survey was sent to 2 athletic trainers with qualitative and survey research expertise for face and content validation. We used an established validation process[14]; 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 their feedback, 2 survey items were revised to maximize clarity and comprehensibility. Due to the open-ended nature of the survey items, a reliability analysis was not warranted.

After survey validation, the finalized survey was distributed to 11 athletic trainers practicing in the college/university or secondary school setting for pilot testing. These individuals were selected because they represented the participants included for data collection but would not be included themselves. At the end of the survey, each pilot participant was given an opportunity to provide suggestions or feedback on the comprehensibility and relatability of the survey. All 11 participants deemed the survey both comprehensive and relatable to their role as an athletic trainer.

Procedures

A recruitment letter, which included an introduction and the purpose of the study, the estimated time of completion (ie, 10–15 minutes), and a URL link to the online survey, was sent via email to all 2010 potential participants. Upon distribution, 18 emails were returned undeliverable; therefore, the recruitment email was sent to a total of 1992 athletic trainers. The initial recruitment email was sent in February 2015 and the participants were given 4 weeks to voluntarily complete the survey. Three reminder emails were sent during the 4-week period to individuals who had not yet completed the survey. Participant consent was implied upon voluntarily completion of any portion of the survey, due to the exempt nature of the research.

Data Analysis and Management

Descriptive statistics were used to identify central tendency characteristics (mean, standard deviation, frequency) of the demographic items. Partial data analysis techniques, which have been consistently used throughout athletic training literature,[15,16] are commonly used to account for missing data due to participants' rights to decide not to respond to specific survey items. For the purposes of this study, all participant responses were included in data analysis as long as the participant responded to at least 1 of the open-ended items.

Due to the textual nature of the data collected, we used a qualitative approach to analyze the data. Specifically, the consensual qualitative research (CQR) tradition was used to guide the data analysis process. The CQR approach requires the use of a research team to ensure the data are analyzed from multiple perspectives and to reach a consensus about the meaning of the data[17,18]; this approach has been frequently used in athletic training research.[15,19–22] For this study, we used a 3-person data analysis team (B.E.A., C.W.B., E.L.S.) to reach consensus and minimize researcher bias (Table 1). Two members of the team (B.E.A., C.W.B.) were involved in every phase of data analysis while 1 member (E.L.S.) helped to establish the consensus codebook and then served as the internal auditor.

To begin data analysis, each team member individually coded the first 50 responses into themes and categories and created

Table 1. Roles and Experiences of the Research Team

	Researcher 1	Researcher 2	Researcher 3
Study role	Primary researcher, research team member	Research team member	Research team member, internal auditor
Qualitative experience	Experienced researcher new to the CQR data analysis approach	Experienced qualitative researcher with an extensive background in CQR	Experienced researcher new to the CQR data analysis approach

Abbreviation: CQR, consensual qualitative research.

an individual codebook. The research team then met to discuss the codes and develop a consensus codebook. From there, 2 members of the team coded all remaining responses and met to confirm the codes. If a disagreement occurred, it was settled by the third researcher, who served as the internal auditor. Once all codes were finalized and separated into the respective themes and categories, the internal auditor reviewed all final coded data to ensure representativeness and saturation of the participant responses, as well as to ensure trustworthiness of the data.

The final phase of data analysis involved frequency counting of participant cases to capture the representativeness of responses within each emergent category. As described by Hill et al,[17,18] the frequency of each category was described as *general*, *typical*, *variant*, or *rare*. For this study, the frequency of *general* was assigned if more than 158 participant responses were coded within the respective category, *typical* if 88 to 157 were coded, *variant* if 35 to 87 were coded, and *rare* if 34 or fewer participant cases were coded.

