Athletic Trainers' Experiences Developing and Maintaining Contemporary Expertise

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Context: The Commission on Accreditation of Athletic Training Education (CAATE) implemented new accreditation standards for professional education in 2020, requiring educators and preceptors affiliated with CAATE-accredited professional programs to identify an area of contemporary expertise. Although this requirement is imperative to ensure that educators and preceptors are exposing students to the breadth and depth of content areas in athletic training practice, little is known about how an area of contemporary expertise is developed and maintained.

Objective: To explore educators' and preceptors' experiences with developing and maintaining an area of contemporary expertise.

Design: Cross-sectional.

Setting: Web-based survey.

Participants: Of 449 athletic trainers (ATs), 347 (183 educators and 164 preceptors) indicated an identified area of contemporary expertise, completed the survey, and were included in the data analysis.

Data Collection and Analysis: A 16-item survey (10 demographic items, 1 Likert-scale item, and 5 open-ended questions) was used. Descriptive statistics were used to characterize participant demographics and familiarity with contemporary expertise. Data analysis of open-ended responses was guided by a 4-phase, consensual qualitative research process using a 3-person team. An external auditor confirmed data representation and accuracy.

Results: Familiarity with contemporary expertise and its impact on practice was shared, and participants identified various activities and resources accessible for ATs. However, challenges associated with developing and maintaining expertise and conflicts with current certification expectations were also identified.

Conclusions: Program administrators and employers should consider how they can best support the endeavors of educators and preceptors for developing and maintaining areas of contemporary expertise. Program administrators should evaluate programmatic approaches to assist preceptors with maintaining contemporary expertise. Additionally, as educators and preceptors become more familiar with contemporary expertise, the Board of Certification and the CAATE should provide guidance regarding the intent of continuing education, how it relates to contemporary expertise, and how stakeholders can achieve the objectives set forth by regulatory groups.

Key Words: preceptor, clinical practice, professional development, continuing education, athletic training faculty

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KEY POINTS

- Most educators and preceptors had an identified area of contemporary expertise, but barriers to the development and maintenance of these areas were identified. Program administrators should consider how to best support faculty and preceptors in their respective areas.
- More frequently than preceptors, educators described research and scholarship as methods used for developing and maintaining contemporary expertise. Similarly, clinical practice and professional development were used by both educators and preceptors as activities for their areas of expertise.
- As contemporary expertise becomes more commonplace among educators and preceptors, the strain on resources should be considered for simultaneously requiring continuing education to maintain competence and promote the development of areas of expertise.
- Additional guidance may be necessary from the Board of Certification and the Commission on Accreditation of Athletic Training Education to achieve this simultaneous outcome of maintenance of competence and contemporary expertise.

INTRODUCTION

To advance athletic training education, the Athletic Training Strategic Alliance—composed of the Board of Certification (BOC), the Commission on Accreditation of Athletic Training Education (CAATE), the National Athletic Trainers' Association (NATA), and the NATA Foundation—announced an entry-level degree change in 2015 requiring postbaccalaureate education for entry into athletic training practice.^{1,2} To ensure that the accreditation requirements met the needs of graduate educational offerings, the CAATE published the 2020 Standards for Accreditation of Professional Athletic Training Education Programs,³ which provided a new framework to guide athletic training programs in developing future generations of lifelong learners in the field.⁴ One of the new additions to the 2020 standards was the requirement for educators and preceptors to develop and maintain areas of contemporary expertise.³

In athletic training, contemporary expertise is defined as the "knowledge and training of current concepts and best practices in routine areas of athletic training, which can include prevention and wellness, urgent and emergent care, primary care, orthopedics, rehabilitation, behavioral health, pediatrics, and performance enhancement."⁵ This expertise can be achieved through a variety of methods such as advanced education, clinical practice experience, clinical research, additional forms of scholarship, or continuing education. Contemporary expertise can involve one or more identified areas of athletic training practice (ie, prevention and wellness, urgent and emergent care, primary care, orthopaedics, rehabilitation, behavioral health, pediatrics, and performance enhancement) or additional areas related to athletic training (eg, leadership, organization, and administration).^{3,6,7} The activities selected by educators and preceptors to develop and maintain

contemporary expertise may vary based on the resources available to achieve advanced education, clinical practice, or clinical research in the identified area.

In addition to athletic training, accreditors in other health professions have identified contemporary expertise as a requisite criterion. For example, the Commission on Accreditation in Physical Therapy Education outlines faculty expectations in physical therapy education programs regarding requirements for scholarship, service, and the maintenance of expertise in contemporary practice within their assigned teaching areas.⁷ For educators in health professions education, identifying and processing current, up-to-date publications; reviewing literature in their content or teaching area; and seeking new learning opportunities support their areas of contemporary expertise and their ability to share this knowledge with students.⁸

Because the literature regarding contemporary expertise in health professions is limited, our understanding of the experiences of athletic training educators and preceptors with contemporary expertise is lacking. Ideally, one's efforts should focus on improving knowledge in a specific content area and its associated skill set so that the educator or preceptor can become an expert in that area, increasing personal qualifications for teaching in that area of expertise and, thus, improving education and clinical practice.^{9,10} Yet such efforts require resources to engage in activities that enhance contemporary expertise. To best support educators and preceptors in their endeavors toward contemporary expertise in education and clinical practice, we first need to understand how these athletic trainers (ATs) have achieved contemporary expertise thus far. Therefore, the purpose of the current study was to explore educators' and preceptors' experiences with developing and maintaining an area of contemporary expertise.

METHODS

Design

We used a cross-sectional, web-based survey that incorporated open-ended questions to understand athletic training educators' and preceptors' experiences with contemporary expertise. The study was considered exempt by the A.T. Still University Institutional Review Board.

