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Approved Clinical Instructors' Perspectives on Implementation Strategies in Evidence-Based Practices for Athletic Training Students

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Approved Clinical Instructors' Perspectives on Implementation Strategies in Evidence-Based Practice for Athletic Training Students

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Context: Understanding implementation strategies of Approved Clinical Instructors (ACIs) who use evidence-based practice (EBP) in clinical instruction will help promote the use of EBP in clinical practice.

Objective: To examine the perspectives and experiences of ACIs using EBP concepts in undergraduate athletic training education programs to determine the importance of using these concepts in clinical practice, clinical EBP implementation strategies for students, and challenges of implementing EBP into clinical practice while mentoring and teaching their students.

Design: Qualitative study.

Setting: Telephone interviews.

Patients or Other Participants: Sixteen ACIs (11 men, 5 women; experience as a certified athletic trainer $=10 \pm 4.7$ years, experience as an ACI $= 6.8 \pm 3.9$ years) were interviewed.

Data Collection and Analysis: We interviewed each participant by telephone. Interview transcripts were analyzed and coded for common themes and subthemes regarding implementation strategies. Established themes were triangulated through peer review and member checking to verify the data.

Results: The ACIs identified EBP implementation as important for *validation of the profession*, *changing paradigm shift*, *improving patient care*, and *improving student educational experiences*. They promoted 3 methods of implementing EBP concepts with their students: *self-discovery, promoting critical thinking*, and *sharing information*. They assisted students with the steps of EBP and often faced challenges in implementation of the first 3 steps of EBP: defining a clinical question, literature searching, and literature appraisal. Finally, ACIs indicated that modeling the behavior of making clinical decisions based on evidence was the best way to encourage students to continue using EBP.

Conclusions: Athletic training education program directors should encourage and recommend specific techniques for EBP implementation in the clinical setting. The ACIs believed that role modeling is a strategy that can be used to promote the use of EBP with students. Training of ACIs should include methods by which to address the steps of the EBP process while still promoting critical thinking.

Key Words: clinical education, role modeling, qualitative research

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Key Points

- Approved Clinical Instructors (ACIs) believed modeling and demonstrating evidence-based practice (EBP) processes in their clinical practices encourage students to continue using EBP.
- Athletic training education programs need to educate their ACIs in the 5 steps of the EBP process and in teaching strategies for clinical education.
- The ACIs' implementation of EBP processes in the clinical setting will enable athletic training students to provide more effective and meaningful patient care.

The clinical educational component of the athletic training education experience is critical to student development.[1,2] Entry-level certified athletic trainers attribute 53% of their professional development to their clinical educational experiences as students.[3] These experiences should be a time when students develop skills and search for knowledge on how to improve their patient care.[2,4] Clinical instructors and students believe that modeling professional behavior is one of the most helpful characteristics of clinical instructors in student learning and that knowledge and research are the least helpful.[2] As evidence-based practice (EBP) becomes more prevalent in the athletic training profession,[5–8] the need to incorporate and model EBP with students in their clinical experiences also will increase.[9]

The fourth edition of *Athletic Training Educational Competencies*[10] published by the National Athletic Trainers' Association (NATA) does not include requirements specific to EBP. However, the fifth edition[11] includes a focus on EBP, clinical outcomes, and clinical decision making.[8] The fields of physical therapy,[12] nursing,[13–15] and medicine[16,17] already have incorporated EBP into their educational curriculums. Because the fourth edition does not include specific requirements geared toward EBP processes in athletic training education programs, each athletic training educator and clinical instructor determines how to incorporate EBP into his or her programs. Athletic training educators have addressed how incorporating EBP through a curricular emphasis, specific teaching strategies, and student activities has enhanced the didactic curriculum of their

athletic training education programs.[18] The integration of clinician expertise, best evidence, and patient values is one of the hardest concepts to teach students about EBP.[19] In the clinical setting, the question is not about how to teach EBP; as Denegar and Hertel[20(p127)] stated it is, "How do we best prepare students in the art and science of evidence-based clinical practice?"

Approved Clinical Instructors (ACIs) can play an important role in preparing students and future clinicians who understand both the art and the science of EBP. Medical researchers have shown that residents who learned about EBP in didactic coursework did not incorporate EBP in their clinical skills without directed clinical implementation.[21] Therefore, ensuring that clinical education encompasses and fosters these concepts will be essential as educators implement EBP concepts into didactic coursework. Integrating EBP into the clinical experience of athletic training students will enhance their abilities and willingness to include EBP in their future clinical practices.[22] Approved Clinical Instructors should be able to encourage students to create meaningful clinical questions, find valid literature, and apply the evidence to their patients while also considering the patients' goals and values. If students are not adept at applying their knowledge of EBP in the clinical setting, the care they provide the patient remains the same, and they are not performing the practice component of EBP.