Table 2. Participant Demographics (n = 176)

	Frequency, No. (%)
Years of experience	
<2 y	5 (2.9)
3–5 y	72 (41.1)
6–10 y	60 (34.3)
11–15 y	9 (5.1)
16–20 y	8 (4.6)
21+ y	21 (12.0)
Route to Board of Certification	
Internship (before 2003)	23 (13.1)
NATA-approved curriculum (before 2003)	15 (8.5)
CAATE-accredited athletic training program (post-2003)	138 (78.4)
Highest educational degree attained	
4-y college degree (eg, BS, BA)	29 (16.6)
Master's degree	127 (72.6)
Doctoral degree (eg, PhD, EdD)	10 (5.7)
Clinical doctorate degree (eg, DAT, DPT)	5 (2.9)
Professional degree (eg, MD, DO)	4 (2.3)
Primary patient care setting	
Clinic	34 (19.3)
College/University	73 (41.5)
High school	69 (39.2)

Abbreviations: BA, bachelor of arts; BS, bachelor of science; DAT, doctor of athletic training; DO, doctor of osteopathic medicine; DPT, doctor of physical therapy; EdD, doctor of education; MD, doctor of medicine; PhD, doctor of philosophy.

RESULTS

Of the 1992 potential participants, 350 accessed the survey for an access rate of 17.6%. Three hundred twenty-one participants completed at least 1 item of the survey and 196 respondents completed the survey in its entirety (completion rate = 61.1%). During data analysis, partial responses from 125 participants were removed; these individuals did not respond to any of the 4 open-ended items. Furthermore, 20 participants indicated that they primarily provided athletic training services in a setting other than college/university, secondary school, or clinic. Thus, responses from a total of 176 participants were included for data analysis. Participants included 45.5% males (n = 80) and 54% females (n = 95) with an average age of 32.4 ± 9.1 years representing 43 states. One participant chose not to respond to the demographic item related to sex. Additional participant demographics are displayed in Table 2. During data analysis, a total of 7 responses to the various open-ended items were deemed unrelated to the purpose of the study and were discarded.

The 2 themes that emerged during data analysis were *advanced clinical practice definition* and *advanced clinical practice characteristics* (Figure 2). For the purposes of this manuscript, we will discuss the advanced clinical practice definition theme. Participant responses within the advanced clinical practice definition theme were further separated into 4 categories. The frequency of participant responses per category is displayed in Table 3.

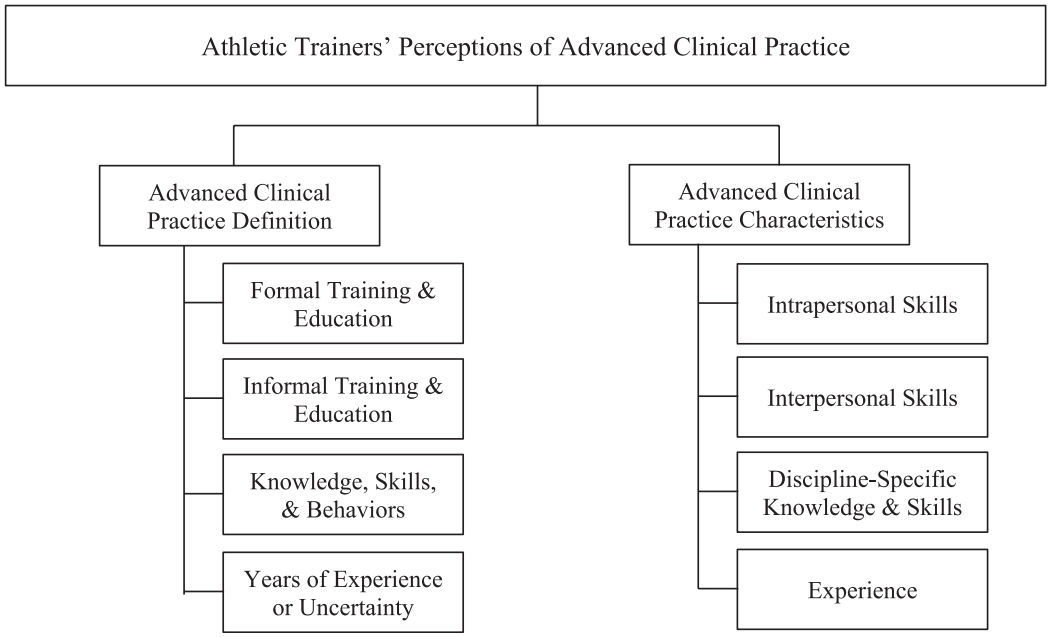
Formal Training and Education

According to our participants, the formal training and education category emerged from 144 participant responses related to the type of training and education that was needed to achieve advanced clinical practice. Most commonly, participant responses in this category related to recognized