Participants

For the current study, we recruited ATs who were members of the NATA in good standing and self-reported as educators in a college/university setting (N = 1077) or who served as a preceptor affiliated with a CAATE-accredited professional athletic training program. To assist with the distribution of our study recruitment email, we relied on the NATA Survey Research Service and Coordinators of Clinical Education (CCE). To contact CCEs, we obtained a list of 412 email addresses from the CAATE office and then sent an email asking each CCE to forward the study recruitment email to all preceptors currently affiliated with their program.¹¹

Instrumentation

We developed a web-based survey containing 10 demographic items, 1 Likert-scale item, and 5 open-ended questions that were relevant to participants' perceptions of contemporary expertise.¹¹ The survey was hosted on the Qualtrics (Provo, UT) platform. Because we used the skip logic function of Qualtrics, participants did not always receive every survey item. Additionally, even though the survey questions were identical, one survey was distributed to educators, and a separate survey was distributed to preceptors. To ensure that participants who served in a dual role as an educator and a preceptor did not complete the survey twice, we included an additional screening item at the start of the educator survey to determine whether they had already completed the preceptor version of the survey. After survey development, the survey was reviewed by 3 content experts for face and content validity, and it was then pilot tested with 20 ATs who did not serve as educators or preceptors at the time of the study.¹¹

Procedures

Potential participants who met our inclusion criteria were sent a recruitment email that included the purpose of the study and a brief overview, the estimated time to complete the survey (ie, 10) to 15 minutes), and a URL link to the web-based survey. At the beginning of February 2021, the recruitment email was first sent to preceptors from the respective CCEs.¹¹ One week later, a separate recruitment email was sent to educators by the NATA Survey Research Service on our behalf. Participants were given 4 weeks to voluntarily complete the survey; 1 reminder email was sent to CCEs with a request to remind preceptors, and 3 reminder emails were sent to educators by the NATA Survey Research Service during the data collection period. Because the study was exempt, participant consent was implied with the voluntary completion of any portion of the survey; participants were not required to complete every survey item and could opt out of responding to any item.

Data Analysis

Descriptive statistics were performed using SPSS (version 27; IBM Corp) to analyze the demographic characteristics of the participants. Data from the open-ended questions were analyzed using the consensual qualitative research multiphase data analysis process.¹² To start, data from the educator data set and the preceptor data set were analyzed separately to ensure the representativeness of the participants' voices for each group. The data analysis process for the preceptor data set is described in detail elsewhere.¹¹

We followed an identical data analysis approach for the educator data set as that used for the preceptor data. The data analysis team for the educator data set included 4 athletic training researchers (N.R.S., J.M.C., C.E.W.B., and S.E.W.) who had previously collaborated in analyzing data with the consensual qualitative research process. Three members of the team (N.R.S., J.M.C., and C.E.W.B.) analyzed the data during the first 3 phases of the analysis, as described previously by Philpot et al,¹¹ and the fourth team member (S.E.W.) served as the external auditor, reviewing all data after analysis to ensure that the findings accurately represented the experiences of the participants.^{12,13}

Once the analysis of both data sets was complete, all members of the data analysis team met to discuss the similarities and

differences across the themes and categories that emerged. After careful consideration, we determined that the 3 themes from the educator data set were appropriately reflective of 3 of the 4 themes from the preceptor data set, which meant that they could be reported together. The Consolidated Criteria for Reporting Qualitative Research¹⁴ was used in the current study to ensure that the findings were comprehensively reported.

RESULTS

For the recruitment email sent by the NATA Survey Research Service, 8 of the 1077 emails sent to educators were returned as undeliverable, so 1069 initial emails were sent. Of those, 307 individuals accessed the survey, but 8 indicated that they served as a preceptor and completed that survey instead. During the distribution of the recruitment email to preceptors, 18 of the 412 emails sent to CCEs were returned as undeliverable, or the individual was out of the office or voluntarily opted out of the study¹¹; therefore, 394 initial emails were sent to CCEs. Of those, 277 preceptors from 80 CAATE-accredited professional athletic training programs accessed the survey. In total, our surveys were accessed by 534 ATs and completed by 190 educators and 259 preceptors (n = 449, 84.1% completion rate). Of the 449 individuals who completed the survey, 347 indicated that they had an identified area of contemporary expertise and responded to the open-ended survey questions. Thus, data analyses were conducted on responses from 347 ATs (183 educators and 164 preceptors). Additional participant demographics of these educators and preceptors are presented in Table 1.

Participants who identified an area of contemporary expertise were asked to describe it. Approximately 81% of educators and 84% of preceptors indicated that their area of contemporary expertise was in 1 of the 8 areas of athletic training practice identified by the CAATE (Figure 1). Other common areas of contemporary expertise were organization and administration, and leadership. Those with an identified area of contemporary expertise were asked whether their role (teaching assignments or patient panel) was assigned relative to their area of expertise or whether they chose their role based on their expertise. More educators indicated that they were assigned teaching responsibilities based on their area of contemporary expertise, but more preceptors selected their area of contemporary expertise based on their assigned patient panel (Figure 2).

During the analysis of the open-ended responses, 3 themes regarding experiences with contemporary expertise emerged among educators and preceptors: (1) activities, (2) resources, and (3) barriers to contemporary expertise (Figure 3). A fourth theme emerged among preceptors and has been reported elsewhere.¹¹ The frequency counts of participant responses coded within the categories of each theme are presented in Table 2.

Activities for Contemporary Expertise

The theme of activities for contemporary expertise identified the methods that participants used for maintaining and developing their areas of contemporary expertise. Participant responses within this theme were further reduced into 5 categories: scholarship and research, clinical practice and experience, teaching, professional development, and collaborative activities.

Scholarship and Research. Educators more commonly identified the use of scholarship and research as activities for

| Demographic Variable | Value | |
|---|--------------------------|---------------------|
| | Preceptors ($n = 164$) | Educators (n = 183) |
| Mean \pm SD (range) | | |
| Age, years | 37.2 ± 10.8 (22–65) | 42.3 ± 8.9 (26–66) |
| Years as a health care professional | 14.1 ± 1 0.3 (0.5–40) | 19.5 ± 8.2 (5–43) |
| Years in athletic training (preceptor/educator) | 9.0 ± 7.8 (0.5–34) | 12.7 ± 7.8 (0.5–40) |
| No. (%) | | |
| Gender expression | | |
| Male | 79 (48.2) | 75 (41.0) |
| Female-to-Male | 2 (1.2) | |
| Female | 83 (50.6) | 106 (57.9) |
| Prefer not to respond | | 2 (1.1) |
| Highest degree attained | | |
| Bachelor's degree | 26 (15.9) | 1 (0.5) |
| Master's degree | 119 (72.5) | 21 (11.5) |
| Clinical doctoral degree | 9 (5.5) | 25 (13.7) |
| Academic doctoral degree | 8 (4.9) | 134 (73.2) |
| Professional degree | 2 (1.2) | 2 (1.1) |
| Current patient panel ^a | | |
| Pediatric: general population | 7 (3.9) | |
| Pediatric: secondary school | 52 (39.0) | |
| Adult: collegiate athletics | 85 (47.5) | |
| Adult: collegiate general population | 6 (3.4) | |
| Adult: collegiate intramural sports | 4 (2.2) | |
| Adult: professional athletics | 4 (2.2) | |
| Adult: public safety population | 1 (0.6) | |
| Pediatric and adult: general population | 19 (10.6) | |
| Missing | 1 (0.6) | |
| Didactic teaching responsibility for a | | |
| CAATE-accredited athletic training program | | |
| Yes | 38 (23.2) | |
| No | 126 (76.8) | |