Understanding how to provide a high-quality clinical education experience that integrates EBP will help both current and future ACIs. Athletic training education program directors and ACIs need to determine the best methods for EBP implementation not only in the classroom but also in the clinical setting. Therefore, the purpose of our study was to examine the perspectives and experiences of ACIs involved in professional undergraduate athletic training education about EBP. Specifically, our aim was to investigate the importance of using EBP concepts in clinical practice, clinical EBP implementation strategies for students, and challenges of implementing EBP into clinical practice while mentoring and teaching athletic training students.

METHODS

Participants

We used a combination of criterion and snowball-sampling strategies. To be included in the sample, participants met 3 criteria: serve as an ACI for a professional undergraduate athletic training education program, serve as an ACI for at least 1 year, and report using EBP within their own clinical practices and instruction of students. Use of EBP was determined by participants' self-described adherence to the definition of Sackett et al,[23] who stated that EBP is the "integration of the best research evidence with clinical expertise and patient values to make clinical decisions,"[(p71)] and by the use of the 5 steps of EBP described by Sackett et al[24]: (1) defining a clinically relevant question, (2) searching the literature for the best evidence, (3) critically appraising the evidence, (4) applying the evidence, and (5) evaluating the performance of EBP. Sixteen ACIs (11 men, 5 women; experience as a certified athletic trainer $= 10 \pm 4.7$ years, experience as an ACI $= 6.8 \pm 3.9$ years) participated. All participants were given last-name pseudonyms to ensure anonymity during the study (Table 1). The study was approved by the Old Dominion University Institutional Review Board for Exempt Research before the start of data collection.

Table 1. Demographic Information by Participant

Participant Pseudonym	Sex	Experience as Athletic Trainer, y	Experience as Approved Clinical Instructor, y	Clinical Setting
Balanos	Male	16	4	Clinical
Bozzell	Male	5	3	Collegiate
Fontes	Female	19	17	Collegiate
Gathers	Male	5	4	Collegiate
Gatti	Male	8	6	Collegiate
Hamby	Female	16	10	Collegiate
Holzman	Male	8	3	High school
Kleeman	Male	9	8	Collegiate
Kopicko	Male	12	10	Collegiate
Kukler	Male	7	3	Collegiate
Magee	Female	8	6	Collegiate
McPherson	Female	14	10	Collegiate
Myrman	Male	3	2	Collegiate
Stanlet	Male	14	9	Collegiate
Towle	Female	10	9	Collegiate
Vint	Male	6	5	Collegiate

Procedures

Qualitative inquiry was used to explore the perspectives and experiences of ACIs about EBP implementation with students because of its ability to obtain information-rich responses.[25,26] One researcher (D.A.H.) initially contacted the program directors of athletic training education programs that she knew taught EBP concepts in the curriculum. We contacted these programs as a starting point of the snowball-sampling process. The directors of these programs were asked to provide names or to forward a request for participation to ACIs in their academic programs who met the inclusionary criteria. After receiving the name of an ACI, we sent an e-mail to the ACI in which we asked about his or her specific clinical EBP processes to ensure that he or she met the inclusionary criteria of the investigation. People who met the criteria for inclusion were scheduled to participate in a telephone interview during the spring and fall 2009 academic semesters. While interviewing participants identified by the initial criterion sampling, we asked them to identify other potential ACIs for contact whom they believed met the inclusion criteria. This snowball- or chain-sampling method allowed us to obtain more information-rich cases to investigate the use of EBP in the clinical setting.[26] The recommended people who worked in the same clinical setting or were ACIs for the same athletic training education program as other participants were not included in this inquiry to reduce any undue influence or bias from the clinical or program setting. People whose names we received from other participants were contacted in the manner described to investigate their potential interest in participating in the study.

Data Collection

Semistructured telephone interviews were conducted with an emergent design strategy because it allowed the interview to transpire with each ACI.[26] Each participant was interviewed by 1 researcher (D.A.H.) via telephone following the semistructured interview protocol (Table 2). We developed the protocol and structured it to obtain information about the ACIs' clinical EBP processes and experiences, their perspectives on the

importance of EBP, and the way they incorporated the EBP process with their students in a clinical setting (Table 2). The semistructured nature of the interview led to the development of an interview protocol that included a battery of questions addressing the research questions and purpose of the investigations. The protocol was reviewed by other qualitative researchers in the field and pilot tested with other athletic training clinicians before data collection. The review and pilot testing were conducted to ensure that the interview questions were not biased toward a particular outcome. During the interview process, the researcher encouraged participants to elaborate on or clarify their responses, and she was allowed to deviate from the interview protocol when deemed necessary, which is consistent with an emergent design strategy. The telephone interviews were recorded using a digital voice recorder (model PN-2100VC; Olympus America, Inc, Center Valley, PA) that connected via a recorder telephone pickup (RadioShack Corporation, Fort Worth, TX) to a telephone (model 7970IP; Cisco Systems, Inc, San Jose, CA). This pickup device captured both sides of the conversation through the telephone receiver. Each participant was interviewed in 1 session that lasted 30 to 60 minutes. All interviews were transcribed by a professional transcriptionist to ensure accuracy. Interviews were conducted until saturation occurred, meaning that new themes and information were not emerging from the data.[26,27]

