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ORIGINAL RESEARCH

A Report from the Athletic Training Clinical Education Network on Scholarship Requirements in Professional Athletic Training Programs

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Context: Scholarship is a required element of the 2020 curricular content standards in professional athletic training education.

Objective: To explore the perceptions and experiences of implementing student scholarship within a professional program.

Design: Consensual qualitative research.

Setting: Individual phone interview.

Patients or Other Participants: Seventeen program directors of professional programs (professional bachelor's program = 12, 70.6%; professional master's program = 3, 17.6%; both = 2, 11.8%). Programs reported an average of 3 ± 1 core faculty (range, 1–5 faculty) supporting 37 ± 21 students (range, 3–96 students), with 3 ± 2 faculty (range, 1–8 faculty) involved in scholarship activities of their students. Data saturation guided the number of participants.

Data Collection and Analysis: Interviews occurred via phone using a semistructured interview guide. All interviews were audio-recorded and transcribed verbatim. Data were analyzed by a 3-person research team and coded into themes and categories based on a consensus process. Credibility was established by utilizing multiple researchers, an external auditor, and member checks.

Results: Two major themes emerged from the data: perceptions and mechanisms of scholarship. Student engagement in scholarship was perceived as valuable, but it was challenging to develop buy-in from students and preceptors. Participants felt that the term *research* carried a stigma, making it difficult to cultivate the value of scholarly clinical practice. When institutional culture embraced scholarship, participants indicated it was easier to integrate scholarly activities into the program. Participants reported students engaged in a variety of scholarly activities, including traditional research and evidence-based practice. Some scholarship experiences were singular, occurring once in the curriculum, while others were purposeful, sequenced, and integrated throughout the curriculum. Future scholarship endeavors included traditional theses and experimental research as well as practice-based, point-of-care research that might better integrate clinical practice and scholarship.

Conclusions: Participants perceived scholarship as important to professional preparation and required intentional action to integrate throughout the curriculum.

Key Words: Professional education, research, critical appraisal, evidence

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KEY POINTS

- Developing clinical scholars requires intentional action across the continuum of the curriculum and integration of scholarship into clinical practice.
- Professional athletic training programs aim to develop graduates who are able to critically appraise evidence and incorporate it into clinical practice, not to develop future independent researchers.
- Professional athletic training programs use a variety of mechanisms to incorporate scholarship into their curricula, but in planning for the future, evidence-based activities at the point of care that integrate scholarship into clinical education may be the most relevant.

INTRODUCTION

The 2020 deadline for elevation of the athletic training degree to the master's level represents a critical point in the transformation of the profession. Programs that are moving to the master's level must consider how they will implement new accreditation standards to meet expectations for health professions education. Health professions degrees offered at the master's level have grown from 7 to 121 between 2000 and 2015,[1] and collective standards to guide institutions and accreditors in program development and evaluation have been developed by the World Federation for Medical Education (WFME).[2] These standards suggest that a master's degree must demonstrate certain characteristics, including a "sound grounding in research methods, and an ability to analyze, synthesize, and critique theories and trends" to drive decision making in clinical practice.[2(p.7)] As athletic training undergoes degree elevation, the role of scholarship and research in degree programs will be an important consideration.

Literature[3] has suggested that medical and healthcare education curricula has failed to adequately prepare clinicians for the health systems of the 21st century. Proposed reasons for these failures include the inability to transfer knowledge from evidence into action.[4] This occurs because of an incomplete base of research from which to draw conclusions, contradictory research, or a lack of collaborative research designed to answer questions that matter to patient care.[4] The WFME expectations[2] require programs to consider how to incorporate scholarship into their curricula, which provides an opportunity to prepare future clinicians to collaborate with researchers to ensure engaged research aimed at answering critical clinical questions.

In 1990, Ernest Boyer and colleagues[5] developed a model of research scholarship that included not only the traditional scholarship of discovery but also scholarship of integration, application, and teaching. Boyer's model reconsiders scholarship in the professoriate but can also be applied within professional healthcare programs, such as athletic training. The scholarship of integration is a means to critically analyze the available literature, while the scholarship of application is aimed at using evidence to solve real problems in the discipline.[5] These scholarly endeavors may help to resolve the gap in engaged research that could help better prepare clinicians for today's clinical practice. As we consider these options in curricular planning, we first must examine how programs currently incorporate scholarship into their curricula. The purpose of this investigation was to explore the current practices program directors use to incorporate elements of scholarship into their professional athletic training programs.