Table 3. Participant Cases by Category

Category	Frequency	No. of Participant Cases
Formal training and education	Typical	144
Informal training and education	Variant	35
Knowledge, skills, and behaviors	Typical	132
Years of experience or uncertainty	Rare	14

Figure 2. Conceptual framework of themes and categories.



training and education that occurred beyond the entry level. One participant commented on how advanced clinical practice consists of a clinician "who works within the clinical setting with an advanced degree above and beyond the entry-level certification." Similarly, another participant noted that

> *Advanced clinical practice means that a person has gone through a more intensive course of study with a curriculum that involves in-depth learning beyond what the traditional [professional] course work has merely brushed over.*

Other participants also commented on how advanced clinical practice consisted of formal training and education beyond the entry level, but went on to further provide examples. One participant remarked,

> *To me, advanced clinical practice means the clinician has been formally trained above and beyond the entry level. This could be in a specific area of clinical practice or more generalized, but the clinician's advanced clinical practice was obtained through formal training rather than informal or work experience only. This formal training could be in the form of an additional degree, certificate, or [postprofessional] residency program.*

Similarly, another participant said,

> *Advanced clinical practice would be defined as skills and knowledge beyond what is offered with a [professional] degree. This could be training that [offers] other certifications or higher education such as a postprofessional master's degree or a PhD.*

Finally, some participants went on to comment that formal education and training was not limited to formalized degree programs. One participant suggested that formal education and training for advanced clinical practice could include

> *passing some formal assessment to quantitatively show you are capable of application of new skills and theory, which is different than being an experienced clinician.*

Likewise, another participant commented,

> *Advanced clinical practice means more certifications and specific formal training to add to an athletic trainer's toolbox. These certifications or specialties could consist of more schooling such as a [master's degree] or a [doctoral degree], but could also include certifications such as Graston [Technique®], Certified Strength and Conditioning Specialist®, FMS certification, etc.*

Informal Training and Education

Some participants also discussed advanced clinical practice being achieved through informal training and education. Although variant, this category emerged from 35 participant responses and captured responses related to more informal clinical experiences and on-the-job training. One participant described advanced clinical practice as a

> *means to broaden the skills the athletic trainer has. These advanced skills could be taking other routes outside of the traditional athletic training practice to explore newer techniques and ways to solve injuries and illnesses.*

Similarly, another participant remarked,

> *Advanced clinical practice is the opportunity to continue to improve the skills that one has gained in their educational curriculum, to see and practice those skills in a variety of settings, and to learn new skills over time that will enhance that person's ability to perform the duties and responsibilities listed in our professional domains.*

Other participants highlighted that advanced clinical practice was attained via exposure to patient cases in their employment setting. One participant noted that advanced clinical practice includes "skills possessed by a health care practitioner, over and above entry level, that are honed by that individual's employment setting." Likewise, another participant stated that advanced clinical practice requires

> *possession of a deeper understanding of pathologies and how to manage them from onset to resolution. This [deeper*

understanding] is acquired via exposure to a wide variety of cases during practice and persistent attention to detail.

Finally, another participant commented, "Advanced clinical practice means that someone is furthering their athletic training education through a hands-on approach of clinical hours (ie, practice, observation, and job setting)."

Knowledge, Skills, and Behaviors

In addition to describing the type of training and education needed for advanced clinical practice, our participants also detailed the knowledge, skills, and behaviors that could define advanced clinical practice. The knowledge, skills, and behaviors category emerged from 132 participant responses and included specific knowledge areas or skills that should be included in advanced clinical practice. Numerous participants discussed the importance of the core competencies related to advanced clinical practice. One participant stated,

Advanced clinical practice to me means learning new skills and knowledge not taught in a [professional] athletic training program that will enhance the quality of patient care, optimize clinical outcomes and improve patients' health-related quality of life, in specialized areas of athletic training practice.