Data Analysis

For this emergent design study, we used a phenomenologic perspective[25,26] with elements of modified grounded theory[26] to complete the investigation. The phenomenologic perspective allowed us to understand the real-life experiences of the ACIs incorporating EBP into their clinical work with students.[25,26] We used NVivo 8 (QSR International Pty Ltd, Doncaster, Victoria, Australia) qualitative software to organize and code the data after the transcriptions were completed. The data analysis included a series of steps: (1) reading each transcript to understand the common experiences, perceptions, and strategies of the participants; (2) coding each participant's responses for common themes and patterns; (3) reading each transcript again to evaluate the themes and codes; (4) dividing responses of each main theme into subthemes; and (5) conducting verification of themes with selected participants and other qualitative researchers in the field. Themes emerged from the participants' responses, and no criteria were specified for themes or subthemes. Themes and subthemes were created until saturated or exhausted. Common themes emerged from all participants, creating a structure for the shared experiences of ACIs about implementation of EBP with students in the clinical setting.[26]

Peer checking, triangulation, and member checking were conducted to ensure that research bias was not a factor and to confirm the findings.[25,26,28] We used peer checking to examine the themes and subthemes created.[25,28] The peer had experience with qualitative research and determined that the themes and subthemes created were consistent with the material and important to the research problem. Triangulation occurred through researcher evaluation as the research team analyzed the emergent themes to determine whether information was interpreted appropriately.[25] Member checking occurred through transcript verification, with all participants reviewing their recorded transcripts for accuracy.[25] Interpretive verification, which is another form of member checking, was conducted with 5 of the 16 participants.[25] The 5 participants were selected randomly to evaluate the established themes and subthemes via e-mail. We described the themes to the participants and instructed them to confirm the themes based on their responses and perceptions of the theme. Participants verified and agreed with all themes and subthemes.

Table 2. Semistructured Interview Protocol

1. Please explain your evidence-based practice process. What [are the] elements and to what degree do you use the 5 steps of evidence-based practice?
   Probe: What specific evidence-based practice skills do you personally use?
2. Can you discuss why you chose to implement evidence-based practice into your clinical practice and when you started doing so?
3. Please discuss the importance of certified athletic trainers using evidence-based practice concepts in their clinical practices.
   Probe: Why do you believe evidence-based practice is important or not important?
4. What barriers do you encounter when trying to use evidence-based practice concepts in your clinical practice?
5. Discuss the emphasis, if any, that is placed on using evidence-based practice concepts in your work environment.
6. How long have you been incorporating evidence-based practice when working as an Approved Clinical Instructor with your students?
7. How do you incorporate evidence-based practice in teaching your athletic training students clinically?
8. Does the academic program you serve as an Approved Clinical Instructor teach evidence-based practice in the classroom?
   Can you discuss how you were made aware of the evidence-based practice skills students are learning?
   Do you feel like these communications are enough?
   Probe: What would be more helpful?
   Is there a programmatic effort to tie the evidence-based practice skills learned in the classroom into the students' clinical practice? What does it entail?
   If evidence-based practice is not taught in the classroom, why have you decided to incorporate evidence-based practice when teaching students clinically?
9. When was your last Approved Clinical Instructor training, and was evidence-based practice a part of the curriculum?
10. What evidence-based practice skills do you find yourself helping students with the most?
11. What do you feel is the best way to get students to use evidence-based practice clinically?
12. Please discuss which part or parts of the evidence-based practice process are most difficult for students to apply clinically.
13. Please discuss any barriers you encounter when teaching evidence-based practice to your students.
14. Does the level of athletic training student you are working with affect the evidence-based practice skills you use with that student?
    Probe: What skills do you find appropriate with lower-level students?
    Probe: What skills do you find appropriate with higher-level students?
15. As a clinician, how do you feel evidence-based practice could be expanded to other athletic trainers not currently using it?
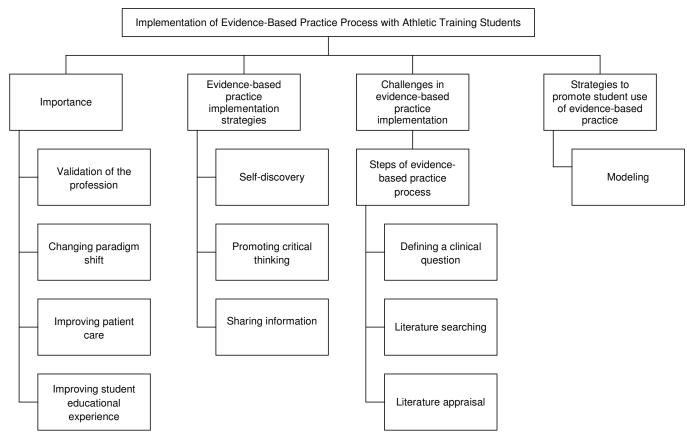
Figure. Conceptual framework of themes and subthemes.

