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ORIGINAL RESEARCH

Preparation, Expectations, Experience, and Environment of a College/University Athletic Training Residency: An Ethnographic Study

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Context: Athletic training residency programs are proliferating rapidly, yet only 1 accredited residency is housed outside of physician-practice or clinic settings.

Objective: The focus of this article was to explore the structural and cultural factors that support a residency program in a college/university athletic training facility.

Design: Qualitative ethnographic study.

Setting: Boston University Commission on Accreditation of Athletic Training Education–accredited residency program.

Patients or Other Participants: The unit includes 16 full-time athletic trainers (2 of whom are residents, 6 of whom are residency faculty/preceptors) and 3 fellowship-trained primary care sports medicine physicians.

Data Collection and Analysis: I made observations, engaged in discussions, and conducted interviews for 34 days (159.5 hours) over 4 months. Data analysis involved examining transcriptions, field notes, and observational summaries of dialogue and behaviors, reactions, and my own interpretations. I used an inductive coding process to develop meaningful concepts, grouping them together to classify the data and identify themes and subthemes characterizing the structures of the culture.

Results: I identified 3 themes: resident preparation and expectations, residency experience, and environment. In the first theme, I identified that the residents came into the residency having some deficiencies and incongruent expectations of the program. In the second theme, I observed the residents gained depth of knowledge, skills, and abilities in their focused area of practice, and they improved self-reflective practices through their exposure to clinical specialists and the varied pedagogical approaches within the program. The environment included both benefits and challenges in having a residency. Engagement in interprofessional and collaborative practice and a culture of teaching and learning supported the residency environment.

Conclusions: Athletic health care administrators must clearly communicate expectations when recruiting candidates, consider the training and commitment of their staff, and ensure culture of health care education within their unit before developing a residency, regardless of setting.

Key Words: Specialty, specialization, clinical expert, fellowship, postprofessional education

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Preparation, Expectations, Experience, and Environment of a College/University Athletic Training Residency: An Ethnographic Study

Lindsey E. Eberman, PhD, ATC

KEY POINTS

- Approaches to professional and postprofessional education must include integration of evidence into practice to better prepare clinicians to practice with evidence. These approaches will create a stronger foundation for these practices if a graduate seeks advanced training in a residency program.
- Residency graduates gain advanced practice knowledge, skills, and abilities and improved self-reflective practices through their exposure to clinical specialists and multimodal instruction within a framework of competency-based education.
- An environment of interprofessional and collaborative practice and a culture of teaching and learning are critical to the delivery of an athletic training residency.
- Athletic training residencies are not, and should not, be setting specific. However, the field needs to continue to proliferate residencies in traditional settings by ensuring meaningful and numerous patient encounters and exposure to interprofessional experiences. This will lead to more residency-trained specialists in all athletic training settings.

INTRODUCTION

At the cusp of educational transition in athletic training, leaders in the profession articulated a framework for the future.[1] In this framework, there was a call to develop clinical specialists, advanced practice leaders, and stewards of the profession to serve as guides for the delivery of postprofessional residencies, advanced practice doctorates, and research doctorates.[1] Clinical specialty has existed in medicine for over a century, with the first specialty emerging in ophthalmology.[2] Specialization, regardless of health care profession, has historically been driven by innovation, preference, and economy.[3] Innovation in health care delivery occurs through the expansion of knowledge and technology, much of which cannot be taught in professional-level education because of its foundational role. As such, specialists emerge from among the generalists to meet both their own professional aspirations and the needs of the patients.[4]

The emergence of specialty training in athletic training is similar to (albeit more slowly) the expansion of athletic health care delivery in more settings, which has diversified the profession. The first call for specialization in athletic training occurred in the 1970s, but it was not until the "Future Directions of Athletic Training" document in 2011 that the wheels were finally set in motion.[5] In 2014 the first accreditation standards were published for athletic training residencies.[6] In 2018, the Board of Athletic Training Specialties transitioned from the National Athletic Trainers' Association to the Board of Certification and became the Specialty Council.[7] Although the council has been working diligently to establish criteria for board certification in orthopedics, this information is not publicly available (as of May 2020). Public statements by the Strategic Alliance have indicated that among the primary criteria for specialty certification eligibility will be successful completion of a Commission on Accreditation of Athletic Training Education–accredited residency program. According to the National Athletic Trainers' Association, specialization in athletic training results from significant clinical experiences in a prescribed content area and a sustained training effort, culminating in a valid credential denoting clinical expertise.[7] Absent the culminating credential, the advanced education and clinical training expected of a specialist currently occurs through residency training in athletic training.