METHODS

Design

This study used the consensual qualitative research (CQR) tradition,[6,7] which has been previously used in athletic training.[8,9] The CQR tradition was selected because of its robust process for reaching consensus with constant and repetitive analysis of multiple cases to ensure a comprehensive representation of the data.

Participants and Setting

Institutional research board approval (Indiana State University) was obtained before any data collection occurred. Because athletic training programs, regardless of degree level, have demonstrated engagement with scholarship, we recruited program directors from all professional bachelor's and master's programs (n = 382) via e-mail with an invitation to participate in an interview. We used an electronic survey to document informed consent and to collect demographic information about the participants. We sent an initial email on a Tuesday morning at 10:00 AM EDT and sent a follow-up email 1 week later (Tuesday at 10:00 AM EDT). We closed the recruitment survey a week and a half later, the following Friday.

As participants responded, interviews were conducted by the principal investigator (PI) (L.E.E.). With CQR it is recommended to have 10 to 15 participants[6,7] to achieve data saturation. A total of 17 interviews were conducted until the research team deemed that data saturation had been achieved. Participants consisted of 11 (64.7%) females and 6 (35.3%) males from professional programs (age = 45 ± 7 years) with 13 ± 7 years as an administrator. Participants were in 11 public institutions (64.7%) and 6 private institutions (35.3%) and taught in 12 professional bachelor's programs (70.6%) and 3 professional master's programs (17.6%), and 2 taught in both the professional bachelor's and master's programs (11.8%). Eight programs (47.1%) were from doctoral-granting universities, 7 (41.2%) from master's-granting universities, and 2 from other (11.7%) universities. Programs reported an average of 3 ± 1 core faculty (range, 1–5 faculty) supporting 37 ± 21 students (range, 3–96 students), with 3 ± 2 faculty

Table 1. Participant Characteristics

Participant Pseudonym	Age, y	Sex	Years of Experience	Years as Program Director/ Administrator	Type of Institution	Carnegie Classification of Institution	Athletic Training Degree Level
Ariel	48	Female	25	11	Public	R3: Doctoral Universities *Moderate research activity*	Master's
Goodwyn	39	Male	18	10	Public	M2: Master's Colleges & Universities *Medium programs*	Baccalaureate
Hans	37	Male	17	6	Private	R2: Doctoral Universities *Higher research activity*	Baccalaureate
Gill	59	Male	37	24	Public	M1: Master's Colleges & Universities *Larger programs*	Baccalaureate
Winnie	40	Female	12	1	Public	M1: Master's Colleges & Universities *Larger programs*	Baccalaureate
Collette	42	Female	21	15	Private	Baccalaureate Colleges: Diverse Fields	Master's
Alice	53	Female	30	12	Private	M1: Master's Colleges & Universities *Larger programs*	Baccalaureate
Megan	39	Female	17	11	Public	R1: Doctoral Universities *Highest research activity*	Baccalaureate
Fillmore	44	Male	22	16	Private	M3: Master's Colleges & Universities *Smaller programs*	Baccalaureate
Elsa	33	Female	11	2	Public	R1: Doctoral Universities *Highest research activity*	Baccalaureate
Jasmine	46	Female	24	13	Public	M1: Master's Colleges & Universities *Larger programs*	Baccalaureate & Master's
Merida	47	Female	23	17	Public	Special Focus Four-Year: Medical Schools & Centers	Master's
Eve	48	Female	26	17	Public	M1: Master's Colleges & Universities *Larger programs*	Baccalaureate
Mack	37	Male	12	4	Private	R3: Doctoral Universities *Moderate research activity*	Baccalaureate
Belle	54	Female	32	25	Private	R1: Doctoral Universities *Highest research activity*	Baccalaureate & Master's
Tiana	45	Female	18	12	Public	R1: Doctoral Universities *Highest research activity*	Baccalaureate
Gideon	55	Male	32	18	Public	R1: Doctoral Universities *Highest research activity*	Baccalaureate

(range, 1–8 faculty) involved in scholarship activities of their students. Table 1 details the characteristics of the program directors and their respective institutions.