RESULTS

Approved Clinical Instructors' perspectives on the *importance* of EBP in the clinical setting emerged as a theme through the data analysis and coding process. The emergence of importance provided a foundation for the need for EBP in the athletic training profession and in the athletic training clinical education setting. In addition to importance, 3 themes emerged with respect to the ACIs' use of EBP with students in the clinical setting. The themes that emerged were the ACIs' *EBP implementation strategies*, *challenges in EBP implementation*, and *strategies to promote student use of EBP*. The conceptual framework of the themes and subthemes that emerged is presented in the Figure.

Importance

All participants believed that practicing in an evidence-based manner was important for several reasons. Responses about importance contributed to 4 subthemes: *validation of the profession*, *changing paradigm shift*, *improving patient care*, and *improving student educational experience*.

Validation of the Profession. Many ACIs commented that the use of EBP is related directly to justifying the worth of the work athletic trainers perform to other health care professions and to insurance companies. The athletic training profession being regarded as highly as other health care professions became a common theme for all ACIs because they hoped it would increase respect, reimbursement, and compensation. Kleeman commented,

Unfortunately, I think, with athletic trainers, one of the problems why athletic training hasn't been regarded as highly as physical therapy, physicians, or physician extenders is because there has always been this lack of evidence. So I think it's important for athletic trainers and the profession to use evidence and really the only means to allow them [athletic trainers] to be regarded in the same light as other health care professionals.

Vint said,

I think that it's paramount to the success of the profession, especially the way the economy is today and the way the health care profession is. . . . Our worth is in the health care profession. I think that if we can show that what we do works, I think that's how we are going to increase our pay and increase our importance in the medical field.

Bozzell noted,

I think that it's paramount to increase the body of knowledge that we have and to show that there is a standard of care for any one condition . . . trying to improve that from a health care standpoint.

Balanos stated,

One thing that I think is coming into full circle right now is being able to justify our services to the insurance carriers. You know as well as I do, . . . there is all this talk about health care reform and health care everything. I think what

we have to do is show ourselves capable of doing what we do and showing that we should be reimbursed for our services, but also we've got to show that we can provide good service to the patient while trying to keep the cost of the insurance low. I think if we can justify it, it gives us more credible evidence and more credible backing because we can take this and say, "Hey look, this is what we can do," and we can show it and show it based on good studies like outcome studies we do in our own clinic.

Changing Paradigm Shift. One of the more common themes from participants was that the profession of athletic training has evolved, and the manner in which treatments and other services were performed many years ago has changed. Participants believed that EBP is an avenue to change the thinking of "this is how it has always been done." Hamby said,

Given the field that we are in, I think there is a lot of "it's always been done this way" and "this is how we do it." There is this sort of learning that goes on regardless of whether or not it's supported by current standards, current literature, or current research.

Vint remarked,

I have found that there is an "Institution X" way of doing things, there is an "Institution X" way to tape an ankle, an "Institution X" way to treat every ankle sprain the same way. I think we look at what are we doing and say, "Does it work?" or are we doing it just because that's the way everybody else that works here has done it? I think we need to shift away from that.

McPherson stated,

"This is what I was taught, so this is the way we do it, and it's worked in the past, so why doesn't it work now?" I think people need to get out that mind frame and just think. . . . In order to prove to people that we are an allied health, . . . medical health profession, then we need to be able to show what we are doing works just like any other medical profession.

Improving Patient Care. Understanding how EBP improves patient outcomes emerged as an important theme for the ACIs. Improved time and efficiency was stated as a benefit to using EBP. Clinicians believed that using evidence not only improves outcomes but also decreases the amount of time spent treating a patient. Fontes commented,

For the benefit of the patient, especially, you owe it to them to try to keep up with the latest research and try and keep up with the latest treatments that have been proven to be successful. That's why I think it's very important. I mean, it's important to keep up with that and to implement that into your therapy and your treatment.

Myrman said,

I think the biggest thing is outcomes. I want to find the way that's going to get my athlete back to playing pain free as quick as possible, so I will develop my own theory, but I want to see what else is out there. That's kind of the important thing; you want to find the quickest options. I think the most important thing is getting that quick outcome.

Bozzell observed,

I think once you get to a point where you are comfortable with the literature in any one given area, I think that you

save yourself a lot of time when you are treating patients because you have a plan and you know how to execute it.

