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Dana K. Bates

*George Fox University*, [dbates@georgefox.edu](mailto:dbates@georgefox.edu)

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# Perceptions from Graduates of Professional Athletic Training Programs Involved in Peer-Assisted Learning

Dana Karlene Bates, PhD

Department of Health and Human Performance, George Fox University, Newberg, OR

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**Context:** Research has not explored how peer-assisted learning (PAL) impacts graduates once they are practicing as athletic trainers. Peer-assisted learning has been used in a variety of health education settings but there is a lack of data on its effects on the performance of graduates.

**Objective:** To investigate professional graduates' perceptions of PAL pedagogy in their athletic training education and the impact of that experience on their first job.

**Design:** Qualitative study using a phenomenological approach.

**Setting:** One-on-one phone interviews with athletic training graduates.

**Patients or Other Participants:** Participants were from 8 accredited athletic training programs that varied in terms of the size of their institution, geographic location, number of graduates, and program directors' willingness to promote the study. Thirteen (7 female, 6 male) 2010 (n = 5) or 2011 (n = 8) graduates volunteered for this study. Ten of the participants were from undergraduate baccalaureate athletic training programs, while 3 were from professional postbaccalaureate athletic training programs.

**Main Outcome Measure(s):** One-on-one phone interviews were conducted with a structured interview protocol. Each participant was asked the same questions and allowed to clarify when needed. Interview data were analyzed inductively to uncover dominant themes, first by organizing the data, then by summarizing them into codes, and finally by interpreting them. Credibility was secured through a pilot study, member checking, triangulation, and peer debriefing.

**Results:** Data were analyzed through a qualitative process; themes indicated graduates who have experienced PAL believe it led to improved communication and confidence, enhanced teaching skills, better clinical reasoning, improved socialization, and a deeper understanding that contributed to success on the Board of Certification examination.

**Conclusions:** These findings are significant to the field of athletic training education as program directors investigate pedagogies that can assist students to think clinically as graduates. Evidence demonstrated that PAL does impact the students after graduation.

**Key Words:** Education, athletic training pedagogy, professional development

## INTRODUCTION

Athletic training clinical education, as defined by the Commission on Accreditation of Athletic Training (CAATE),<sup>1</sup> is the application of athletic training knowledge, skills, and clinical abilities on an actual patient base that is evaluated with feedback provided by the preceptor. The goal of clinical education is for the athletic training student to acquire technical skills, develop professional responsibility, and move from dependent, supervised practice to independent, collaborative practices.<sup>2</sup> Athletic training educators currently question how to move students from paper-and-pencil concrete thoughts to more independent clinical reasoning as health care professionals. Clinical reasoning involves athletic trainers making multiple decisions based on myriad dimensions of knowledge and skill sets; the skillful gathering of subjective and objective data; complex interactions with the patient, family members, and other providers; and real-time problem solving.<sup>3</sup> Over the last 10 years, athletic training education has experienced changes in educational requirements as a result of the CAATE implementing a competency-based curriculum that entails supervised clinical experiences.<sup>1</sup> These revisions ensure high-quality health care professional graduates. The concern, however, is whether these revisions in supervised clinical experience lead to higher quality, clinically reasoning professionals.

Athletic training programs must seek a pedagogy tailored toward clinical reasoning with the goal of moving a student to an entry-level athletic training professional. The study sought to answer the question of in what way peer-assisted learning (PAL) curriculum impacts professional graduates. Peer-assisted learning is a strategy that was developed from Bandura's social learning theory that involves a continuous reciprocal interaction among cognitive, behavioral, and environmental influences.<sup>4</sup> Bandura<sup>4</sup> stated that virtually all learning phenomena resulting from direct experience can occur on a vicarious basis by observing other people's behavior and its consequences. This results in a form of modeling, and in clinical education, students can learn through modeling and teaching. This can take place through their preceptors and from their peers. Learning from peers has been called *peer education*, *peer learning*, *peer tutoring*, *peer teaching*, and *PAL*. With PAL, students from similar social groupings learn and teach together. Peer-assisted learning involves upperclassmen assisting and teaching their peers content and sharing knowledge they have acquired through previous course work. Topping and Ehly<sup>5</sup> defined PAL as people from similar social groupings, who are not professional teachers, helping each other to learn and by so doing, learning themselves. Henning et al<sup>6</sup> defined PAL in the context of athletic training as the process of gaining knowledge, understanding, or skill in athletic training-related tasks among students who are at either different or equivalent academic or experiential levels through instruction or experience. As a pedagogical tool, PAL may be able to assist

in transitioning athletic training students to entry-level professionals who think critically and clinically.