Instrumentation

As a result of the lack of available evidence on the topic, the research team used the purpose of the research to guide the development of the semistructured interview script (Table 2). The interview script included 12 questions. Three athletic training educators (21 ± 4 years of experience), two with substantial research experience (15 ± 6 years), reviewed the interview script for content and clarity. The semistructured interview approach allows for the interviewer to ask follow-up questions to probe for deeper meaning and to clarify participant responses.

Data Collection Procedures

Participants were contacted with the electronic survey via email, and at the conclusion, interested participants entered their contact information for the interviews. We scheduled individual interviews with each participant and conducted each interview using teleconferencing software (Zoom, Version 3.6; zoom.us; San Jose, CA). The interviews lasted approximately 35 to 40 minutes each. At the conclusion of each interview, an audio file was automatically saved to the interviewer's computer. The files were sent to a professional transcription company (Dictate2us© Transcription Service; Manchester, UK). The PI (L.E.E.) deidentified all interview transcriptions, removing names and places of employment before beginning the member-checking and data analysis process.

Data Analysis and Trustworthiness

We used member-checking after the transcripts were transcribed to ensure that what they intended to say was conveyed accurately.[7,10] This gave the participants an opportunity to verify that their words were accurately captured and allowed them to reflect upon and clarify their responses.[7,10]

The data analysis team (Table 3) began the data analysis process by reviewing 4 transcripts using an inductive

Table 2. Semistructured Interview Script

Questions
1. Tell me about the status of your program.
2. Please discuss your thoughts on the inclusion of student scholarship/research activities throughout professional athletic training programs.
3. What value, if any, do you feel student scholarship/research activities have on the overall professional experience for a student?
4. Please discuss how your program implements student scholarship/research activities into your program. What are the resources necessary? How much and what kind of faculty support is necessary?
5. How have you structured the scholarship/research activities? What influenced that structure?
6. Are there any approaches to implement scholarship/research activities that you have tried that were unsuccessful?
7. Which approaches do you believe are most successful for implementing student scholarship/research activities into your professional athletic training program?
8. Please discuss your level of satisfaction with your current implementation approach of student scholarship/research activities within your professional athletic training program.
9. What changes, if any, would you make to your current approach?
10. Are there any scholarship/research activities you would like to incorporate but are currently unable to?
11. What strategies do you feel will be useful to educate educators and preceptors for implementing student scholarship/research activities throughout didactic and clinical education curricula?
12. What resources could the Athletic Training Clinical Education Network or other professional organizations provide you to be successful at implementing student scholarship/research activities into your program?

approach. The data analysis team consisted of the PI and 2 other individuals with various levels of experience with the CQR tradition. CQR emphasizes the use of multiple perspectives, opinions, and levels of awareness to approximate the truth and reduce researcher bias. One additional member (J.M.C.) also served as an external auditor. Each member of the team independently read the transcripts to develop a domain list reflective of the data.[6,7] Then the team met to compare notes and to come to consensus on the domains and to conceptualize the core ideas, creating the initial codebook.[6,7] The initial codebook was then applied to 2 of the original transcripts and 2 new transcripts.[6,7] This phase of the process was used to ensure that the codebook was reflective of the data.[6,7] The team met again to confirm the consensus codebook.[6,7] During the next phase, the consensus codebook was applied to the remaining transcripts, whereby each of the 3 members of the data analysis team coded 4 or 5 transcripts.[6,7] Then, those coded transcripts were confirmed by one other member of the data analysis team, and any diverging opinions were discussed to reach consensus.[6,7] Finally, we constructed cross-analyses of multiple participant interviews to ensure that core ideas were accurately placed in categories.[6,7] At the conclusion of the data analysis process, the interview script, consensus codebook, and the cross-analyses and coded transcripts were shared with the external reviewer.[6,7] Triangulation of the data was ensured and trustworthiness was established by the use of multiple researchers, participant member-checking, and an external auditor.[6,7]

The final stage of analysis consists of frequency counting, which allows the team to determine the frequency of each category across the whole sample.[6,7] Categories were assigned as *general* if identified in 16 or more cases, *typical* if identified in 8 to 15 cases, *variant* if identified in 4 to 7 of the cases, and *rare* if only identified in 3 or fewer cases.[6]