Improving Student Educational Experience. Approved Clinical Instructors believed that incorporating and using EBP concepts was important because they were serving as instructors for students. The use of EBP improved the ability to explain and teach the athletic training students while also encouraging students to use evidence to support their own clinical decisions. Gatti commented,

I think with students and their participation, I've really picked it up because I think that we need to explain to our students that it is important to be able to justify the things we do, and I think that EBP helps with that.

Hamby stated,

The students have a tendency to grasp it [EBP] more, I think. If you can show them not only that it works but why it works, then they can logic their way though, saying, "Well, research says this, and this is why we are going to try it this way." If it doesn't work, it doesn't work, but we've got solid evidence behind it to say that chances are it's going to work.

EBP Implementation Strategies

The second main theme to emerge from the data was EBP implementation strategies that ACIs used to incorporate EBP concepts in their teaching with students. The ACIs differed on the strategies used, but 3 subthemes were common among ACIs: *self-discovery, promoting critical thinking,* and *sharing information.*

Self-Discovery. Approved Clinical Instructors identified self-discovery activities as methods with which they encourage students to incorporate EBP into their clinical experiences. The self-discovery techniques centered on requiring students to search for research on a particular topic and to present the findings to their ACIs. According to Hamby,

Our students have actually done a fair amount of research to find out what the treatment patterns are, what work best, what doesn't work best, and the pros and cons of each different sort of treatment parameters. Then, they follow those [cases] through to the full healing, to return to activity, and the steps in between as far as treatments and rehabilitation.

Kleeman noted,

When a problem arises, I challenge them to identify articles or the most recent research regarding that injury. Then, we discuss it, whether it's at practice or clinic, and then we talk about how it's applicable or maybe not applicable in that certain situation. We'll have a discussion and then we apply it.

Kopicko said,

One example, I think was early this year, we got a Hivamat [Physiomed North America, Farmerville, LA] machine. I gave everyone an assignment for their homework, saying, "Everyone needs to bring me one article on this machine that they can find." Which is very difficult considering that there is not much out there, but that was one good way to say, "Hey, we have a new machine in our usage, and we have one of our

people who is using it just constantly. Why? What do we have that is to say that this is going to work? We have maybe some rationale of theory, but come bring some more information." So we will give them an assignment, and they seek out some information on it. That is one way we do it.

Hamby indicated that she encourages students to work together in research and in finding evidence. She believes that making the research process game-like helps to promote engagement with the student. She explained,

When we find something that's unusual, we send them off in a group. We say, "You go find this part of the treatment, you go find possible contraindications, you go do this and get together and come back and present a plan of attack." That is kind of the only way we get to do those sorts of things, and if we challenge them with it, it's almost like we turn it into a game, you know, who can come up with the right answer first. That's really the only way that I have found that I can get them actively involved in any evidence-based anything.

Promoting Critical Thinking. Approved Clinical Instructors reported that they expected students to be able to explain why they were performing a particular treatment or technique. The ACIs wanted to promote this idea with their students, and the methods they used centered on the concept of being able to defend a particular choice. In doing so, they encouraged students to think critically about what they have learned in the classroom and to apply that knowledge clinically. Myrman told us,

I won't let anybody do anything unless they understand why. That's kind of one of the big things. Yeah, you can see that "x treatment" is going to solve for "y" 99% of the time, but do you understand why?

Kukler explained,

We do a lot of questioning. The students will come in, and we may be doing a particular treatment on someone, and we may ask them before they can ask us, "Why are you doing it?" A lot of times I will know what they are doing in class, or I will ask them, "What are you doing in class today?" It may be, "Well, we are looking at a knee special test." So I'll say, "Okay, well, let's look at the validity and reliability of these particular tests. What do we know about that?" The student will say, "Well, I don't normally talk about that in class." I encourage them: "Well, let's go figure that out. What is that? What does that mean?" You know, it just brings up question after question, and not in any way to bring them down. I think that all of the students have kind of figured out . . . that's the way I work. . . . I like to challenge you.

Holzman remarked,

I think there's a real skill in separating out some skill stuff here. You know you can learn "XYZ" in the classroom, but that critical thinking piece is really what I'm trying to get out of my kids . . . out of my students. That's why I think . . . that using this approach, this evidence-based practice, teaches them critical thinking. I think that really can be done quite well in the clinical setting and clinical experiences.

Sharing Information. Participants also shared EBP information with their students during the clinical experience. Sharing articles, inviting students to staff meetings, and having central information hubs are methods the ACIs used to provide students with EBP information. Towle said,

I have a binder that's called "Interesting Articles" that the students always make fun of me about. But obviously in athletic training, there is a lot of "go, go, go!" But there's also some down time with certain sports, and so when that happens, I'm always like, "Could you take a look at this article?" or "I just got this," and we kind of pass it along. The exchange of information is there, and then we kind of look at what we are doing based on what they are learning.