Some preceptors indicate that they provide services to more than one patient panel category. Percentages for the patient panel are based on 179 responses from preceptors.

contemporary expertise than preceptors. Specifically, 104 educators and 10 preceptors described the use of scholarship and research as methods to develop and maintain their areas of contemporary expertise. One educator wrote, "I conduct and disseminate research related to the topic with my students and collaborators." Another educator noted that they maintained their area of expertise through "an active research agenda, participation in research studies, and dissemination of research." Various other educators mentioned their research agenda and process for actively creating and disseminating research in their areas of expertise; only a few preceptors mentioned their involvement in research and scholarship. One preceptor noted, "I produce articles for publication related to my area of contemporary expertise," and 3 other preceptors mentioned "staying up to date" with research in their area to develop their expertise.

Clinical Practice and Experience. Educators and preceptors equally identified clinical practice or clinical experience as a method for maintaining contemporary expertise. Although some educators were removed from clinical aspects of employment. others sought out such opportunities. One educator wrote, "I practice clinically outside of my employment duties in order to apply, reflect, and learn further so that I can educate my students." Similarly, another educator indicated, "Despite clinical

doing something clinically every year because I firmly believe if I am going to teach it, I need to continue to practice.'

Preceptors were more regularly engaged in clinical practice, and our participants described how they maintained and improved their areas of contemporary expertise. One preceptor noted, "I regularly practice the skills associated with the area of expertise," and another preceptor mentioned having "constant exposure to the areas [of contemporary expertise]." A preceptor also mentioned encouraging athletic training students to bring new information from the classroom to the clinical setting: "I challenge my students to bring some of their current classroom information to me, and this helps to keep me sharp."

Teaching. Most responses related to teaching as a method to develop and maintain contemporary expertise came from educators rather than preceptors. Few preceptors mentioned involvement in teaching students through either their preceptor positions or a more formal education course. One preceptor noted, "I have taught college and high school level students in these [contemporary expertise] areas. Thus, needing to provide students with [the] most updated evidence-based information." Another preceptor described how they incorporated teaching into their preceptorship: "Also, I precept. I challenge my students to bring their current classroom information."





Do you currently have an area in which you feel you have contemporary expertise?

Identified Areas of Contemporary Expertise



Various educators discussed teaching the courses in their area of contemporary expertise. One specified that they conveyed this knowledge by "conducting research and integrating current, valid, and reliable data and best practices into classes I teach." Another educator discussed their role in the clinical setting but still focused on the connection between the classroom and clinical experiences in the following statement:

I participate in weekly contemporary practice in the [athletic training] clinic by interacting with students while they perform

AT skills on patients. Note, their preceptor is also present and officially supervising them ... My purpose is helping students connect classroom concepts to clinical applications.

Another commonality for maintaining and developing contemporary expertise expressed by educators was the number of years teaching in that subject area. For example, one educator mentioned having spent "multiple years of teaching in these areas," and another specified, "I have taught for seven years at the undergraduate and graduate [athletic training] level in those areas."



Figure 2. Assignment or selection of roles based on contemporary expertise for preceptors and educators in athletic training. Abbreviation: CE, contemporary expertise.

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Figure 3. Conceptual framework of themes and categories.



Professional Development. Educators and preceptors used professional development activities to gain exposure to their areas of expertise. These opportunities included general, formal, and informal professional development. Overall, 149 educators discussed using formal professional development opportunities, but only 79 preceptors did. Of the 3 types of professional development activities, formal professional development was most commonly used.

The most common method of professional development was continuing education in general topic areas or areas specific to contemporary expertise. Formally, continuing education seminars, workshops, and conferences were mentioned by many educators and preceptors. "I attended many meetings and educational sessions on the topics and obtained training in dry needling, cupping, manual therapy and corrective exercise, and was able to apply the knowledge in my care of athletes," wrote one preceptor. Another preceptor discussed graduate coursework as the formal professional development option for developing contemporary expertise. Educators also attended continuing education courses based on their area of contemporary expertise. For example, one educator mentioned "participating in workshops and conference meetings relevant to the contemporary expertise." Similarly, another educator indicated that they "attend workshops to improve my knowledge and understanding of that area."

The second most common method of professional development was informal practices such as reading the literature and available research in an area of contemporary expertise. One educator indicated, "I stay current with the newest research related to orthopedic evaluation and I continue to seek out opportunities to learn and grow when I am given the opportunity." A preceptor discussed "following research studies, specifically meta-analysis studies determining [the] effectiveness of treatments." An additional method of informal professional development was the use of podcasts and social media to gain knowledge in areas of contemporary expertise.

Collaborative Activities. For educators and preceptors, collaborative activities ranged from community partnerships, colleague discussions, and active professional memberships. Many educators mentioned professional memberships, committees, and collaborative practice through different organizations. One educator indicated, "I stay relevant by meeting on interprofessional education teams." Another described being "routinely involved as a team member in quality improvement initiatives within the clinical unit at my institution." Similarly, yet another educator wrote that their collaborative activities included "maintaining memberships and participating in meetings within communities that specialize in my areas of expertise."

Various preceptors identified interprofessional collaboration with other health care professionals, communication with team physicians in their area of expertise, and peer-to-peer learning as collaborative activities that contributed to contemporary expertise. One preceptor specifically mentioned that they "maintain communication with other ATs in all levels of athletics to compare on [*sic*] the latest treatments and trends." Another preceptor described their experience as "working alongside an expert in the field of sport neurology to develop a concussion recognition and management plan."

Resources for Contemporary Expertise

Another theme was resources for maintaining and developing contemporary expertise. For this theme, participants identified the resources necessary for pursuing contemporary expertise and, in some cases, specified the mode of delivery of those resources. Participants' responses within this theme were further reduced into 4 categories: personal, employer, professional, and time. More educators than preceptors mentioned the resources that they used to develop and maintain their identified area of contemporary expertise. However, both groups reported most commonly using professional development resources with general, synchronous, and asynchronous delivery methods.