Residencies and specialization in athletic training are established around focused areas of practice, specifically population or systems focused: prevention and wellness, urgent and emergent care, primary care, orthopedics, rehabilitation, behavior health, pediatrics, and performance enhancement.[8] The focused areas of practice were identified in July 2017, and programs accredited or seeking accreditation at the time were permitted to maintain their focused area of practice; those programs proposing a new focus were required to provide additional materials for commission review.[8] At the time of publication (August 2021), there were 10 accredited residency programs, with 8 additional programs seeking accreditation, up from only 2 programs in 2013–2014.[9] The proliferation of athletic training residency programs may not occur at a comparable speed to those in physical therapy,[10] but this rise suggests rapid growth in the coming years. All but one of these accredited residencies is housed in a physician practice or clinical setting; however, a greater proportion of athletic trainers (ATs) work in the college and university setting. A recent study on motivators to apply to residencies suggested future residents have a strong desire to move into a physician practice setting,[11] suggesting a perception that residency programs are setting specific and not specialty specific, as outlined by the accreditation standards.[8] It is possible there is a misconception that residencies cannot be housed in a traditional athletic training setting. The focus of this study was to explore the structural and cultural factors that support a residency program in a college/university athletic training facility.

METHODS

Design and Setting

This study used an ethnographic approach to help understand the structural and cultural factors needed to deliver a residency in the college/university setting. *Ethnography* is a qualitative approach involving immersion into the setting by first learning the culture of the group, then deriving explanations for attitudes and behaviors.[12] I gained access into the setting through previously established personal and professional relationships with the director of athletic training services and the residency program director. Specifically, we engaged in professional-development programming, service work, and professional advocacy initiatives together. These

interactions led to formal affiliations with one another's respective programs as affiliate faculty. The study was conducted with the Boston University Athletic Training Services and the accredited residency program with focused areas in (1) orthopedics and diagnostics and (2) neurotrauma and spine.

The athletic training residency, at the time of delivery, was a 12-month program beginning each year in June. The length of the program was consistent with accreditation standards (Standard 67).[6] In the year of observation and immersion, the program enrolled 2 residents, 1 in each focused area of practice. A majority of the residents' clinical experiences must be in the focused area of practice, and 20% of the time must be mentored one-on-one with a trained preceptor (Standard 96).[6] Residents must be engaged in planned and ongoing didactic education for at least 5 hours per week (Standards 52 and 59), and residents must engage in a planned scholarly experience as part of the program (Standard 53).[6] Residents are integrated into the work environment as employees and are compensated as such, because they engage in a continuous full-time practice commitment (Standard 67). This residency program was accredited in 2018 and remains active in good standing.[9]

The setting was selected because it was the only college or university with an accredited residency. The unit was characterized as an academic health care center with specific aims and dedicated time to educate and train medical and health care professionals. The unit provided care for 627 varsity intercollegiate student athletes, 952 club sport athletes, and 140 Reserve Officer Training Corps tactical athletes. The unit included 16 full-time ATs (2 of whom are residents), 5 part-time ATs (all of whom are graduate assistants), 2 immersive masters in athletic training (MAT) students, 5 MAT students, and 4 baccalaureate students, as well as 3 fellowship-trained (primary care sports medicine) family medicine physicians and their 1 fellow.

Sampling Strategy

During my immersion in the Boston University Athletic Training Services and residency, I engaged as a participant observer in staff meetings, residency faculty meetings, senior staff meetings, and various ad hoc meetings. I attended all didactic residency sessions including grand rounds, case presentations, labs, fellowship meetings, consultations about critically appraised topic papers and quality improvement projects, and remediation meetings. I observed clinical practice delivered by students, residents, residency faculty (who also served as preceptors), staff (many of whom have advanced education and training in specialty areas [behavioral health, primary care, women's health, rehabilitation]), physicians, and physician fellows. I also attended weekly professional MAT program faculty meetings and engaged in socializing with all members of the community.

As part of the ethnography, I conducted several interviews with senior staff, a representative sample of staff, residency faculty, the residency program director, director of athletic training services, medical director, MAT faculty, patients, and the AT residents (referred to as Resident O [orthopedics and diagnostics] and Resident N [neurotrauma and spine]). I reviewed program documents including the self-study (completed 1 year before my immersion), assessment materials, examples of student work, emails, and student feedback. A summary of data sources is provided in Figure 1.