Kleeman observed,

As I take on a new student every semester, I ask them to start an evidence-based binder that will define their practice. I work specifically with men's basketball, so some of the articles I will provide for them up front, and I expect them to read them because it defines my practice of why I do certain things. So I'll provide kind of a "hit list" of articles that I follow and that support why I do certain things. As the season goes on, every year kind of brings up a new thing, whether it is MRSA [methicillin-resistant *Staphylococcus aureus*], etc, and then we add to that binder. In return, they add to my binder as well.

Kopicko stated.

We have set up a Google [Mountain View, CA] account, [on] which we use a Google calendar and Gmail . . . so we have them sort of log into that, and that sort of becomes the "central hub," so we've actually thrown articles up onto Google docs that all the students can access there. Or, I will say to the student, "When you have an article, throw it into there so everyone else can access it." So we try to create essential hubs, probably not as in-depth as I envision it yet, but I think it is one good way to say, "Okay, everyone can access it and share it." And the one other last thing we do a lot is we involve our students with our education session, our staff continuing education things, we include our students with.

Challenges in EBP Implementation

Although participants had several examples of EBP implementation strategies, the incorporation of EBP does not come without challenges. Many of the challenges the participants discussed centered on *defining a clinical question, literature searching,* and *literature appraisal.* These challenges provide the opportunity for the ACI to help the student grow in his or her EBP process. The responses we include indicate the participants' responses to the question, "What parts of the EBP process do you find yourself helping students with the most?"

Defining a Clinical Question. McPherson noted,

I think, as of right now, it's still really defining the problem. You know, it's a starting point, and hopefully we will get to the point so that when they come in, they can already say, "This is a problem, and how do I address that?" But right now, I still think we are in the early stages, so we are still at, "You need to define the problem."

Bozzell commented,

I think that we stress so much about them being into the literature and really trying to read and understand how to interpret scholarly journal articles. I don't know if we missed the boat on it or they missed the boat on it. I don't know

where the disconnect is, but I think their ability to actually form the clinical question is probably where they struggle the most.

Literature Searching. Gathers explained,

When I have them do that [a search], they go straight to Google instead of looking at a book or trying to go [to] the *Journal of Athletic Training* online, or something else like that. . . . They go right to Google, so I'm trying to tell them that the stuff off Google it isn't really right and to look at more of the peer-reviewed journals.

Kukler said,

It's amazing to me how students have no clue how to get on[line] and find an article. You know, I can say, "Okay, well let's go and find out about osteochondral defects of the talus or talar dome," and they, 95% of them, and I don't know if this a programmatic thing or what it is, but they don't know where to go. They don't know where the library site on the computer is. They don't know how to search for things. They say, "Well, I went onto Google, and I can't access this article." You have access to pretty much everything. You've got to use the library Web sites. Once I teach them that, then they just run with it. You know, they're like, "Oh, I have access to all of these different journals, this is great!" At first, that's the biggest thing that I'm helping them with.

Literature Appraisal. Towle told us,

I think appraising the evidence and looking to see if it's a good study. I feel like a lot of times students will read a study and say, "Okay, well, this is what we have to do," or "This is what the study says is right." We all know that if you find one study, you can probably find 2 that say the opposite. Looking at it and trying to assess, "Is this a good study, is this applicable?"

Kleeman remarked,

I'd say identifying whether it's a good study or not. I'd say looking at that research article and saying, "All right, where are the flaws? Is there a type I error or a type II error? What's wrong with this research?" That's probably the biggest challenge for them.

Strategies to Promote Student Use of EBP

Evoking change in personal practice for students was a need many ACIs discussed. The ability for students to see their ACIs using the process of EBP was reported to be a key strategy of encouraging students to incorporate EBP into their own clinical practices. Through modeling, the ACIs hoped to encourage students to make EBP a foundational component in their clinical practice. According to Magee,

If we show that it is important to us, I think they would follow suit as well and not just look at it as, "Oh my, this an assignment for class," but look at it as a way to make me better and make my clinical skill better and more efficient.

Holzman explained,

Do you want to hit them over the head with a club? I don't know. I guess you model it [EBP], and people see it. I guess

the best way is stop talking about how . . . you see it modeled, and then you see the clinical outcomes that go along with it, so how can you not use it? I think that whole modeling piece would actually be the best way.

Kopicko stated that encouraging questions helps create a culture of questioning and that often clinical staff and ACIs can be given as both good and bad examples for students:

We make great examples of ourselves [staff] constantly, both good and bad. You know, we sort of sometimes make a joke of it, sort of keep it light around here, but also really make it a point of, "Hey, well, why are you doing that? What is the point of that?" Or we point to other staff: "Hey, do you understand why you are doing that?" Or we encourage the students to go ask, "Why even have me do this?". . . So, it's more like getting that culture out there that asks the proper questions and asks the critical questions in the end: "Hey, am I doing the right thing?"