Of the core competencies, evidence-based practice and patient-oriented outcomes were mentioned the most. One participant noted that advanced clinical practice requires "the clinician to engage in evidence-based practice and patient care quality initiatives to [improve] patient outcomes." Similarly, another participant commented, "you must incorporate outcome measures and allow those to guide your practice." A third participant discussed the importance of evidence-based practice and remarked,

[Advanced clinical practice] requires closing the gap between clinical studies and actual practice. Questioning treatment, rehabilitation techniques, and prevention programs that have always "worked" but are just [based] on theory. Testing theories and advancing treatments for our [patient] population and using evidence-based practice that can be integrated into our setting easier, and more conveniently.

Participants also discussed the idea that advanced clinical practice should be associated with an advanced scope of practice. One participant stated,

Advanced clinical practice means a skill set and accompanying scope of practice that encompasses higher-level medical procedures, diagnoses, and knowledge. An advanced clinical practitioner would be held to a higher level of skills, knowledge, and responsibility than that of an entry-level provider.

Another participant described the perception that advanced clinical practice should include responsibilities similar to those of other health care professionals. This participant remarked,

To me "advanced clinical practice" means being able to order/prescribe and evaluate advanced diagnostic and treatment options, which is what currently separates the physical evaluations of an athletic trainer from that of a physician, physician assistant, or nurse [practitioner]. The hands-on exam and special tests are all the same. Yet "advanced practitioners" have the ability to order diagnostic imaging and laboratory studies to further confirm or rule out what their manual tests and physical evaluations have indicated. On the treatment side, advanced practitioners have the ability to provide stronger than [over-the-counter] medicinal aids to help with recovery of injury or illness.

Finally, several participants noted that advanced clinical practice requires a combination of both advanced knowledge and skill as well as the inclusion of the core competencies. One participant commented,

In my perspective, advanced clinical practice is another level of academic and clinical achievement that bridges the gap between research and real-world patient application. I feel this practice would show a deeper understanding of the body's global chain throughout evaluations and treatment strategies, including the advanced skills of "modern" treatment techniques that go beyond our commonly used modalities. I feel that this practice would also seek sound research principles and apply in reasoning of every clinical and treatment decision. I think a final component may also include constant collection of patient outcome data.

Years of Experience or Uncertainty

While a majority of participant responses related advanced clinical practice to some type of training or knowledge acquired, a small subset of participant responses (n = 14) either associated advanced clinical practice with years of experience or reported unfamiliarity with the concept. According to 7 participant responses, advanced clinical practice is correlated with the number of years of practice an athletic trainer has. While some of these participants made general statements regarding years of experience (eg, "a person who has extensive clinical practice experience," "it means it is not for beginners but for people who have more years of experience under their belt"), other participants provided a specific number of years. One participant remarked that an athletic trainer reached advanced clinical practice "with at least ten years [of] experience." Another participant commented that advanced clinical practice was conducted by "an experienced clinicians with at least five to ten years of clinical experience with good clinical skills."

Seven participants reported they were unfamiliar with advanced clinical practice and were unsure of what it meant to them. Participants who were unsure of advanced clinical practice provided responses such as "I've never heard this term before so I wouldn't begin to know how to explain it," or "Honestly [I am] not sure what this means in the context of athletic training." One participant further explained,

I am unsure as to what the actual definition of "advanced clinical practice" in athletic training is despite its common use in academia. I believe it is mostly used by postprofessional-level education programs to describe the further education and clinical experience students will gain by being enrolled in the program, but I am unsure if that is an accurate assumption.

DISCUSSION

The purpose of this study was to examine how athletic trainers practicing in a college or university, in a secondary school, and in clinical settings within the United States define advanced clinical practice. Athletic training is in the early

stages of formally defining advanced clinical practice and developing mechanisms for creating clinical specialists through residency training programs and advanced practice leaders through DAT programs. Given the Strategic Priorities of Athletic Training Education and their focus on advancing athletic trainers beyond entry-level knowledge and skills, it is important that the profession clearly identify both the definition of advanced clinical practice, and the characteristics of advanced practice clinicians. The themes and categories that emerged from this study indicate that athletic trainers have similar definitions of advanced clinical practice, and these definitions align with the Strategic Priorities of Athletic Training Education and existing postprofessional educational pathways in athletic training.