RESULTS

Four themes related to implementing student scholarship within a professional athletic training program emerged during data analysis: perceptions of scholarship, mechanisms of scholarship, challenges to scholarship engagement, and needed resources for scholarship engagement. For the purposes of this article, we focused specifically on 2 themes: perceptions of scholarship and mechanisms of scholarship. A brief summary of the challenges to scholarship engagement and needed resources for scholarship engagement is provided here. Participants indicated that unless a culture existed that embraced scholarship, they struggled to integrate scholarship into the curriculum and often didn't have commitment from students and preceptors with regard to the value of scholarship. Participants described the desire to conduct collaborative research, specifically with preceptors, so that students could appreciate the role of scholarship in their clinical practice. Unfortunately, without commitment from preceptors and students, this kind of research had been unachievable. Resources needed for scholarship engagement included time, faculty expertise, and release or load to engage and mentor students on their scholarship. Participants also described difficulty in properly advising students on their scholarship topics because of a lack of content knowledge or expertise. Participants highlighted the need for publically

Table 3. Roles and Experiences of the Research Team

Role	Principal investigator; data analysis team member	Data analysis team member	External auditor	Data analysis team member
Research experience	Expert qualitative researcher with extensive experience in various forms of qualitative inquiry	Expert qualitative researcher with extensive experience in various forms of qualitative inquiry	Expert qualitative researcher with extensive experience in various forms of qualitative inquiry	Expert qualitative researcher with extensive experience in various forms of qualitative inquiry

Table 4. Frequency of Cases per Theme and Category

Theme/Category	Frequency	No. of Participant Cases
Perceptions of scholarship		
Stigma of research	Typical	9
Culture	Typical	12
Value and relevance	General	17
Expectations	General	16
Mechanisms of scholarship		
Current integration	Typical	15
Future intentions	General	16
Traditional approaches	Typical	13
Critical appraisal	Typical	11
Integrating scholarship into clinical education	Typical	11

available examples and resources to assist them in incorporating scholarly experiences within a professional program. The perceptions of scholarship and mechanisms of scholarship themes were further broken down into multiple categories, and representative participant quotes were included for each category. The frequency of participant cases per category is presented in Table 4.

Perceptions of Scholarship

Participant responses regarding perceptions of scholarship were grouped into 4 categories: stigma of research, culture, value and relevance, and expectations.

Stigma of Research. The *stigma of research* category refers to the negative reaction to, or avoidance of, engaging in or even reading research. Typically, participants described a certain stigma around the concept of research among stakeholders, particularly the students. Elsa remarked,

> *I think there is a huge fear for students to get involved with research. It sounds really scary [to them], so it is important for us to get them exposed to [research] so it is not as scary. We need to get rid of some of the stigma associated with [research].*

Participants also discussed the stigma of research among the athletic training community and how socializing students could build better informed clinicians. Mack commented,

> *That word [research] is scary for a lot of clinicians. Students need to invest in that because that's one of the ways we're gonna build . . . build our clinical presence and our clinical knowledge is through establishing that we are investigators, we are researchers. I think undergrad[uate] and graduate professional programs both should acknowledge that and have some tie to the students doing some type of information review or data collection and analysis to make a change to interventions or a change to practice.*

Culture. Participants also discussed how the culture at their institution affected the perception of scholarship among the stakeholders. Particularly, if a culture of research was already established at the institution, it appeared easier to engage students in scholarship. Collette explained,

> *Scholarship is a part of the culture on our campus. We have a very strong emphasis on undergraduate research experiences here and so I would say that even some students that maybe aren't in the top five percent [of the class] still want to attempt [scholarship] because it's part of the culture here.*

In contrast, some participants discussed how a lack of a culture across the institution made it difficult to engage students in scholarly experiences. Fillmore described that although he believes the students in his program are able to appraise available evidence well, generating enthusiasm about scholarship is difficult. He noted,

> *I believe that we are assuring that students graduate as effective consumers and evaluators of scholarly work. They are better able to discern the strength of the evidence and better able to discern the quality of the research, which is being published and presented at professional meetings, but I don't believe that we are able to generate excitement about scholarly work.*

Additionally, some participants also discussed the need for preceptors to create a culture of research within the clinical setting, modeling the importance of integrating evidence into practice during students' clinical experiences. Belle remarked,

> *We need to make sure our preceptors feel supported, because I think [clinical experiences] are where we get some of our best [scholarly experiences]. We have a couple of research projects going on with our athletic training [staff], which helps students understand that participating in research is really important to answering some of these clinical questions. Modeling is very important*