Peer-assisted learning has been widely implemented in education as well as in the health fields of dentistry, nursing, occupational therapy, and physical therapy.<sup>6</sup> The identified benefits of PAL have included increased confidence in performing skills, decreased anxiety or stress when working with peers rather than clinical instructors, increased self-esteem, increased communication skills, improved test scores and course performance, increased critical thinking, enhanced learning of the material, social and psychological support, professional development, and improved organizational skills.<sup>2,6-16</sup> Documentation supports PAL as a very useful pedagogy in many health professions; however, the effects of PAL have not been investigated relative to the development of athletic trainers after graduation. The purpose of this qualitative study was to investigate professional program graduates' perceptions of PAL pedagogy in their athletic training education and the impact of that experience in their first job. A phenomenology qualitative research method was used in this study. A phenomenological approach was appropriate since the aim was to explore the student experiences with PAL. A phenomenological approach investigates the lived experiences of the participants.<sup>17</sup> This study further explored PAL and investigated the principle of the experience as perceived by the graduates in order to understand the "essence" of the practice of PAL.<sup>17</sup> In-depth interviews were used to examine the various aspects of PAL and to investigate the graduates' perceptions of this pedagogy once they were practicing as athletic trainers.

## METHODS

A qualitative research design was chosen for this study since the aim was to further understand, through the students' perspective, how PAL impacted them after graduation. One-on-one interviews with graduates were conducted to allow participants to express meaning about their PAL experience and how this pedagogy impacted their transition from athletic training student to a credentialed professional. All participants were notified that their responses would remain confidential and that no individual or institution would be identified. The interview protocol and consent form were reviewed and approved by the institutional review board. All participants signed a consent form, which was e-mailed to them before the interview.

### Participants

Participants were selected through first finding programs that implemented a PAL curriculum. E-mail addresses were obtained from accredited professional program directors from the CAATE Web site. The program directors were e-mailed to determine if they implemented a PAL curriculum; therefore, they were given a definition of PAL, as defined by Henning et al,<sup>6</sup> as the process of gaining knowledge, understanding, or

**Table 1. Professional Athletic Training (AT) Programs Volunteered for Study**

Program	No. of Graduates from AT Program per Year	NATA District	No. of Students Enrolled on the Physical Campus
1	14–20	5	<20 000
2	8–10	8	<2000 but >5000
3	9–13	10	<15 000 but >20 000
4	4–6	4	>2000
5	12–14	4	<5000 but >10 000
6	7–10	7	<20 000
7	2–5	6	<10 000 but >15 000
8	6–10	4	<2000 but >5000

Abbreviation: NATA, National Athletic Trainers' Association.

skill in athletic training–related tasks among students who are at either different or equivalent academic or experiential levels through instruction or experience. Thirty-five programs specified they implemented PAL pedagogy, and 12 of these 35 programs gave consent to interview their graduates. From these 12 programs, a purposeful sampling of 8 programs was selected; these programs varied in terms of the size of their institution, geographic location, number of graduates, and program directors' willingness to promote the study (Table 1).

These 8 programs were given pseudonyms in order to keep the identity of each program anonymous. The program directors were sent an e-mail to forward to potential research participants in May 2012. In this initial e-mail was the investigator's contact information, including e-mail and phone number. Participants were asked to contact the investigator if they wanted to volunteer for the study. Participants were also told they would receive a \$25 gift card as an incentive to participate. From these 8 programs, 13 (7 female, 6 male) 2010 (n = 5) and 2011 (n = 8) graduates volunteered to be interviewed. Ten of the research participants were from professional baccalaureate athletic training programs, while 3 had graduated from postbaccalaureate

professional programs (Table 2). All participants completed programs that had a required and planned component of PAL. For the purpose of this study, a planned PAL pedagogy was defined as one that requires students to serve as either a peer-student (a student being taught by a higher academic level peer) or a peer-tutor (a student who is utilizing PAL to teach, instruct, or demonstrate a learned skill to a peer-student at a lower academic level) through their educational exchange. Not all research participants served in both roles; 10 served both roles; 1 served as peer-tutor only; and 2 were peer-students only. This cohort of graduates was chosen since a time frame of 1 to 2 years after graduation would still leave a fresh perspective on how this pedagogy was currently impacting their professional career.

### Data Collection

Data were collected through semistructured phone interviews. Semistructured questions allowed for individual responses and gave the investigator the opportunity to ask more probing or follow-up questions if further clarification was necessary.<sup>18</sup> Phone interviews were also more practical for the study than were one-on-one interviews because of the graduates' locations, which spanned the United States. These interviews were recorded utilizing Sound Recorder (Microsoft Windows, Redmond, WA) on the investigator's password-secured laptop.

The interview protocol was based on the research of Henning et al,<sup>6</sup> Mackey et al,<sup>12</sup> and Henning and Marty<sup>19</sup> as well as on the investigator's experience with PAL. The questions sought to explore the graduates' perceptions of PAL and how serving as a peer-student and peer-tutor impacted their current professional careers (Table 3). The interview questions included both open-ended and close-ended questions.

The interview began by asking each participant to identify 1 of 4 descriptors (*peer modeling, peer assessment, peer mentoring, or peer-assisted learning*) as a term familiar to that student to accurately describe how PAL was implemented at their institution. Once this term was identified by the participants, the term was then used throughout the interview process.