Training and Education

One prominent category that emerged from our participants was that of formal training and education. These responses suggest that athletic trainers typically associate advanced clinical practice with formal training and education beyond an entry-level professional program. This definition aligns with physical therapy and nursing, which have formalized advanced clinical practice through postprofessional education.[2,4,6] Physical therapy uses residency and fellowship programs to provide formal training and education in specialized areas of clinical practice.[6] Since the establishment of these formal training programs, physical therapy has seen a significant increase in the number of residency and fellowship programs, as well as an increase in the number of residency- and fellowship-trained physical therapists.[6] Nursing has also formally defined advanced clinical practice through the development of advanced degrees, including the Doctor of Nursing Practice. Advanced practice nurses include nurse practitioner, certified registered nurse anesthetist, certified nurse midwife, and clinical nurse specialist.[23] In athletic training, formal training and education to develop advanced clinical practice knowledge and skills in athletic training currently exists in 2 postprofessional educational pathways, postprofessional residency training programs and DAT degree programs.

Accredited residency programs are designed to provide formalized training and education to athletic trainers within a specialized content area, improving quality of care and patient outcomes.[24] Similar to physical and occupational therapy, accredited postprofessional residency programs in athletic training create clinical specialists with knowledge in a focused area of clinical practice. Currently, the CAATE recognizes 8 areas of focused clinical practice for accredited residencies: (1) Prevention and Wellness, (2) Urgent and Emergent Care, (3) Primary Care, (4) Orthopaedics, (5) Rehabilitation, (6) Behavioral Health, (7) Pediatrics, and (8) Performance Enhancement.[25] Accredited residency programs represent the primary mechanism for achieving the Strategic Priority of creating clinical specialists, and closely align with current perceptions of advanced clinical practice through formalized training and education beyond the entry level.

Historically, postprofessional master's degrees in athletic training represented the primary educational pathway for athletic trainers seeking advanced knowledge and skills within the profession. With the transition of the professional degree to the master's level,[13] the DAT degree has emerged within the last decade as the future postprofessional degree option.[26,27] At the time of this writing, there were 6 programs currently offering the DAT degree.[28] Although DAT programs vary widely in the structure of their curriculum, design, and delivery of content (online, face-to-face, hybrid) and their areas of focus, these programs represent the primary mechanism for the development of advanced practice leaders within athletic training, the fourth Strategic Priority. Doctor of Athletic Training programs, offering formalized training and education in athletic training, also align with the perceptions of advanced clinical practice displayed by the participants in this study.

The category of informal training and education focused on development of advanced skills outside of earning a formal degree or completion of a formal training program. Although this category was classified as variant, it does represent another opportunity for athletic trainers to achieve advanced clinical practice. Less than half of study participants identified informal training or education within their definition of advanced clinical practice, suggesting that the postprofessional educational pathways of accredited residency programs and DAT programs represent the most widely accepted route for developing the knowledge and skills associated with advanced practice clinicians.

The category of years of experience was identified as rare, suggesting that most athletic trainers recognize that advanced clinical practice is not developed just through years of clinical practice, but requires dedicated formal or informal study to learn specific, advanced skills and behaviors and to gain advanced knowledge within the profession. Thus, based on our results, the typical definition of advanced clinical practice as requiring formal training and education beyond entry level closely aligns with the Strategic Priorities of Athletic Training Education and the currently available postprofessional educational pathways.

Knowledge, Skills, and Behaviors

Another prominent category that emerged from our participants was that of specific knowledge, skills, and behaviors associated with advanced clinical practice. A variety of skills and knowledge areas were identified; however, the common thread within this category was that these skills and knowledge areas were beyond entry level. This category connects closely with the category of training and education, where accredited residency and DAT programs provide the mechanisms for development of advanced knowledge, skills, and behaviors in athletic training.