Data Collection

To prepare for my immersion, I reviewed the program's self-study, which included assessment materials, policies, and examples of resident work (Figure 1). During observations, I took field notes that summarized dialogue and behaviors, reactions, and my own interpretations. I collected data on 34 days across 4 months (February–April 2019) including 9568 minutes (159.5 hours) of observations, discussions, and interviews. I have maintained a relationship with the unit since my departure, which also continues to inform my interpretations. I used a combination of semistructured and unstructured interview guides. Interviews were guided by observations and therefore varied by interviewee. At the onset of immersion, I used field notes to capture data during interviews. I used this approach to establish rapport with participants and gain a comprehensive vision for what activities happened within the residency. As interviews progressed, I focused questioning on why activities happened within the residency and how each stakeholder felt the program was meeting its aims. Interviews at the conclusion of the immersion were audio-recorded interview data. As mentioned, I also reviewed and collected both publicly available and private program documentation.

Data Analysis

Data analysis involved examining transcriptions, field notes and observational summaries. I used an inductive coding process to develop meaningful concepts, grouping them together to classify the data and identify themes and subthemes characterizing the structures of the culture.[13]

Researcher Reflexivity and Trustworthiness

I have 16 years of research experiences including quantitative, qualitative, and mixed-methods approaches to the research. I am trained in document review, interview, and participant observation data collection strategies; I have been qualified as an expert qualitative researcher by my colleagues through roles as an author, coder, external reviewer, and grant consultant. In qualitative research it is expected that the researcher has bias, particularly when they become embedded in the culture as a participant observer.[14] Specifically, in ethnography, interviews are unstructured or semistructured with the intent of being conversational.[15] This approach may result in interviewer bias.[12] I mitigated this by using data triangulation. In addition, particularly in the early stages of researcher immersion, participants may experience response bias in that they may give responses they believe the researcher wants to hear. This was mitigated by research legitimization by authority figures in the program and the length of immersion.[14] I used triangulation, data from multiple sources, and member-checking by sharing preliminary findings with the director of athletic training services and the residency program director to establish trustworthiness.

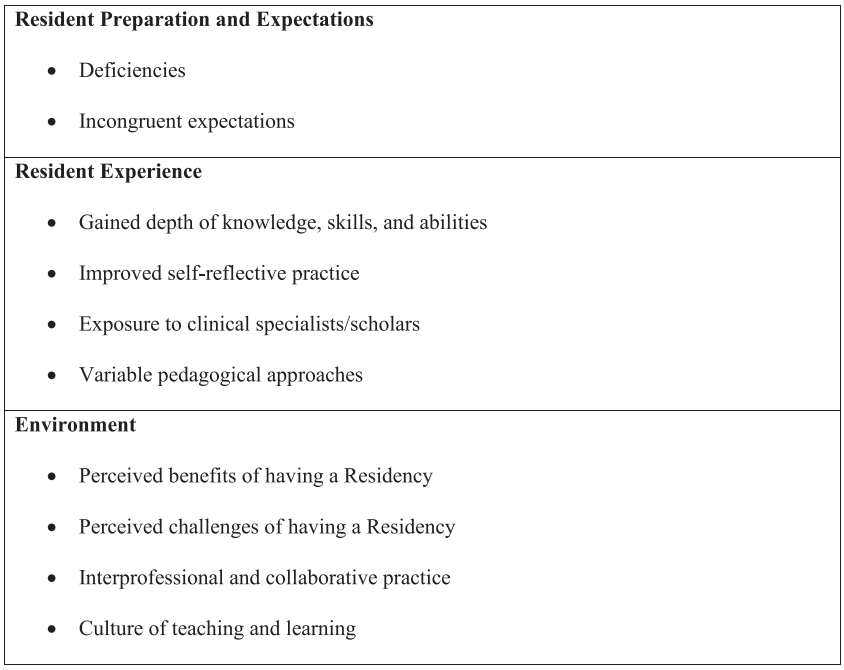
Research Ethics

In consultation with the institutional review boards at both universities, it was determined that no approval was

Figure 1. Summary of data sources.