Value and Relevance. The value of providing students with scholarly experiences was important, according to our participants. Ariel remarked on the importance of student involvement in scholarship to help to evolve the available body of literature. She commented,

> *We want a student that can help the profession move forward. The research component is important for the growth of the profession and even if [the students] may not have quite the strenuous scholarship component that you would see at a [postprofessional] master's level, the [professional students] can still be involved by even just being [research] subjects and seeing how you go about the [research] process. I think that understanding the research process is important at all levels of education, but especially as you start moving into a master's degree level.*

Similarly, several educators described the value of producing graduates that are able to incorporate available evidence to inform their clinical decisions. Collette noted,

> *In a professional program our goal is not necessarily for [students] to be producers of research, but rather be educated consumers of it. I think the role of professional programs is certainly for [students] to understand how to read and interpret the literature and how it impacts their clinical practice. That includes asking clinically relevant questions that directly impact their patient care, but then sometimes also understanding that they can be a producer of research, but that research probably looks different than what people traditionally think about it. It's not necessarily going to be laboratory or bench science. It's going to be more embedded within the clinical practice setting and probably not*

necessarily generalizable. [Students] need to be able to figure out what's wrong with their patient population whether it's one individual or if their looking at more of a population health perspective, looking at trends within their own patient groups and figuring out what questions are relevant to that specific team or group of individuals and know how to answer those questions. Sometimes the answers are already present in the literature, but other times, they need to know it may require an intervention case study or maybe figuring out how to mine big data and make decisions about their own patients based on that.

Expectations. Generally, the participants discussed their global expectations for incorporating scholarship in their programs. Specifically, participants commented on their expectations of students to be consumers of evidence rather than trying to become athletic training researchers. Goodwyn remarked,

I think it is important for students to understand what goes into scholarship and the publication process in order to better understand how to [appraise] information in that publication. I also think that training [athletic training students] on some of the methodologies and how the [research] process works and exposing them to how that process works and how much effort goes into one single study is important. However, the focus is more on the interpretation and pulling evidence out of published research. I hope that [athletic training students] are more prepared to implement evidence into their clinical practice.

Elsa discussed the importance of exposing students to scholarship early during their time as a professional athletic training student so that they can connect the value of scholarship more easily to clinical practice. She commented,

If we can expose [athletic training students] early, they can start using [those skills] in their professional practice. They can start asking their preceptors relevant clinical questions and can start looking at their current patients and how that applies and it gives them an opportunity to ask questions early on and have discussions, bring it to the classroom, talk to their preceptors, talk to their classmates about using that scholarship early on. Later on, when they are certified athletic trainers out in the profession, they're advocates for scholarship. They're advocates for their patients and evidence-based practice.

Some participants further discussed the need to balance scholarship expectations with other programmatic expectations. In particular, Belle noted,

We are philosophically committed to creating practitioners who are consumers of the literature and the research, as opposed to generators of it. At our institution, we are not opposed to students participating in [research], but we really think that our focus, given the short amount of time that we have, should be on graduates who can easily access, interpret and incorporate best evidence into their practice, as opposed to generating new knowledge. We felt like the curricular time was just too valuable and getting students to be good consumers of research was very labor intensive to do it right. And we thought that adding a research component would detract from that goal.

Participants also described the need to be open-minded about the types of scholarship and that it is important to expose students to scholarly experiences that extend beyond a traditional original research project. Fillmore commented,

I think it depends on what you define as scholarship. If you use the Boyer model of scholarship of application, I don't think that [students] have to be engaged in bench data collection. But I do think they can produce scholarship whether it's in the form of a critically appraised topic, or possibly a case study or case theories.

Similarly, Mack stated, "we try to be open-minded to types of scholarship available and are willing to let the students find their own path into scholarship."

Mechanisms of Scholarship

Along with perceptions of scholarship, *mechanisms of scholarship* was another theme that emerged from data analysis. Data were then grouped into 3 categories within this theme: current integration, future intentions, and integrating scholarship into clinical education. This theme included the ways program directors integrate scholarship into their current curricula, how they aimed to adapt their approaches in the future, and how they hoped to integrate scholarship into clinical education.