Although the specific knowledge, skills, and behaviors of advanced clinical practice were not identified by our participants, there was a strong focus on the CAATE core competencies of (1) evidence-based practice, (2) patient-centered care, (3) quality improvement, (4) interprofessional collaboration and education, (5) health information technology, and (6) professionalism. The core competencies are currently identified within the Standards for the Accreditation of Post-Professional Athletic Training Residency Programs[29] and Standards for the Accreditation of Post-Professional Athletic Training Degree Programs,[30] and are highlighted across DAT programs.[28] Although the core competencies are included in the 2020 Standards for Accreditation of Profes-

sional Athletic Training Programs,[31] athletic trainers currently consider the integration of these behaviors and their requisite knowledge to be associated with advanced clinical practice.

LIMITATIONS AND FUTURE RESEARCH

This study is not without limitations. Although the purpose of this study was to explore athletic trainers' perceptions of advanced clinical practice, the key findings also allowed us to gain insight on which criteria (eg, training, education, years of experience) athletic trainers would emphasize when defining advanced clinical practice. As with all survey research, self-selection for participation and completion of the survey instrument is an inherent limitation. Additionally, the time from data collection to publication of our results was longer than anticipated. During this time, several important changes in athletic training occurred, including the Strategic Alliance's formal announcement of the transition to the professional degree, the emergence of multiple DAT programs, and the identification of residency focus areas by the CAATE. Therefore, after these changes, it is possible that participants might respond differently now. Due to the exploratory nature of this qualitative inquiry, we did not delineate responses based on practice setting or level of education. However, it is possible that respondents who have completed postprofessional education (eg, DAT or residency programs) may have different perceptions of advanced clinical practice in athletic training. Further study of advanced clinical practice in athletic training, specifically among athletic trainers who have completed accredited residency programs and earned DAT degrees, is also warranted. Future research should also explore the educational outcomes of accredited residency programs and DAT programs to ensure that they are meeting the goals of developing clinical specialists and advanced practice leaders.

CONCLUSIONS

Based on the results of our study, athletic trainers perceive advanced clinical practice as clinical practice that incorporates advanced knowledge, skills, and behaviors that are acquired through formal training and education, often in the form of an additional degree or certification. Our results align with the newly proposed definition of advanced clinical practice from the Athletic Training Strategic Alliance[32]:

> *Advanced clinical practice is a level of athletic training practice that utilizes extended and expanded skills, experience and knowledge in assessment, planning, implementation, diagnosis and evaluation of the care required. Athletic trainers practicing at this level are educationally prepared at the post-professional level with advanced education and training within athletic training and may work in either a specialist or generalist capacity.*

This definition and the perceptions of athletic trainers identified in this study align closely with the Strategic Priorities of Athletic Training Education, specifically the development of clinical specialists and advanced practice leaders, and the currently available postprofessional educational pathways represented by accredited residency programs and the DAT degree.