Review of Documents	Learning Activities
• Self-Study (Comprehensive Review completed in 2018-2019) • Comprehensive Assessment Plan and Evaluation Tools • Policies and Procedures • Qualifications of Faculty/Preceptors • Resident Submissions of Didactic Work • Meeting Agendas/Minutes • Supporting Literature to Learning Activities • Foundational Readings • Resident Performance Evaluations on Learning Activities • Resident Quarterly Evaluations	• Clinic Observation/Patient Consultations • Fellow Lectures • Grand Rounds • Discussion Boards • Labs • Journal Clubs • Case Presentations • Literature Reviews/Critically Appraised Topics • Standardized Patient Experiences • Comprehensive Exams • Resident Scholarship Presentations External to the Unit • Radiology Rotations • Physician Clinics and Consultations
Meetings	**Other**
• All Staff Weekly Meetings • Senior Staff Weekly Meetings • Residency Faculty Weekly Meetings • Residents Meetings with Faculty • Resident Meetings with Preceptors • Remediation Meetings • Didactic Assignment Meetings (Literature Review, CAT Paper, Quality Improvement)	• Interviews with Medical Director, Program Director, Director of Athletic Training Services, Residency Faculty and Preceptors, Residents, Staff, MAT Faculty, and Patients • Admissions Interviews and Appraisal of Candidates • Faculty Presentations External to the Unit • Socializing with Residents, Preceptors, and Faculty • Critical Review Process Discussion • Campus Emergency Management Team Meeting • Athletics Wellness Committee Meeting

Figure 2. Summary of results.



necessary. Due to a recent change in the New Common Rule, data collection and use of information that focuses directly on the specific individuals about whom the information is collected is not deemed "research" by federal definition. Although the efforts outlined throughout the project are systematic, they are not generalizable because they characterize a single program.

All individuals observed or interviewed were informed about the goals of the project and verbal consent was acquired.

RESULTS

I identified 3 themes and several subthemes in organizing the data (Figure 2). In the first theme, resident preparation and expectations, I identified that the residents came into the residency having some deficiencies in preparation and at times incongruent expectations of the residency program. In the second theme, the residency experience, I observed that the residents gained depth of knowledge, skills, and abilities in their focused area of practice and they improved self-reflective practices through their exposure to clinical specialists and the variable pedagogical approaches within the program. Last, the environment theme characterized both the benefits and challenges associated with having a residency, as well as the components of the environment that allowed for the delivery of the residency, including engagement in interprofessional and collaborative practice and a culture of teaching and learning.

Resident Preparation and Expectations

Deficiencies. The residency recruitment materials stated preferences for candidates to have 2 years of clinical practice experience and a postprofessional masters degree in athletic training. Both residents met the preferred educational and experience criteria. However, current and previous residents lacked the ability to connect didactic assignments with clinical experiences. For instance, Resident O struggled to find an article for journal club from which he was able to draw a definitive clinical bottom line for his colleagues. Instead of searching for an article that answered a relevant clinical question in his practice, he simply searched for an article to complete the assignment. The faculty/preceptors lamented this was a common occurrence, suggesting that residents enter the program able to operate the mechanics of searching and interpreting evidence but unable to practice in an evidence-based way. Moreover, residents struggled with information synthesis upon entry, some of which persisted, particularly in writing assignments such as the literature review and critically appraised topic. Again, the residents were prepared to search and summarize but were unable to develop a clinical question relevant to practice or synthesize several sources of information to draw a conclusion. These resident deficiencies pose a challenge to residency faculty/preceptors because they are then remediating instead of advancing skills expected from professional and postprofessional athletic training programs.

Incongruent Expectations. Residents also arrived at the residency with incongruent expectations of the program. Both residents failed to recognize how the didactic coursework was designed to enhance their clinical practice. The residents aimed to become clinical experts and expected to do so only through mentored clinical practice. This mindset made it difficult for them to engage fully with the writing assignments and even the standardized patients at the onset of the program. The connection between didactic work and clinical practice became clearer as the residents progressed and was truly elucidated during the midprogram incognito standardized patient experience. During the incognito standardized patient experience, Resident O was able to see how those structured experiences helped the program evaluate his performance and provide feedback toward his progress as a potential specialist. He stated, "I was not myself during the first standardized patient experience," but the incognito standardized patient allowed for "better direct observation." He felt the faculty assessment "was more consistent with how

I see myself in practice." He was able to see the connection to using the standardized patient experiences to evaluate his improvement, specifically the ability to apply his knowledge in orthopedics.