Each of the implementation strategies and challenges discussed by the ACIs showed a devotion to helping students become better evidence-based clinicians.

DISCUSSION

The importance of using EBP and implementing EBP concepts with athletic training students in the clinical setting emerged as paramount ideas in our interviews with ACIs. The themes of *importance*, *EBP implementation strategies*, *challenges in EBP implementation*, and *strategies to promote student use of EBP* emerged. Understanding these themes can assist ACIs in the integration of EBP processes with athletic training students.

Importance

Several researchers[4–7] support the importance of using EBP in the clinical setting that the ACIs discussed. Hertel[7] addressed the need for athletic trainers to document evidence and show effectiveness in treatments. In doing so, the profession of athletic training will move closer to reimbursement for athletic training services and stand with other professions in the health care industry.[6–8] Winterstein[5] introduced a paradigm shift in thinking, explaining that the move toward EBP for clinicians would entail a new point of view in critiquing research and developing a scholarship of clinical practice. As we move away from "it's always been done this way" to evidence-based clinical decisions, thinking will need to shift, and a new culture of EBP will need to be created. Approved Clinical Instructors have the opportunity to teach students how to critique research and make clinical decisions based on evidence, helping create this new culture of EBP.

In addition to the benefits of EBP from a professional validation standpoint, teaching students to use EBP in the clinical setting helps promote critical thinking and allows students to understand the reasoning behind clinical decisions.[13,29] Rothstein[4] suggested that the clinical education experience focuses largely on the components of EBP without labeling it as such. As ACIs teach and incorporate the steps of EBP with their students, they are promoting enhanced critical-thinking skills and clinical decision making with the students.[5,13] In addition, teaching EBP involves more than just a transfer of knowledge; it also can convey professional value.[30] The final subtheme of importance,

improving patient care, is one of the main tenets on which EBP is built. Patient care often is overlooked when clinicians discuss EBP, but it is a fundamental component.[8] Many ACIs specifically mentioned that they do not track clinical outcomes of patients in their own EBP processes but that they believe EBP is important to improving patient care. Understanding that the integration of the best research evidence, clinician expertise, and patient values is the true meaning of EBP often gets lost in the process.[6,8,23] Approved Clinical Instructors should ensure that they are practicing all components of the EBP process while also integrating the evidence, their expertise, and patient values when treating patients. A shift to scholarly clinical practice by the ACIs and education of athletic training students will help to move the athletic training profession toward improved patient care.[31]

EBP Implementation Strategies

The implementation strategies that the participants discussed did not meet specific teaching strategies or methodologic principles found in educational literature. Prince and Felder[32] discussed the idea of active and passive learning strategies. The themes of *self-discovery* and *promoting critical thinking* would be considered active learning strategies,[32] whereas the theme of *sharing information* would be considered a more passive learning strategy. The ACIs who used implementation strategies of self-discovery instructed students to locate information related to a particular case or treatment without giving guidance about what they should expect to find. Self-discovery requires the student to decide what information is pertinent and to arrive at an appropriate conclusion.[32] Some of the self-discovery examples that participants used had components of problem-based learning, but the individual nature of the ACI-student relationship did not meet the criteria for true problem-based learning.[33] The difficulty with self-discovery is that the ACI is not a vital part of the process guiding the student to a specific point. Depending on the EBP foundation that the student receives in the classroom, younger students might not have the knowledge to be able to find pertinent information from the start. The ACIs should be instructed on how to use specific teaching strategies, such as problem-based learning or self-discovery, so they can use all key components of these teaching strategies.

When sharing information with the student, the ACI fulfills the role of mentor and teacher. The ACIs in our study shared with students how the use of EBP contributed to their own clinical practices. Both Towle and Kleeman, who were participants, discussed how they share the articles that guide their own clinical practices with the students and encourage students to begin their own notebooks. This allowed the students to see their ACIs as role models for the behavior and also to understand why their ACIs practice in certain manners. Role modeling has been documented as an effective technique that improves student behavior in the clinical setting.[22]

As with any teaching strategy, no specific right or wrong way exists for implementing EBP into the clinical setting. Factors such as student level, experience with EBP, clinical experience, and ACI comfort often determine which implementation strategy will best serve the student. The ACIs in our study used a combination of methods to encourage student use of EBP. Understanding the student and his or her learning style will be important for ACIs in finding the best strategy for each student. In addition to understanding the learning styles of their students, ACIs also must be educated in EBP and various teaching

strategies. The ACIs should be targeted as learners first, which will help increase their willingness to use these clinical instruction strategies.[34,35]