REFERENCES

1. Sauers EL. A framework for the future: communicating and enhancing the future of athletic training education *NATA News*. 2015;April:18–19.
2. Benner P. Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *Bull Sci Technol Soc*. 2004;24(3):188–199.
3. Jensen GM, Gwyer J, Shepard KF, Hack LM. Expert practice in physical therapy. *Phys Ther*. 2000;80(1):28–52.
4. Bilics A, Iwama M, Kearney P, Kent JP, Romanowski K. A descriptive review of occupational therapy education. *Am J Occup Ther*. 2016;70:7012410040.
5. ABMS history of improving quality care. American Board of Medical Specialties Web site. https://www.abms.org/about-abms/history/. Accessed January 27, 2020.
6. Furze JA, Tichenor CJ, Fisher BE, Jensen GM, Rapport MJ. Physical therapy residency and fellowship education: reflections on the past, present, and future. *Phys Ther*. 2016;96(7):949–960.
7. Dunn W, Rask S. Entry level and specialized practice: a professional encounter. *Am J Occup Ther*. 1989;43(1):7–9.
8. Brown SJ. A framework for advanced practice nursing. *J Prof Nurs*. 1998;14(3):157–164.
9. Neibert PJ. Novice to expert practice via postprofessional athletic training education: a grounded theory. *J Athl Train*. 2009;44(4):378–390.
10. Gardin FA, Mensch JM. Diagnostic problem solving in male collegiate athletic trainers. *J Athl Train*. 2014;49(4):521–531.
11. Malasarn R, Bloom GA, Crumpton R. The development of expert male National Collegiate Athletic Association Division I certified athletic trainers. *J Athl Train*. 2002;37(1):55–62.
12. Raab S, Wolfe BD, Gould TE, Piland SG. Characterizations of a quality certified athletic trainer. *J Athl Train*. 2011;46(6):672–679.
13. Strategic alliance degree statement. Athletic Training Strategic Alliance Web site. https://atstrategicalliance.org/strategic-alliance-degree-statement. Accessed January 27, 2020.
14. Williams RM, Welch CE, Parsons JT, McLeod TCV. Athletic trainers' familiarity with and perceptions of academic accommodations in secondary school athletes after sport-related concussion. *J Athl Train*. 2015;50(3):262–269.
15. Winkelmann ZK, Eberman LE. Characteristics of secondary school athletic trainers: salary, job satisfaction, and perceived percentage of daily practice. *Athl Train Sports Health Care*. 2017;9(3):124–132.
16. Mace KL, Welch Bacon CE. Athletic training educators' knowledge and confidence about competency-based education. *Athl Train Educ J*. 2018;13(4):302–308.
17. Hill CE, Knox S, Thompson BJ, Williams EN, Hess SA, Ladany N. Consensual qualitative research: an update. *J Couns Psychol*. 2005;52(2):196.
18. Hill CE, Thompson BJ, Williams EN. A guide to conducting consensual qualitative research. *Couns Psychol*. 1997;25(4):517–572.
19. Phan K, McCarty CW, Mutchler JM, Van Lunen B. Clinical preceptors' perspectives on clinical education in post-professional athletic training education programs. *Athl Train Educ J*. 2012;7(3):103–114.
20. Thrasher AB, Walker SE, Hankemeier DA, Pitney WA. Supervising athletic trainers' perceptions of professional social-

ization of graduate assistant athletic trainers in the collegiate setting. *J Athl Train*. 2015;50(3):321–333.

21. Welch Bacon CE, Kasamatsu TM, Lam KC, Nottingham SL. Future strategies to enhance patient care documentation among athletic trainers: a report from the Athletic Training Practice-Based Research Network. *J Athl Train*. 2018;53(6):619–626.
22. Welch CE, Van Lunen BL, Hankemeier DA, et al. Perceived outcomes of web-based modules designed to enhance athletic trainers' knowledge of evidence-based practice. *J Athl Train*. 2014;49(2):220–233.
23. APRNS in the U.S. National Council of State Boards of Nursing Web site. https://www.ncsbn.org/aprn.htm. Accessed January 27, 2020.
24. Residency programs. Commission on Accreditation of Athletic Training Education Web site. https://caate.net/residency-programs/. Accessed January 27, 2020.
25. CAATE establishes residency focus areas. Commission on Accreditation of Athletic Training Education Web site. https://caate.net/caate-establishes-residency-focus-areas/. Accessed January 27, 2020
26. Huxel Bliven KC, Potteiger K, Baker RT, Pitney WA. Part II: Examining stakeholder perceptions of the postprofessional clinical doctoral degree in athletic training. *Athl Train Educ J*. 2018;13(3):205–218.
27. Seegmiller JG, Perrin DH, Bliven KCH, Baker RT. Part I: Doctoral education in athletic training. The post-professional education committee doctoral education workgroup report. *Athl Train Educ J*. 2018;13(3):196–204.
28. Hamson-Utley J, Ave J, Weiss L. Athletic training education pathways: the doctorate in athletic training. *NATA News*. 2019; February:28–29.
29. Commission on Accreditation of Athletic Training Education (CAATE). *Standards for the Accreditation of Post-Professional Athletic Training Residency Programs*. Austin, TX: CAATE; 2014.
30. Commission on Accreditation of Athletic Training Education (CAATE). *Standards for the Accreditation of Post-Professional Athletic Training Degree Programs*. Austin, TX: CAATE; 2013.
31. Commission on Accreditation of Athletic Training Education (CAATE). *Implementation and Guide to the CAATE 2020 Professional Standards*. Austin, TX: CAATE; 2018.
32. CAATE. Athletic training glossary. Commission on Accreditation of Athletic Training Education Web site. 2019. https://caate.net/resources-and-additional-documents/. Accessed January 27, 2020.