After my immersion in the residency, while collaborating with a new group of residents on a project to develop a communication-based standardized patient script, one of the residents reflected they "didn't expect this much didactic coursework" and that they expected "more collaborative patient care with the faculty [preceptors])." However, during my observations in clinic and feedback sessions, faculty/preceptors stated explicitly that they expected residents to initiate the collaborative practice. Last, there was incongruence between residents and residency faculty/preceptors relative to feedback. Residency faculty/preceptors often provided robust verbal feedback during a learning activity, but residents were unable to apply verbal feedback immediately. They waited, sometimes longer than they would have preferred, for written feedback. The residency faculty/preceptors were also practicing clinicians with various responsibilities. They expected residents to respond more promptly to verbal feedback, whereas the residents waited for feedback as they likely received it in more formal academic settings.

Resident Experience

Gained Depth of Knowledge, Skills, and Abilities. It was evident that even if residents did not successfully complete the residency, they gained a depth of knowledge, skills, and abilities in their focused area of practice. For instance, Resident O noted that during the end of program comprehensive exams, he immediately went to the section on diagnostic ultrasound, where he had the most confidence and clinical practice experience. He indicated it was substantially "easier" than the initial comprehensive examinations he had taken 11 months before. Beyond resident confidence, evidence of gained depth of knowledge, skills, and abilities was provided through the standardized patient experience at the conclusion of the program. Resident N demonstrated proficiency in the clinical examination, care planning, and patient education during an encounter designed to appraise her care of a patient experiencing a concussion. This included a thorough patient history, use of evidence-supported clinical techniques (eg, Sports Concussion Assessment Tool 5th edition [SCAT5], vestibular/ocular-motor screening, ocular reflex), and care planning that was patient centered and education focused. I also directly observed residents provide advanced and in-depth patient care. In one case, Resident O was asked to consult and conduct a diagnostic ultrasound examination of a patient experiencing acute onset, traumatic knee-joint effusion. In another case, Resident N taught a faculty/preceptor and me best practices for clinical examination and dry-needling of a patient experiencing chronic temporomandibular joint dysfunction after a concussion.

Patients also indicated the residents were knowledgeable. In 1 case of a patient with a concussion, the patient indicated that Resident N was "absolutely qualified" and she "always shared information openly and never hid anything" about his condition or progress. In a case in which the patient was status-post osteochondral autograft transfer system procedure, she indicated Resident O was patient-centered, "really listened" to her about her progress, and provided care that was consistent with the care she received from the staff AT (a clinical specialist). Upon completion of the program, residents are recognized as specialists with in-depth knowledge in their focused area of practice.

Improve Self-Reflective Practice. The review of documents and my observations demonstrated that residents engaged in several learning activities requiring self-reflective practice, including grand rounds, all-staff weekly meetings, and self-evaluations of the Athletic Training Milestones,[16] quarterly evaluations, and standardized patient experiences. Grand rounds served as a meaningful place to present a patient case and develop clinical reasoning skills through probing questions from the audience. Their origin is in medical-resident training; in this athletic training residency program they served to enhance the use of the disablement model framework and exposed residents to reflective practice. The sharing of patient cases was also common among all the staff. Within the weekly staff agendas, there was time set aside for "Patient Cases" where there was an expectation to share, seek advice, and question decision-making. Although these conversations could be tense, because clinicians were questioning one another, the staff worked from the premise that the patient was at the center of care. The residents and residency faculty/preceptors were often actively engaged in these discussions. The program used the Athletic Training Milestones[16] to assess resident performance and self-reflection on performance. Within the Milestones an AT performing at a level 4 (ready for advanced practice) was expected to do things such as "hold peers accountable to practice in an evidence-based manner" and also "recognizes and addresses lack of patient-centeredness in colleagues/peers." Upon completion of the residents' experiences, they demonstrated improved self-reflective practices as well as the patient-centeredness to critique the practice of others.