Current Integration. During the interviews, participants described the variety of ways in which they currently integrate scholarship into the athletic training curriculum. For some, having the students participate in or conduct a research study was perceived to be the best way to educate students about how to be consumers of research. Jasmine explained,

We often talk about the importance of our students being good consumers of research. I think one of the best ways for them to become good consumers of research is to actually conduct a research study. I think it gives them a very different understanding, a deeper understanding, of what makes a quality study and what quality data look like.

Similarly, Collette noted that students that engaged in research studies appeared to have an enhanced level of clinical understanding. She commented,

We've seen that among students that have the opportunity to participate in formalized research experiences that include components such as risk factors, analysis and prospective, intervention studies, their depth of clinical understanding is so much richer because of that research experience, since they've had to analyze things in a much more concentrated and focused manner.

Participants also discussed a wide array of scholarly experiences they provide for their students through coursework. Typically, such experiences included synthesizing evidence to write literature reviews, appraising evidence for critically appraised papers or topics, and conducting a research project or thesis. Additionally, participants described various dissemination mechanisms of these scholarship experiences. Alice remarked,

During the first semester of our 4-year program, we start our students with information literacy, how to do [literature] searches, how to evaluate content, and how to start writing in APA [American Psychological Association] format. And each subsequent semester [the students] are in our program they are doing more in-depth types of scholarship. So, in their

[third] year they are actually presenting posters and they are submitting [abstracts] at the district level. Then, in their [fourth] year they are doing original research, going through the IRB [Institutional Review Board [process], [collecting data on] participants, and then they have to present [their findings] and write a journal article.

Fillmore described,

We have developed a requirement that students do a critically appraised topic in their final year of the professional curriculum .... They put together the manuscript in the Fall semester and then they present the poster in the Spring semester at an on-campus venue.

Elsa described several approaches with which to engage students in scholarly experiences, with an emphasis on integrating scholarship across the curriculum. She commented,

Basically, the level of scholarship we do right now is in the earlier classes of the curriculum. [The students] do evidence-based practice papers where they have to come up with a clinical question related to the topic of the class, usually something they find in their clinical settings, such as an injury or something of interest for them for their clinical site that semester. They come up with a question and then they use evidence to help answer the question. When they get to their senior year capstone, they have to do a project, which is basically a case study very much modeled like if they were to publish a case study where they have to identify the case and go through the literature. They do some critical appraisal of how the case was [managed] and they look at current evidence in the literature. They then have to present the paper in a poster format. We open it up to the staff and the faculty in the department and they also have to write the paper.

Future Intentions. Our participants also discussed how they plan to evolve scholarly experiences for students, particularly as the degree transitions to the graduate level. Most participants emphasized the need to integrate scholarly experiences across the curriculum rather than in one course. Fillmore explained,

In our [professional] graduate program, we are proposing that rather than a one-semester research methods course and then a professional seminar course, [the students] will take a research methods course and then they will take an evidence-based practice project implementation course in their fourth semester. The course will focus primarily on patient-oriented outcomes and data collection in a clinical environment. And we will have the students actually generate a research question that they hope to [investigate] at their assigned clinical site during their immersive experience. Once they get to that immersive experience, they will actually implement that project and conduct a data collection. And when they return to campus, they will actually present the results of that project on campus and they'll also have that data to then submit for potential [conference] presentation.

Similarly, Goodwyn noted,

In the [professional] master's program, I have gotten rid of [the students] doing a full project. Instead, we will have 3 separate research classes that will integrate the evidence-based practice concepts a little bit slower and will allow for some more specific projects to be in those classes. The hope with smaller chunks is also that [the concepts] would be more applicable to the other classes that they are working on as well as more depth can be created to get them into the clinical situations.

Participants also discussed the importance of encouraging students to disseminate findings from their scholarly experiences and the indirect benefits of doing so. For example, Merida highlighted soft skills, like communication and professionalism, which could be integrated as part of the scholarly experience. She noted,

During the project [the students] will work on leadership and teamwork and all of the other soft skills that are important in the profession as well. Additionally, by presenting [research findings] on Research Day at the institution, [the students] would also work on communication skills. There's a lot of skills that could be wrapped up into that type of a scholarly product.

Integrating Scholarship into Clinical Education. Finally, participants discussed the value of integrating scholarly experiences throughout clinical education via a variety of mechanisms and assignments. Mack provided an example of how students at his institution collaborate with preceptors to complete a scholarly experience. He shared,

During their final Spring semester, [the students] are working with a preceptor on a patient case that has a need for a particular intervention. We have them file for IRB approval and then they actually offer the intervention to patients with their preceptors and collect the data through patient outcome measures and then they write up what we call a clinical practice report. We then have them present the [clinical practice report] in poster format and they also submit it to our state conference. If the [clinical practice report] is of quality, we also have [the students] submit it to our regional conference.