Personal. Ninety-six educators and preceptors indicated that personal resources, or resources individually sought out, were beneficial for maintaining contemporary expertise. These resources were often colleagues or informal networking opportunities. One educator noted, "I have developed a network of professionals in other disciplines to maintain a contemporary expertise in these areas." A preceptor echoed the networking approach from an interdisciplinary perspective by identifying these colleagues as "physicians, peers, and other professions (physical therapy, occupational therapy, etc)." Another preceptor discussed how clinical practice with colleagues was also a resource. That participant wrote that they were "continually practicing with my staff in order to maintain skills." Finally, both educators and preceptors mentioned health care and professional memberships as resources for contemporary expertise.

| Ineme | Category | Educators | Preceptors |
|---------------------------------------|---|-----------|------------|
| Activities for contemporary expertise | Scholarship and research | 104 | 10 |
| | Clinical practice and experience | 65 | 64 |
| | Teaching | 63 | 15 |
| | Professional development | | |
| | General professional development | 27 | 50 |
| | Formal professional development | 149 | 79 |
| | Informal professional development | 84 | 78 |
| | Collaborative activities | 37 | 40 |
| Resources for contemporary expertise | Personal | 48 | 48 |
| | Employer | 38 | 9 |
| | Synchronous professional resources | 87 | 44 |
| | Asynchronous professional | 112 | 68 |
| | Time | 7 | 1 |
| Barriers to contemporary expertise | Lack of opportunity to practice | 20 | 10 |
| | COVID-19 pandemic | 18 | 8 |
| | Time and time management | 88 | 63 |
| | Money | 61 | 48 |
| | Lack of professional resources in the area of contemporary expertise | 16 | 24 |
| | Continuing education expectations vs use | 33 | 20 |
| | None | 18 | 25 |

Table 2. Frequency of Participant Responses per Category

expertise, and only 9 preceptors did. Educators identified the following resources provided by their employers for the maintenance of contemporary expertise: "laboratory space," "access to medical libraries," and "employer professional development financial assistance." One educator specifically mentioned "research equipment, library resources for online/print literature, and communication devices such as phone, Google platforms, Zoom, and more" as resources provided by their employer.

Very few preceptors discussed financial contributions from employers for conferences and meetings. When they did, however, they included the name of the employer or specified that their employer was an institution, college, or university. For example, one preceptor wrote, "Our university provides financial resources for continuing education in self-selected areas." Another preceptor mentioned, "Our school district and team doctors have helped with paying our expenses to pay for our [instrumentassisted soft tissue mobilization] tools and workshops we attend."

Professional. Professional development resources were the most reported resource for maintaining contemporary expertise. These resources were often reported as "CEUs" (continuing education units), "professional development opportunities," or "continuing education." Overall, 112 educators mentioned asynchronous professional resources such as literature searches, social media, and other asynchronous platforms. Many also mentioned "researching databases" and "online journal articles." However, one educator wrote, "Online webinars have been predominant in this current climate," which highlighted the current state of professional resources because of the coronavirus disease 2019 (COVID-19) pandemic.

Regarding synchronous professional resources, educators and preceptors indicated that they used annual symposiums, this area of contemporary expertise. For example, I just attended the ATPPS [Athletic Trainers in the Physician Practice Society] conference that focuses in on the physician practice setting as well as specific topics in orthopedics and medicine." An educator provided a similar statement: "I attend professional development opportunities in these areas to ensure I am (1) understanding different viewpoints, (2) identifying new practices, and (3) identifying new implementation techniques to teach these areas."

Frequency of Responses

Time. Time was also mentioned as a resource for contemporary expertise. However, few educators mentioned time as a resource, and only 1 preceptor did. Educators mentioned time mainly in the context of "research release time," "release time to support clinical practice in area(s) of expertise," and "release time for scholarly activities." One educator specifically noted, "My schedule is also flexible to allow me the opportunity to work athletic events. Day job has limited evening responsibilities and no weekends."

Barriers to Contemporary Expertise

The third theme that emerged for educators and preceptors was barriers to contemporary expertise. For this theme, participants described several challenges that prohibited the successful development or maintenance of their identified area of contemporary expertise. Participants' responses within this theme were further reduced into 6 categories: lack of opportunity to practice, COVID-19 pandemic, time and time management, money, lack of professional resources in the area of contemporary expertise, and continuing education expectations vs use.

Lack of Opportunity to Practice. Educators commonly identified a lack of opportunities to practice because of their employment position as a barrier. As one educator shared, "I don't practice clinically anymore which is why I may lack expertise in other areas." Similarly, another educator wrote, "I no longer work as a practicing AT so my experience and training has [*sic*] shifted more to academic settings." Preceptors commonly mentioned inconsistent patient loads or patient exposure as barriers, but a few mentioned the lack of opportunities to practice because of the number of years that they spent as a practicing AT. One preceptor indicated, "The main barrier I have encountered is the minimal amount of experience I have accumulated so far practicing in the field of athletic training. I have been a certified and licensed athletic trainer for less than 1 year currently." Interestingly, another preceptor admitted to "not knowing the importance of contemporary expertise and a lack of experience as an athletic trainer."

COVID-19 Pandemic. The COVID-19 pandemic was a barrier identified by both educators and preceptors. One educator pointed out that "COVID-19 has presented a rather large barrier over the past 12 months ... My continuing education goals have been altered based on how continuing education events have been changed." Another educator wrote, "I would typically say none; however, since COVID-19 my university is not funding faculty for continuing education so there is currently a lack of support in that area." University restrictions because of COVID-19 created additional barriers for educators. An educator highlighted this limitation as follows: "Since the pandemic, I have not been able to gain access to my research lab to continue working on research projects with human subjects." Although barriers related to continuing education course cancellation or postponement were a direct result of COVID-19, the effectiveness of course delivery, most especially for clinical components, was also a barrier caused by the pandemic. As an educator shared, "COVID-19 switching everything to virtual has made it difficult for those courses that would be better served in person."

The pandemic also caused barriers from the clinical perspective. As one educator noted, "Currently under COVID guidelines via the university I am not supposed to practice clinically as it is outside my official job role and responsibility." Similarly, a preceptor noted the effect of COVID-19 on patient care. That participant wrote, "COVID-19 having an impact of patients being scheduled at the clinic from a week-to-week basis has been the biggest barrier."