Exposure to Clinical Specialists/Scholars. Over the course of the residency, the residents had exposure to clinical specialists and scholars among the residency faculty/preceptors. Each member of the faculty/preceptors was expected to be an active contributor to the practice of athletic training and engage in the dissemination of model-practice knowledge at local, regional, national, and international levels. The faculty/preceptors were all affiliate faculty in a Commission on Accreditation of Athletic Training Education–accredited Doctor of Athletic Training program, and among them they had 5 publications and 80 scholarly presentations in their focused area of practice. The faculty/preceptors were revered by the medical director, given that he indicated that some of their best residents were those early on who were then hired as faculty/preceptors. He also stated having the residency faculty/preceptors within the facility "allowed staff to have additional resources on staff that are not physicians who may be more readily accessible to their colleagues." During the onset of the program, the residents were exposed to a robust onboarding process whereby the first 4–5 weeks of their employment helped them transition into the department and residency expectations. During this time, they were able to observe the practice of the residency faculty/preceptors who modeled the behaviors of a clinical specialist. Throughout the program, faculty/preceptors practiced their external presentations in front of their colleagues and engaged in critical feedback to improve performance. The faculty/preceptor presentations were consistent with the case presentations

and journal clubs expected of the residents, offering another opportunity for exposure and role modeling, particularly in accepting and integrating feedback.

Variable Pedagogic Approaches. The program used a variety of pedagogical tools, specifically formative assessments, which fostered an opportunity for residents to leverage their learning preferences. These tools were revealed through the review of documents and then demonstrated over the course of my observations. The program offered the comprehensive exams and critically appraised topics for residents to express their knowledge through writing. The standardized patient encounters, quarterly assessments, quality improvement projects, and lab presentations offered the resident the ability to demonstrate skills and abilities through showing. The grand rounds, journal clubs, and discussion boards offered the residents opportunities to discuss and debate among their peers and faculty/preceptors. The variable instructional strategies allowed the residents multiple avenues to demonstrate improvement. The comprehensive assessment framework relied heavily on the theoretical underpinnings of competency-based education and the progressive development of clinical behaviors. Each of the aforementioned learning activities were evaluated on a consistent scale, with the aspirational goal that residents demonstrated advanced practice behaviors upon completion of the program. The varied instructional strategies but consistent framework for assessment allowed the faculty/preceptors to relate the independent learning activities with the big picture of assessing progressive clinical behavior.

Environment

Perceived Benefits of Having a Residency. The perceived benefits of a residency program were communicated by all the stakeholders during individual interviews. Members of the senior staff indicated having the residency improved the practice of everyone within Athletic Training Services. One member of the senior staff indicated having the residency "makes me more proactive to gain new knowledge." Another member of the senior staff stated "having the residency elevates the rest of the staff" and "people cannot get stale in this environment." Specifically, they believed having individuals with advanced clinical decision-making skills served as a model for novice learners and newer clinicians within the athletic training facility. Members of the senior staff also discussed the benefits of having both advanced generalists (those with experience across the breadth of athletic training, but no advanced training in a specialty area) and specialists on staff. One member of the senior staff stated, "Having a residency helps me know my limitations as a generalist and allows me to collaborate with specialists in difficult cases." Another reflected that the "system needs both generalists and specialists to work effectively." A member of the staff suggested, "I can't read all the literature available, so having the residency gives me access to pieces of the evidence I can't get to." The faculty/preceptors found contributing to the residency as "the most meaningful work of my career" and "rewarding." One member of the residency/faculty, who was also a graduate of the program, indicated the residency was "instrumental to the type of clinician" he is. The residency forced him to see himself as a clinician more clearly and to address his deficiencies head on. Overall, the staff, leadership, and faculty/preceptors described how the residency benefited the overall environment.

Perceived Challenges of Having a Residency. Although the benefits were described as substantial, drawing away the best clinicians simultaneously each week to conduct residency didactic work and core faculty meetings placed pressure on other staff. One member of the senior staff reflected that she was unable to be involved with the residency because she was relied upon to facilitate other members of the staff or be available to provide patient care when the residents and faculty/preceptors were engaged in learning activities. In addition, neither the faculty/preceptors nor the residents were perceived as having much balance between work and life responsibilities. Staff members described a "culture in conflict" in which the director of athletic training services created a space that respects and promotes work-life integration, but they perceived residents and faculty/preceptors were often unable to experience that balance due to the program demands. One member of the staff noted that although the residency elevated his own practice, he worried for the residents, because the rest of the profession did not understand the value of the residency. He noted specifically that a residency in orthopedics may be dismissed because "most people in the profession believe they are specialists in musculoskeletal health care even without advanced training."