Similarly, Gideon shared his program's model for case presentations to further engage students in scholarship during clinical education. He remarked,

We have [the students] do case presentations and a poster session that's open to the department and anybody who wants to come. It is an annual event that is in conjunction with one of their classes. It requires [the students] to look at a clinical problem and think through problems and design issues as if they would be doing a study, but they don't necessarily need to conduct the study.

By integrating scholarship into clinical education, our participants believed students would be able to better connect the importance of becoming a scholarly clinician. Collette remarked,

I'm not a proponent of saying to a student, "you have to do my kind of research to benefit me." Instead, we have taken the route that, "as a clinician, we need you to understand how to be a scholarly clinician and solve problems in your own clinical practice, even if that may or may not be generalizable to the broader patient base for the entire [athletic training] profession to benefit from."

DISCUSSION

Within healthcare education programs, scholarship and research can be vital components for the development of

evidence-based practice knowledge that translates to clinically relevant data and practices.[1,3,11–24] Preliminary research in athletic training has identified that more than 90% of graduate-level professional athletic training programs require either a thesis or structured research project as a graduation requirement[25]; however, at the time of this study, only 8% of professional athletic training programs were at the graduate level. Our results indicate that although they possess perceptions of scholarship, program administrators are giving significant thought about how to best incorporate scholarly activity into their professional athletic training programs' curricula.

Perceptions of Scholarship

Student engagement in scholarship was perceived as valuable by participants who noted the challenge of getting buy-in from their students and preceptors. Some participants felt that the term *research* held a negative connotation with stakeholders, creating a stigma and making it difficult for them to instill the value and relevance of scholarly clinical practice. If preceptors apply a negative association to scholarship, and potentially evidence-based practice, then this association is passed along to students under their supervision during clinical experiences. Similarly, Connolly et al[13] postulated that physical therapy graduates were unable to apply concepts of evidence-based practice 1 year after graduation because they did not see those behaviors modeled or they were not supported in their attempts to apply new research.

Program administrators may be more successful at cultivating student buy-in for scholarship and research participation by attempting to address the stigma, developing a scholarly culture, and demonstrating value and relevance at the preceptor level. Welch McCarty et al[26] previously identified that one of the barriers to preceptors' full acceptance of evidence within clinical practice was accessibility of such evidence. This is also the case in nursing, where practicing nurses indicated a lack of accessibility and understanding of current literature, resulting in a lack of incorporation of evidence into their clinical practice.[19] We suggest that programs seek to improve preceptors' perceptions of scholarship by using university resources to provide access to scholarly databases and professional development focused on literature appraisal.

At institutions in which a culture of research existed, and scholarship was included as a part of faculty expectations and workload, our participants identified that it was easier to incorporate research into the curriculum for both students and faculty. Student integration into research has been found[14] to be mutually beneficial for the students and the institution. When students are involved in a culture of research, they are more likely to establish a collaborative research network that creates continued involvement in research after graduation.[14] In pharmacy education, programs without sufficient institutional resources creatively partnered with larger institutions or national organizations to engage students in scholarship.[14] This approach could be useful in athletic training education when a culture of scholarship does not exist or when the necessary resources to facilitate students and faculty scholarship are unavailable.

Our participants identified the need to set clear expectations with regard to scholarly activity. Allowing students input into the types of projects can alter their perceptions of research, resulting in greater engagement.[17] Participants generally indicated preference for developing graduates who were highly educated consumers of information with critical appraisal abilities, versus graduates who were able to conduct an independent research project. By providing clear expectations, students may be less likely to express a negative perception of scholarship and may be more likely to see the value and relevance of the experience.