Time and Time Management. Time and time management were commonly reported barriers to the development of areas of contemporary expertise. Time was explicitly noted by many participants, while some outlined specific time management barriers. For example, one educator stated, "I guess time to a point. With teaching in a year-round program finding the appropriate time to do or attend a few of these events is tough." From an education perspective, the time management barrier was illustrated through statements such as the following:

Arranging course schedules to allow for time missed in order to attend in-person events. I think for a lot of educators conferences tend to happen at less than ideal times in a semester and I know at my institution the only way I am getting funding is if I am presenting at a conference.

Time was also identified as a barrier for reasons related to home life, family, and other personal commitments. One participant wrote, "I am also a parent of two young children so finding time to travel or focus on a webinar is challenging." Another indicated, "Currently, the biggest barrier is finding the time with a family and full-time job as an athletic training program administrator and educator."

Money. Money was another barrier to the development of contemporary expertise. Participants often identified a lack of funding from employers, personal finances, and even budgetary cuts as barriers. One educator outlined a specific example of this barrier by writing that the "cost of conferences is a barrier as travel funds are limited if I am not presenting." In addition to concerns about the lack of employer funding for travel and registration, participants also identified "funding to improve equipment" as a monetary concern.

A few preceptors mentioned the costs of courses or professional development in relation to the typically low salaries of ATs. As one preceptor indicated, "Funding. We are one of the few health care professions that require yearly CEUs yet we are paid the least, and many of our work settings do not offer continuing education funding." Similarly, another preceptor mentioned "costly prices for the courses with low income pay for ATs."

Lack of Professional Resources in Areas of Contemporary **Expertise.** Educators and preceptors indicated that a lack of professional resources in their specific area of contemporary expertise created a barrier to development. One preceptor wrote that there were "no research resources in the areas in which I want to develop greater expertise." An educator shared their difficulties in finding resources in their area of research that supported their desired area of contemporary expertise. The educator described this challenge as follows: "Often my area of expertise is different from my area of research and where I am presenting my research often doesn't have educational sessions based on my orthopedic assessment contemporary expertise area, so it makes it difficult." Another participant mentioned, "Many continuing education sessions involving this content area are introductory in nature or specific to some other content area so it can be hard to demonstrate continuing efforts to maintain."

Continuing Education Expectations vs Use. Expectations for continuing education requirements, including evidence-based practice (EBP) units, and the use of continuing education activities for contemporary expertise throughout a career were reported as barriers to expertise development. For example, one educator shared the following:

If I had to name one barrier it would be the requirement of the EBP CEUs. I try to get these completed while I am at conferences and there are so few options that they always seem to fall at the same time as a session I am really interested in that falls within my expertise. So I have to miss that session to attend the EBP session. I feel that most of the sessions are evidence-based anyway in order for them to be approved so the EBP requirement really ties my hands to pursue my contemporary expertise fully.

Another educator discussed the differences between the CAATE's focus on contemporary expertise and the NATA's focus on personal improvement in areas of identified weakness. That educator wrote, "The CAATE push to maintain an area of expertise is directly at odds with the NATA push for members to improve personal areas of weakness. It's difficult

to serve two masters who have different ideas of what we should do to be good ATs."

DISCUSSION

The current study explored educators' and preceptors' experiences with developing and maintaining an area of contemporary expertise. Because of accreditation requirements for identified areas of contemporary expertise for educators and preceptors in professional athletic training programs, there needs to be a better understanding of how these professionals perceive, develop, and maintain contemporary expertise.¹⁵ Most of our study participants had an identified area of contemporary expertise, and their experiences with contemporary expertise included various activities that guided its development and multiple resources that they used to achieve that expertise. Participants also reported barriers to developing and maintaining contemporary expertise and identified resources to overcome those barriers and achieve contemporary expertise in athletic training education and clinical practice.

Activities for Contemporary Expertise

After the analysis of the open-ended survey responses, activities for developing and maintaining contemporary expertise were identified as a dominant theme. Common activity categories within this theme were scholarship and research, teaching, and professional development. Educators more commonly mentioned scholarship and research or teaching as an activity used to develop contemporary expertise than preceptors. This outcome may be explained by differences in job descriptions and duties; many educators in teaching positions are also required to pursue research or scholarship as a part of their job responsibilities. A 2017 report investigating faculty time use supports this finding.¹⁶ In that study,¹⁶ full-time faculty typically spent about half of their time engaged in teaching activities and just under 15% of their time conducting research. Notably, only about half of the faculty reported a requirement to conduct research.¹⁶ Therefore, because faculty job requirements require scholarly activity or research, the educators in our study likely relied on that method for developing contemporary expertise more than preceptors did. In the future, program administrators and governing organizations should consider approaches that encourage preceptors to pursue involvement in more scholarship and research activities for contemporary expertise.

Teaching was another common category identified under the activities theme, and more educators than preceptors mentioned its use for developing contemporary expertise. In general, educators are expected to teach content or courses in their area or areas of contemporary expertise.³ Therefore, it was not surprising that educators in our study identified teaching as an activity for developing their area of contemporary expertise. However, this activity creates an interesting contradiction because educators are expected to have contemporary expertise in their teaching areas while simultaneously using teaching as the mechanism to achieve that expertise. Payne et al¹⁷ noted this contradiction in their study, which examined how athletic training educators develop teaching practices. The authors reported that these educators developed pedagogical strategies and teaching practices primarily through their role and practice as a teacher. Specifically, Payne et al¹⁷ referred to this result as role induction through role continuance. Our findings supported those conclusions and

highlighted that educators continue to rely on this strategy for developing contemporary expertise.

However, this strategy may require some reconsideration. Previously, it was successful relative to methods of instruction, but this approach may have less applicability for contemporary expertise. For instance, a drawback of this approach involves teaching in an evidence-based manner but using content taught previously instead of new evidence that supports the course content and promotes contemporary knowledge. Ideally, that evidence-based knowledge is also conveyed to the students in this scenario. Therefore, educators who use teaching only as a method for developing contemporary expertise may not be developing expertise. Relying on didactic material, regardless of how contemporary it may be, and classroom engagement will likely result in the maintenance of existing levels of contemporary expertise instead of the further development of expertise.^{17,18} Given these drawbacks, those who strongly identify with the use of teaching as a mechanism for developing and maintaining contemporary expertise should consider augmenting this strategy with additional methods to better develop and maintain their expertise and facilitate the transference of contemporary concepts to their students.