Interprofessional and Collaborative Practice. The program is embedded within Student Health Services, ensuring both a medical model and independent medical care. Athletic Training Services works alongside the Department of Family Medicine and a Primary Care Sports Medicine Fellowship. Throughout the residency, each resident supported physician's clinic for 1 afternoon each week (about 260 hours over the course of the 12-month residency). Resident O worked alongside primary care sports medicine fellowship–trained family practice physicians and as the program progressed, Resident O used the clinic time to improve his diagnostic ultrasound skills during clinics. Resident N worked alongside a primary care sports medicine fellowship–trained family practice physician, and as she progressed, she supported clinic for a primary care sports medicine and neurology fellowship–trained, board-certified neurologist. Her time with the neurologist continued to advance her skills relative to neurotrauma in a wide array of patient populations. In addition to collaborating in care with specialist and fellowship-trained physicians each week, the athletic training residents also attended a weekly fellowship lecture with the primary care sports medicine fellowship physicians and fellows. Typically, the physicians or fellows presented, but on occasion, the athletic training residents partnered with the fellows to present to the physicians. The residents also completed radiology rotations spanning about 36 hours over the course of the program (9 half-day rotations) to enhance their abilities in diagnostic imaging but also to collaborate with radiologists. During my time immersed within the residency, I observed Resident O present to the staff of physicians and nurses in Student Health Services on musculoskeletal injuries to the wrist and hand. The grand rounds presentations also required the residents to describe how they collaborated with other clinicians in the case they presented. Especially during difficult cases, the residents and the staff, in general, were encouraged to collaborate with other providers, specifically providers with more experience. With this structure and through these activities, the environ-

ment surrounding the residency was one of both interprofessional and collaborative practice.

Culture of Teaching and Learning. The collaboration between the Department of Family Medicine, the Sports Medicine Fellowship, the Athletic Training Residency, the MAT program, and Athletic Training Services demonstrates a strong culture of teaching and learning. Although Athletic Training Services is primarily containing cost relative to university expenditures, it is part of a revenue-generating unit in Student Health Services. The larger university health care structure has been designed as an academic health center in which patients are aware they are being seen and treated by learners and all learners, clinicians, researchers, and teachers work together to deliver the highest-quality health care. This transcends all of the health care delivery, including that of Athletic Training Services. Patients were supportive of the residents; one reflected "in comparison to the supervisor [a clinical specialist], [Resident O] was still learning and at times hesitant," but overall, the patient was "satisfied" with his care. The clinical education coordinator for the MAT program suggested that having students around the residency had "a positive impact on the students as they were able to see a medical mindset in the care delivered." During my observations in clinic, I saw reciprocal learning between students, residents, graduate assistants, staff, physicians, and faculty/preceptors. Learners were encouraged to teach one another and supervisors throughout the facility, creating an environment that embraced learning.

DISCUSSION

Ethnographies often offer a sociocultural theoretical lens through which to view the data gathered.[12] As I synthesized this data, both educational and sociological theories emerged. At its core, a residency, regardless of setting, is a form of experiential learning. However, due to the progressive clinical behavior assessment framework used within this residency, it has been anchored in competency-based education, or an outcomes-based approach to teaching and learning. Mace and Welch Bacon[17] recently synthesized available definitions within the medical and education communities and described competency-based education in athletic training as flexible and outcomes-centric. The challenge often described in more academic environments is the inflexibility of traditional academic semesters;[17] residencies can be less time based and more outcomes based as the resident progressively develops the clinical behaviors of a specialist. From a sociological perspective, outcome interdependence theory can best describe the relationships between providers within this academic health care unit. *Outcomes interdependence* refers to the dependence between clinicians to achieve organizational rewards[18]; in this case, patient function and performance. The heavy reliance on all members of the team, including the patient, in achieving outcomes effectiveness is heavily reliant upon the interdependence within the culture. Neither competency-based educational theory nor outcomes interdependence are athletic training–setting specific; however, they do provide a theoretical framework for which a college/university health care unit can deliver both patient care and residency training.

In this ethnography, I observed a lack of resident preparation, specifically for the integration of evidence gathering and synthesizing with clinical practice. Evidence-based practice has endured in medicine[19] since 1992 and has been part of the athletic training vernacular since 2011. However, how we teach it in professional and even postprofessional education may fail to connect the use of evidence in practice. In addition, a general lack of awareness and understanding of residencies may create incongruent expectations between residents and programs. This may be particularly prevalent in residencies operating outside of physician practice because there are so few. Residencies are not required to be[6] and should not be setting specific, but this is not something that other health care professions have faced. Proliferation of residencies in a more controlled setting, such as physician practice or a physical therapy clinic, offers ensured patient encounters and the repetitions often needed to develop specialization. However, this program within a college/university setting demonstrates that sufficient patient encounters can be achieved through the resident's own patient panel, collaborations and referrals from other providers (in their focused area of practice), and physician clinics. There is also reliance on the faculty/preceptors to engage in collaborative, and when needed, mentored patient care, in addition to their other work responsibilities. Dedicated faculty/preceptors and a culture of teaching and learning are integral to resident development. All of these residency characteristics are consistent with the accreditation standards, and as such, reinforce that residencies do not need to be setting specific, but experience-rich, mentored, educational environments.