Mechanisms of Scholarship

Participants reported that students engaged in a variety of scholarship, including traditional research, evidence-based practice scholarship activities such as critically appraised synthesis of the available evidence, or practice-based scholarship activities such as completion of patient case studies, or quality improvement projects based on clinical practice trends. Many of our participants indicated that being a strong consumer of current literature was the primary expectation for graduates. The ability to understand and critically appraise information as it relates to clinical practice has previously been identified[19] as a frequent barrier to evidence-based practice in other healthcare fields, so it is possible that the inclusion of this skill within a professional program is significant enough to influence evidence-based practice in athletic training. While some programs incorporated singular scholarship experiences at one point in the curriculum, others described a process whereby scholarship transcended across the length of the curriculum. From an educational learning theory perspective, one single experience might limit the students' learning because they are unable to consider scholarship beyond the example provided to them.[27] Repeated exposure is more constructivist and allows students to reflect on the new experience as it relates to previous experiences, ultimately allowing the student to explore the meaning of scholarship in practice on their own.[28]

Participants discussed incorporating traditional theses as well as practice-based, point-of-care research that integrates clinical practice. Some participants described a more traditional approach that is systematically structured and builds upon a topic as the student progresses through the curriculum. This same approach has been used in pharmacy, where programs incorporate a rigorous, full-scale research experience.[14] This is thought to encourage the scientific approach within clinical practice and may lead to increased dissemination of clinically relevant information by those participants in the future.[14] Alternatively, point-of-care research, such as case studies and case series, may also serve to meet programmatic scholarship requirements. In physical therapy education, students enjoyed the ability to immediately connect the information to their clinical practice in a case study incorporating evidence-based practice.[21] Similarly in athletic training, we could incorporate the preceptor into the evidence-based practice case study, which may be an effective way of integrating scholarship into the program through clinical education. Regardless of the mechanism for future scholarship integration, athletic training programs should consider incorporating multiple and varied opportunities for scholarship within the curriculum.

The respondents in our study felt strongly that they needed to balance the other curricular content with scholarship experiences, but all indicated that scholarly experiences are important. Student perceptions in other healthcare professions, especially after a scholarly experience, echoed the importance of scholarship in their learning.[11,22] More than 80% of medical students felt that participation in research during their curriculum was likely important, and just over a third of students felt that there was value in increasing the time spent on research projects within their curriculum.[22] Similarly, in another study,[11] more than two-thirds of medical students believed that conducting research should be a mandatory component of their curriculum. These medical students overwhelmingly identified that future employers looked positively on these experiences, and they wanted to continue to improve their research skills.[11] In another study[15] of undergraduate medical students, participation in a research elective significantly increased the students' likelihood of pursuing a research career. Although our participants did not indicate a desire to develop athletic trainers who pursued a research career, there was an intention that they accept and even encourage a culture of scholarship in clinical practice. It is clear from previous research[11,12,15,22] that after engaging in a scholarly experience, students have positive perceptions about scholarship and the ways it can benefit their future. This same phenomenon would likely be present in athletic training education.

Several studies[11,12,22] have found that medical students were more satisfied with research experiences when they resulted in a tangible professional outcome, such as manuscript publication or a professional presentation opportunity. Within pharmacy residency programs, the use of a practice-based research network yielded increased publications and presentations for program students.[20] Our participants similarly perceived that presentation opportunities increased the value of the experience for the student.

LIMITATIONS AND FUTURE RESEARCH

Our study solicited the opinion of a sample of program administrators and therefore may not be generalizable to all athletic training programs. Some of our respondents were engaging students in scholarly experiences in their baccalaureate programs, so determining how these activities might translate into graduate education is unknown. Additionally, some of the findings presented are based of program administrators' future plans and not have not yet been implemented; therefore, the viability and success of these plans have not yet been demonstrated. Future research should aim to evaluate the effectiveness of scholarship activities, specifically in terms of the ways in which they develop scholarly clinicians. Collaborations between preceptors and students to integrate scholarly experiences in clinical education should be evaluated. We should also seek the opinions of students and preceptors about their participation in scholarly activities, as well as the long-term impact of the participation in such activities on their clinical practice.

CONCLUSIONS

Our participants have identified that although the perceptions of scholarship may vary among stakeholders, increasing the value and relevance of scholarship opportunities can overcome negative perceptions, especially when expectations of scholarship are clearly outlined. Participating programs were including various forms of scholarship, including traditional research, evidence-based practice scholarship activities, practice-based scholarship activities, and quality improvement projects. Program directors believed that those opportunities should continue at the graduate level, and many were considering integrating the scholarly experience into clinical education. Participants agreed that as the culture and value of scholarship increased at their institution, so too did the ease with which scholarship could be incorporated into curricular requirements.

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