Both educators and preceptors in the current study identified using clinical practice and experience to improve their areas of expertise. Participant responses commonly highlighted the importance of clinical practice for enhancing skills and applying new techniques described in current research. They also mentioned the general time frame of clinical practice in relation to the clinical experience gained throughout their careers. However, expertise is more than just the accumulation of experience and knowledge, and experience alone is not enough for an individual to claim expertise in a particular area.¹⁸ As such, it is unclear how preceptors use clinical practice and experience as methods for developing contemporary expertise. We had similar results for educators. Specifically, these participants identified role induction as a means for role continuance,^{9,17} but it was unclear how they used clinical practice and experience to develop expertise. Since expertise is developed through deliberate practice or the use of self-motivation and regulatory processes, clinical practice alone may be inadequate for the thorough development of contemporary expertise.^{9,19} Therefore, educators and preceptors may need to establish a clear connection between clinical practice and their identified area of expertise to effectively use this activity to maintain expertise.

Even though teaching for educators and clinical practice for preceptors may be viable methods for maintaining areas of contemporary expertise, they should not be the only activities used for developing and maintaining expertise. Furthermore, years of experience with either of these methods do not equate to expertise. For example, clinicians practicing late in their careers have years of clinical experience. As such, there may be a false presumption that they possess a level of expertise based solely on their years of experience. However, according to the Dreyfus model,¹⁸ expertise can be achieved during all stages of skill acquisition from novice to advanced beginner and from competent to proficient to expert. Therefore, years of experience do not always result in expertise. The Dreyfus model¹⁸ may especially be true for new ATs who choose clinical practice to develop expertise in their targeted area as they transition from stage to stage of their career. Importantly, this model also applies to later career professionals and should be considered for all ATs seeking expertise in new areas.^{9,18,19}

In the current study, educators and preceptors identified general, formal, and informal professional development activities as methods for developing contemporary expertise. Continuing education as a form of professional development is required for all credentialed ATs; however, governing bodies currently have contradictory requirements. For instance, the BOC requires continuing education, often as formal professional development, to maintain minimal levels of competence across all domains for safe practice in the profession. As such, the BOC promotes the use of the Professional Development Needs Assessment survey so that ATs can better reflect on their professional needs and identify areas of weakness.²⁰ Ideally, the results of the assessment will encourage ATs to seek professional development opportunities that address their weaknesses. Conversely, requirements from the CAATE for developing and maintaining contemporary expertise encourage the use of professional development for areas of existing expertise or individual areas of strength within practice. Although choosing professional development opportunities in an existing area of expertise or in an area where the AT is trying to gain expertise is an efficient way to establish expertise, this method of professional development seems to oppose the original intention of the credentialing body.²⁰ Because of these contradictory requirements for professional development activities, the profession and these credentialing bodies should strive to develop more uniform requirements that also make the pursuit of professional development opportunities easier for ATs.

Barriers to Contemporary Expertise

Barriers to contemporary expertise described by the study participants included typical barriers related to additional work tasks, personal commitments, and the current environment. In particular, the COVID-19 pandemic was identified as a barrier by both educators and preceptors. The resulting changes in the environment because of the pandemic made synchronous professional development opportunities and hands-on experiences much more difficult. The pandemic also impacted employer budgets for professional development and travel, caused public transportation bans or cancellations, and affected the ability of ATs to clinically practice. A recent study by Hancher-Rauch et al²¹ highlighted the difficulties experienced by health educators because of the COVID-19 pandemic. In that study,²¹ educators were given additional duties and responsibilities to ensure compliance with new protocols related to the pandemic. Although health professions educators willingly shifted into these new roles, as the pandemic has eased, some have had difficulties shifting back to prepandemic roles and responsibilities,²¹ impeding their ability to pursue contemporary expertise. Furthermore, as a direct result of the environment, the pandemic also delayed the process of expertise development for some ATs because safety restrictions made it difficult to comply with professional standards.³ Fortunately, COVID-19 is unlikely to remain a barrier to the development of contemporary expertise in athletic training.

Our study participants also identified time and time management as common barriers to the development of contemporary expertise. Educators in the current study thought that there was not enough release time to attend continuing education opportunities and identified teaching schedules and other academic responsibilities as constraints on their time. They also indicated that time constraints related to family life, other required work, and professional activity did not allow time for the development of contemporary expertise. Because of these challenges related to the fulfillment of academic roles,^{9,22} the responses from many educators focused almost exclusively on time and the time that it takes to develop and continually maintain an area of expertise. This finding was supported by Manspeaker and Van Lunen.²³ In that study,²³ both time and time management were identified barriers in other areas of athletic training such as EBP implementation in athletic training education. Regarding the incorporation of EBP for the development of contemporary expertise, our participants reported similar challenges with time and time management barriers as those identified by Manspeaker and Van Lunen.²³ Clearly, this barrier has a marked effect on multiple aspects of athletic training education, and it may be necessary to consider ways to mitigate time constraints.

Like educators in the current study, preceptors also identified time as a barrier to the development of contemporary expertise. However, preceptors identified time constraints related to busy clinical schedules and a lack of ability to take time from their busy professional schedules to pursue continuing growth. Although the primary roles of clinical ATs involve the prevention, management, and treatment of musculoskeletal injuries and general illnesses, administrative responsibilities and other issues of a nonathletic training or clinical nature are also part of their role as health care providers. As such, our findings were supported by previous research. For instance, having ample time to provide quality patient care and complete administrative tasks has been identified as a contributor to increased role strain for ATs.²⁴

The connection between time barriers and role strain may also explain our findings. For example, the observed differences between educators and preceptors may be related to requirements for the identification of an area of contemporary expertise in athletic training programs.³ Although educators in these programs are mandated to identify their area of expertise, ATs in general are not required to do so, and only those who choose to serve as preceptors associated with CAATE-accredited athletic training programs must fulfill this requirement.³ Since most ATs are not expected to identify an area of expertise, having this additional task to complete may be a time barrier for preceptors of CAATE-accredited programs. Furthermore, this requirement may make it more difficult for athletic training program administrators to recruit and retain quality preceptors for their students.²⁴ Therefore, the profession should consider developing a system to help preceptors overcome time and role strain barriers so that they can develop and maintain contemporary expertise.