Academic health care centers (also referred to as academic medical centers) are collaborative units that bring together learners, clinicians, educators, and researchers to deliver the highest-quality patient care.[20] Academic health care centers have resulted in better outcomes and are often sought out to manage more-complex cases.[21] Mentoring plays a critical role in academic health care centers, because mentors can serve as role models and learners can inspire mentors through continual inquiry.[22] The faculty/preceptors in this residency described their roles as the most important of their career, suggesting that they had a strong connection to teaching and learning within the facility. The regular, daily interactions they had with residents were necessary to cultivate trust and reciprocal learning. Reciprocal learning has been summarized[23] as valuable to learning in the clinical space at all levels of learning in athletic training. Some research[22] has suggested that elevating mentorship to a strategic priority in academic health care centers is a critical next step to rewarding mentorship as part of the system. Within this residency, all members of the staff were allocated dedicated time toward teaching, thus demonstrating the commitment of the unit and each individual to the learning environment.

This residency program produced individuals who gained more depth of knowledge, skills, and abilities, which was evidenced through the outcomes from the comprehensive assessment plan. However, with a small sample, it is difficult to generalize or conclude that this is a consistent finding. In physical therapy, employers have indicated that residency- and/or fellowship-trained physical therapists scored higher in leadership, communication, clinical aptitude, evidence-based practice, and teaching than their experience-matched colleagues.[24] In 2 studies in orthopedic medicine,[25,26] programmatic outcomes using competency-based education have suggested graduates described better resident experiences (relative to coaching and supervision) as well as accelerated

graduation times, based on individual student performance. This suggests that the competency-based approach to athletic training residencies has long-term potential for positive outcomes and may offer flexibility to the length of the program. Overall, the varied pedagogical approaches used in this residency have long been established as effective individually, but the curricular decision to offer a multimodal approach has not been evaluated within residency training. In undergraduate medical education, a multimodal approach resulted in better retention and comprehension, as well as improved student interest in the content.[27] Best practices in anatomy instruction in preparation for medical training have also been described as multimodal.[28] A multimodal, competency-based approach to delivering an athletic training residency, although not formally evaluated for effectiveness, is grounded in evidence.

The sample size (N = 1 program) is an inherent limitation; however, the purpose of ethnography is not to generalize the findings.[12] The purpose of an ethnography is to allow researchers to collect data directly at the source and to describe the social and cultural considerations influencing the environment.[15] In this study, the findings are not generalizable, but they do provide a general framework for the development of future residencies, regardless of setting. The proliferation of athletic training residencies has historically occurred in the physician practice setting, but this has created a false correlation between setting and residency development. Future research should explore motivators to apply and enroll in residency programs, with special consideration for setting, to determine whether setting influences applicants. Residency programs may consider establishing a list of foundational materials and sharing these with professional and postprofessional programs to ensure candidates are adequately prepared. Residency programs and researchers should also collaborate to disseminate programmatic outcomes and compare the patient outcomes of residency-trained specialists with those with equal years of experience, as is done in physical therapy. Athletic training residencies are new and, simply put, more research on every aspect is necessary to demonstrate the value of postprofessional training and specialization.

CONCLUSIONS

The focus of this article was to explore the structural and cultural factors that support a residency program in a college/university athletic training facility. The findings indicate that residents may not be adequately prepared and may have incongruent expectations of the residency program. Professional and postprofessional academic programs have a responsibility to better prepare graduates for the competent practice of athletic training, therefore better preparing future residents. Residents gain more depth of knowledge, skills, and abilities in their focused area of practice and improve self-reflective practices through their exposure to clinical specialists and variable pedagogical practices. Developing a residency does not come without its challenges, but an environment that includes interprofessional and collaborative practice and a culture of teaching and learning leads to successful staff and resident graduates. Athletic health care administrators must consider the training and commitment of their staff, as well as the culture of their unit, before developing an athletic training residency, regardless of setting.

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