Challenges in EBP Implementation

The challenges ACIs discussed about EBP implementation with their students focused on completing steps of the EBP process, which are essential in practicing as an evidence-based clinician. The ACIs reported helping students most with the steps of defining a clinical question, literature searching, and literature appraisal. To find literature relevant to the patient, the student must be able to define a clinically relevant question. Using the Patient Intervention Comparison and Outcome format[36,37] of clinical questions would help ACIs direct students to a more searchable question and provide a more formal structure to the questions students already are asking ACIs in the clinical setting.[38] The use of tutorials[38] for literature searching (eg, PubMed tutorial; University of North Carolina Health Sciences Library: "Searching the Medical Literature for Best Evidence" tutorial) and critical appraisal (eg, Centre for Evidence Based Practice; University of North Carolina Health Sciences Library: "Introduction to Evidence-Based Medicine") also might be helpful because these 2 steps were identified as challenges for students. Incorporating these tutorials in the didactic portion of the educational experience would allow the ACI to teach the student more about applying the evidence to patients.

The final 2 steps of applying the evidence and evaluating the outcome of the EBP were not discussed as challenges by the ACIs. The students may not have been applying the evidence or evaluating the outcomes of their patients because they were having difficulty with the first 3 steps. Although these steps were not specifically identified as challenges, concluding that challenges did not exist with them is difficult. Our participants served as ACIs for various levels of students; therefore, the challenges faced probably were associated with the students' levels in the athletic training education programs. The ACIs indicated that younger, less experienced students would be expected to have more difficulty with the earlier steps of the EBP process. The challenges of student level and additional barriers to student use of EBP will be reported in the future.

Strategies to Promote Student Use of EBP

Although our participants used the EBP implementation strategies of self-discovery, promoting critical thinking, and sharing information, role modeling[9,22] also has been shown to be an effective strategy to encourage the use of EBP with students. Role modeling is a common strategy for clinical education in various health professions.[9,22,36,39,40] Approved Clinical Instructors need to become proficient in the processes of EBP and should be comfortable with directing students on how to incorporate the 3 tenets of EBP into their own clinical practices. As clinical instructors model behavior, students can see how clinical skills should be incorporated into practice. Regarding EBP in the medical profession, clinical instructors who model behavior of EBP allow students to see the integration of evidence into decisions and to see how evidence results in good patient care.[36]

To encourage and model the use of EBP in the athletic training setting, ACIs need to use and understand the evidence-based

process themselves.[34,35,39] With the publication of the fifth edition of the NATA's *Athletic Training Educational Competencies*,[11] athletic training education program personnel are required to teach EBP concepts. A programmatic tie between the classroom and clinical components of the athletic training education process will help improve continuity not only for students but also for ACIs. If EBP skills are taught solely in the didactic classroom, an inherent gap will exist between classroom and clinical knowledge if EBP is not also mandated clinically.[9,19,39] Education of both athletic training students and ACIs will be necessary to continue the promotion of student use of EBP.

Limitations

The ACIs who participated in our study were selected from a specific, nonrandomized sample of the population. The ability to identify ACIs is limited to what can be obtained through the athletic training education program director, so not all potential participants were identified. However, the saturation of the data indicated that the small sample size might not have affected the responses. Two of the ACIs did not work in a collegiate setting. Although these ACIs differed in their clinical work environments, all 16 participants provided patient care on a regular basis, and the methods in which they provided patient care would be similar regardless of clinical setting. The self-report nature of the clinicians' use of EBP also could be a limitation because we did not measure whether they accurately and consistently used EBP, but we assumed that all participants were contributing truthful information during the interview. Some participants were in dual positions that included teaching in the didactic curriculum, so the methods used for EBP implementation could have differed between those who taught in the classroom and those who worked only in the clinical setting. Future research is necessary to determine whether differences existed between these people.

CONCLUSIONS AND IMPLICATIONS

The implementation of EBP processes in the clinical setting is necessary to change the athletic training profession, translating to more effective and meaningful patient care.[5,8] The ACIs provide a critical link to encouraging student use of EBP. Approved Clinical Instructors use self-discovery, critical thinking, and sharing as strategies to implement EBP with students in the clinical setting. Completing the steps of the EBP process provided the biggest challenges to the ACIs for implementation with students. Students need help finding appropriate information and appraising the literature. As mentors, ACIs believed that modeling and demonstrating EBP processes in their own clinical practices will help promote the use of EBP with students. Therefore, athletic training education programs must work toward educating their ACIs in the 5 steps of the EBP process and associated terminology and in teaching strategies for clinical education.

In the future, researchers should continue to assess the most effective clinical teaching methods for EBP. Educators and researchers should investigate how the combination of didactic and clinical instruction affects student knowledge and use of EBP. In addition, researchers should address the current knowledge level of EBP athletic training educators to establish better educational media for promoting EBP throughout the profession.

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