Money was another key barrier identified in the current study. This finding was not surprising. Money and financial support from employers are huge considerations when ATs are looking for employment. According to the 2022 NATA salary survey, 71% of employers had a continuing education allowance or reimbursement as a benefit for their employees.²⁵ Furthermore, by using the BOC's Professional Development Needs Assessment survey, ATs can assess their professional needs and identify areas of weakness in professional practice.²⁰ With that knowledge and because continuing education is a requirement to maintain their credentials and employment, ATs should be negotiating continuing education allowances or reimbursement with their employers. In particular, educators and preceptors who also need to identify an area of contemporary expertise should negotiate for these funds since they require additional continuing education beyond what is already mandated.^{3,20,25} Whether money barriers were related to personal finances, employer budgets, required justification for the cost of various opportunities, or budget cuts related to the COVID-19 pandemic, educators and preceptors in the

current study identified money as the second most common barrier to developing and maintaining contemporary expertise.

Interestingly, both educators and preceptors indicated that a lack of professional resources for their identified area of contemporary expertise was a barrier. Some participants identified more specific details about this barrier by mentioning a lack of certain sports or activities in the literature or general access to journals that may contain that information. Furthermore, some preceptors identified a lack of availability of instructional or technique-based courses in the newer or upcoming areas of athletic training practice that aligned with their contemporary expertise. More preceptors than educators indicated the lack of professional resources as a barrier to the development of contemporary expertise. A possible explanation for this finding may be related to employer-provided resources such that employers of educators typically provide more access to resources than employers of preceptors. For example, resources provided by employers of educators may include access to online journals or databases, which preceptors may have limited access to. Conversely, it is also possible that preceptors, who have larger patient populations and treatment regimens, desire more technique-based, challenging, and hands-on continuing education for developing their contemporary expertise than educators, who typically have fewer encounters. Clearly, the lack of professional resources, in general, impedes the development and maintenance of contemporary expertise; therefore, the profession should investigate methods of improving access and encourage employers to contribute to more professional resources.

Another interesting barrier identified in the current study was related to the expectations and use of continuing education. Some educators indicated that their area of expertise was different from their area of research and scholarly practice. This scenario causes time and resource difficulties. Since both areas require development, there is a subsequent conflict with maintaining their area of expertise, completing necessary tasks for scholarly activity and academic research, and maintaining competence as outlined by the BOC.²⁶ Because ATs are encouraged to use continuing education or professional development opportunities to maintain competence in clinical practice and also their identified area of expertise, continuing education becomes a barrier instead of the means for acquiring that expertise. As a result, these conflicting goals are a burden on their available resources, time, and finances and make it harder to maintain knowledge for clinical practice and develop expertise.²⁶ Although ATs may be able to use alternative mechanisms for continuing education needs for clinical practice or academia, the steps for expertise have been clearly outlined and progress through specific stages that focus learning outcomes on an identified area or deliberate practice.^{18,19,26} To alleviate this conflict, the profession should consider steps that make it easier for educators and preceptors to address their areas of weakness, maintain competence, and develop an area of contemporary expertise.

Resources for Contemporary Expertise

The analysis of the open-ended survey responses in the current study also identified resources for contemporary expertise as a theme. The categories for this theme were personal, employer, professional, and time. Educators and preceptors equally mentioned the use of personal resources such as networks or colleagues and coworkers. Given that participants also identified networking as a category of the activity theme, it is not surprising that participants included a network of professionals or their colleagues as resources for developing contemporary expertise. Professional memberships provide ATs with opportunities to network with colleagues and other specialists in their field. Furthermore, even though membership fees are often considered a personal contribution, 39% of ATs reported that their employer contributed to their membership in professional organizations.²⁵ Our participants commonly identified networks of health care professionals in other areas or disciplines that allowed ATs to connect and collaborate in their respective areas of contemporary expertise.

More educators than preceptors indicated that their resources for developing contemporary expertise included those provided by employers. Examples of these types of resources included grant funding, general professional development funding, university courses or opportunities, laboratory space, and computers. Because educators are typically associated with a university and their physical location is generally on campus, they have better access to these resources than preceptors serving in various clinical practice settings. Furthermore, employer contributions to activities for professional development seem to be more common in the university setting for both educators and preceptors and less common for preceptors in secondary school settings.²⁵

In the current study, more preceptors than educators identified professional resources as methods for developing contemporary expertise. However, both groups shared experiences with continuing education opportunities from a personal or employer standpoint. Many participants also mentioned that the COVID-19 pandemic had increased opportunities for some courses and webinars since restrictions resulted in their conversion to asynchronous opportunities. Because the pandemic forced this shift to virtual platforms, continuing education could still be offered to athletic trainers and other health care professionals, and research suggests some satisfaction with the online delivery of education programs, courses, and materials.²⁷ However, the sudden change of format resulted in a lack of regulation, and recommendations are necessary for more sustainable online education offerings. Furthermore, with digitalization becoming more predominant in health care, digital medical education resources may transition to a new normal since they eliminate certain barriers (eg, travel or time management considerations) to continuing education for a multitude of activities.²⁸ In a study by Schulte et al,²⁸ online and in-person lectures were the main sources of continuing education; however, online journals, websites, books, and colleagues were also chosen as comparable educational references. Although asynchronous continuing education may be unsustainable in the long term, it provides supplemental opportunities for continuing education for ATs while eliminating the travel costs and fees associated with in-person learning opportunities.

Contemporary Expertise in Athletic Training

Because of the recent requirement for contemporary expertise for educators and preceptors, the profession needs to decide how contemporary expertise will be developed within athletic training. Furthermore, since contemporary expertise requirements are evaluated for educators and preceptors involved with CAATE-accredited athletic training programs, the BOC and CAATE should collaboratively outline the best-practice methods for continuing education efforts for these ATs. Having to attend continuing education for the maintenance of competence, improvement of identified areas of weakness, and development and maintenance of contemporary expertise places additional strain on the resources needed to achieve these goals and increases the role strain experienced by athletic training educators and preceptors.^{26,29}

For preceptors developing contemporary expertise, athletic training programs should consider the innovative delivery of resources as an incentive for preceptors to continue in their role despite the additional requirements. In addition to providing better access to various resources for these preceptors, program administrators should also provide mentorship and guidance to help preceptors develop expertise. Because contemporary expertise is not a requirement for all ATs in the profession, some preceptors may be unfamiliar with the concept and may require additional guidance. From an employer's perspective, contemporary expertise presents an opportunity to support employees by allocating resources that decrease the identified barriers to the development of expertise.

Limitations

The results of the current study should be interpreted based on the self-selection and self-reported nature of the participants and data. Since some of our participants were individuals who attended postprofessional athletic training programs, including residency programs, they likely had a recent involvement in formal educational environments and, thus, were more likely to develop an area of contemporary expertise, which may have influenced their responses. Future research should focus on the process of identifying an area of contemporary expertise, implications for the use of resources, and how the expertise of educators and preceptors influences program outcomes.

CONCLUSIONS

The results of the current study supported the development of contemporary expertise among educators and preceptors associated with CAATE-accredited athletic training education programs and highlighted the impact of expertise on practice. However, the results also illustrated the hardships in developing and maintaining expertise based on numerous barriers and conflicts with current certification expectations. As contemporary expertise becomes more commonplace among educators and preceptors of athletic training, the BOC and CAATE should better outline the intent of continuing education and how it relates to contemporary expertise and the maintenance of competence. Additionally, programs should encourage administrators or employers to evaluate how they can help faculty and preceptors maintain contemporary expertise. Programmatic approaches to aid preceptors with contemporary expertise should also be evaluated.

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REFERENCES

1. Mulder ER, Welch Bacon CE, Edler JR, et al. Motivators, anticipated challenges, and supportive factors for athletic trainers pursuing the doctor of athletic training degree. *Athl Train Educ J.* 2018;13(2):148–157. doi:10.4085/1302148

- Seegmiller JG, Nasypany A, Kahanov L, Seegmiller A, Baker R. Trends in doctoral education among healthcare professions: an integrative research review. *Athl Train Educ J*. 2015;10(1):47–56.
- 3. Commission on Accreditation of Athletic Training Education (CAATE). 2020 Standards for Accreditation of Professional Athletic Training Education Programs. CAATE; 2018.
- 4. Sauers EL. A framework for the future: communicating and enhancing the future of athletic training education. *NATA News*. 272015:18–19.
- Contemporary expertise. Standards Committee. Published 2019. Accessed July 14, 2021. https://caate.net/wp-content/uploads/ 2019/09/Contemporary-Expertise-Website_logo.pdf
- 6. Commission on Accreditation of Athletic Training Education (CAATE). *Implementation and Guide to the CAATE 2020 Professional Standards*. CAATE; 2018.
- 7. Commission on Accreditation of Physical Therapy Education (CAPTE). Standards and Required Elements for Accreditation of Physical Therapist Education Programs. CAPTE; 2020.
- 8. Turocy PS. The impact of instructor expertise and competency on student learning and strategies for improvement. *Athl Train Educ J.* 2015;10(4):328–331.
- 9. Persky AM, Robinson JD. Moving from novice to expertise and its implications for instruction. *Am J Pharm Educ.* 2017;81(9):6065.
- 10. Hunt TN, Harris L, Way D. The impact of concussion education on the knowledge and perceived expertise of novice health care professionals. *Athl Train Educ J.* 2017;12(1):26–38.
- Philpot NJ, Cavallario JM, Walker SE, Welch Bacon CE. Athletic training preceptors' perceptions of the characteristics for contemporary expertise. *Athl Train Educ J.* 2022;17(1):129–137.
- 12. Hill CE, Thompson BJ, Nutt-Williams E. A guide to conducting consensual qualitative research. *J Couns Psychol*. 1997;25(4):517–572.
- Hill CE, Knox S, Thompson BJ, Nutt-Williams E, Hess SA, Ladany N. Consensual qualitative research: an update. J Couns Psychol. 2005;52(2):196–205.
- Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349–357.
- Pursuing and maintaining accreditation of professional programs in athletic training. Commission on Accreditation of Athletic Training Education (CAATE). Published August 2021. Accessed April 9, 2022. https://caate.net/wp-content/uploads/ 2021/08/Pursuing-and-Maintaining-Accreditation_Professional-Programs_August-2021.pdf
- Nyunt G, O'Meara K, Sayer L. Summary report: faculty time use study implementation. Published 2017. Accessed July 6, 2022. https://www.uww.edu/documents/ir/University-Wide%20Surveys/ Faculty%20Time%20Use/FINAL%20Summary%20Report-%20 Faculty%20Time%20Study%202017%20Implementation.pdf
- Payne EK, Walker SE, Mazerolle SM. Exploring athletic training educators' development as teachers. *Athl Train Educ J.* 2017;12(2): 134–145.
- 18. Peña A. The Dreyfus model of clinical problem-solving skills acquisition: a critical perspective. *Med Educ Online*. 2010;2010:15.
- Kim I, Ko B. Content knowledge, enacted pedagogical content knowledge, and student performance between teachers with different levels of content expertise. J Teach Phys Ed. 2020;39:111–120.
- Professional Development Needs Assessment. Board of Certification (BOC). Accessed May 9, 2022. https://bocatc.org/athletictrainers/at-resources/professional-development-needs-assessment/ professional-development-needs-assessment-overview

- Hancher-Rauch HL, Bishop C, Campbell A, Cecil K, Yazel L. Effects of COVID-19 pandemic on the professional roles and responsibilities of health educators. *Health Promot Pract.* 2021;22(2): 156–162.
- 22. Perrin DH. Athletic training: from physical education to allied health. *Quest*. 2007;59(1):111–123.
- Manspeaker SA, Van Lunen BL. Overcoming barriers to implementation of evidence-based practice concepts in athletic training education: perceptions of select educators. *J Athl Train*. 2011;46(5):514–522.
- Romero MG, Pitney WA, Brumels K, Mazerolle SM. Role strain, part 1: experiences of athletic trainers employed in the professional sports setting. *J Athl Train*. 2018;53(2):184–189.
- 25. NATA salary survey: executive summary. National Athletic Trainers' Association. Published 2022. Accessed May 9, 2022.

https://www.nata.org/sites/default/files/nata_2021_salary_survey_executive_summary.pdf

- Edler JR, Eberman LE. Factors influencing athletic trainers' professional development through continuing education. *Athl Train Educ J.* 2019;14(1):12–23.
- Ismail II, Abdelkarim A, Al-Hashel JY. Physicians' attitudes towards webinars and online education amid COVID-19 pandemic: when less is more. *PLoS One*. 2021;16(4):e0250241.
- Schulte TL, Groning T, Ramsauer B, et al. Impact of COVID-19 on continuing medical education—results of an online survey among users of a non-profit multi-specialty live online education platform. *Front Med (Lausanne)*. 2021;8:773806.
- 29. Armstrong KJ, Weidner TG. Preferences for barrier to formal and informal athletic training continuing education activities *J Athl Train.* 2011;46(6):680–687.