**Table 2. Participant Demographics**

Participant	Sex	Graduation Year	Role Participant Played in PAL (Peer-Tutor/Peer-Student/Both)	Current Employment	Professional Program (Master's or Undergraduate)
1	Male	2011	Both	Clinical setting	Undergraduate
2	Female	2010	Both	High school	Master's
3	Female	2011	Both	Graduate Assistant	Undergraduate
4	Female	2010	Both	Graduate Assistant	Undergraduate
5	Female	2011	Both	Graduate Assistant	Undergraduate
6	Male	2011	Both	Graduate Assistant	Undergraduate
7	Female	2011	Both	Graduate Assistant	Undergraduate
8	Male	2011	Both	Graduate Assistant	Undergraduate
9	Male	2010	Peer-student	Clinical setting	Master's
10	Female	2010	Peer-tutor	Graduate Assistant	Undergraduate
11	Male	2010	Both	High school	Undergraduate
12	Female	2011	Both	Teaching Assistant	Undergraduate
13	Male	2011	Peer-student	College Athletic Trainer	Master's

Abbreviation: PAL, peer-assisted learning.

**Table 3. Semistructured Phone Interview Questions**

1. What terminology was used at your institution to describe the learning amongst your peers?
  - a. What wording was used (PAL, peer-tutor, peer mentoring, ...)
    - i. Peer-modeling: process by which students pattern their thoughts, beliefs, strategies, and actions after those who demonstrate targeted actions, verbalizations, and expressions.<sup>5</sup>
    - ii. Peer assessment: an instructional technique in which a student judges the level of quality of a peer's understanding and provides corrective comments to improve the execution of tasks.<sup>50</sup>
    - iii. Peer mentoring: a supportive relationship between two students of differing academic or experience levels within the professional program with a focus on acquiring norms, values, knowledge, and skills to function as a future professional.<sup>26</sup>
    - iv. Peer-assisted learning: process of gaining knowledge, understanding, or skill in athletic training from students who are at different or equivalent academic or experiential levels.<sup>6</sup>  
The above term was then replaced throughout the interview for PAL.
  - b. How was PAL implemented at your school?
    - i. Were you ever taught by an upperclassman, were you ever that upperclassman assisting an underclassman?
2. Describe your thoughts regarding this educational exchange/PAL with peers in your athletic training education.
  - i. As a peer-student, as a peer-tutor?
3. What makes learning from your peers effective?
  - i. Are there any limitations to learning from your peer and if so what are they?
4. How would you describe your experience serving as a peer-tutor?
  - i. Confidence, clinical skills, clinically thinking, can you clarify?
5. What benefits did you gain from these peer interactions?
6. Did your participation in this PAL impact your current practice as an athletic trainer?
  - i. You mention benefits you perceived from PAL above; did these carry over to your current practice? How?
7. In what ways did serving as a peer-tutor prepare you with the skills necessary for your first job/graduate work postgraduation?
  - i. Can you elaborate?
  - ii. Give an example?
  - iii. Clinical thinking?
  - iv. Clinical reasoning?
  - v. Differential diagnosis?
  - vi. Clarify?
8. Can you explain how PAL may have impacted you in your first job/graduate work postgraduation?
  - i. Can you elaborate?
  - ii. In what ways?
  - iii. Give an example.
9. Is there anything else that you'd like to share with me regarding PAL?

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Abbreviation: PAL, peer-assisted learning.

The interview questions were piloted before the initiation of this investigation with a sample of athletic training students who represent the same target population and were excluded from the final data analysis. These 3 pilot participants completed the interview protocol and questions. After the interview the pilot participants were sent a list of the interview questions and asked if anything needed to be defined or questioned differently to assist in clarity. The pilot study participants were debriefed, and information was obtained to assist in clarifying interview questions and relevance to the study's aim. Feedback included phrasing of questions to make them clearer, clearly defining terms, and suggesting the investigator speak clearly and slowly. The pilot study allowed for refining and developing the interview questions and protocol. From the feedback provided, changes in interview questions and protocol were facilitated to improve clarity.

Recorded interviews were replayed for transcription for all research participants, and information was stored on a password-protected personal laptop. All participants received via e-mail a transcription of the interview for final review and to make sure their experiences with PAL had been correctly captured. Any feedback from this review was noted. Throughout the interview notes were taken, and these were

kept with the transcriptions in the investigator's locked office. Any audio files were stored on an external hard drive at the end of the interview sessions. Records of interviews were kept in separate files and labeled with a unique number.

To analyze the data, the goal was to discover patterns, ideas, explanations, and a deeper understanding of PAL's influence on athletic training students after graduation. The data were analyzed by first organizing data, then summarizing data into codes, and then, finally, interpreting the data. Organizing the data was first performed through transcribing the interviews. The sole investigator chose to transcribe and review the interviews in order to be fully immersed in the data. All research participants received transcription notes through e-mail to ensure that they were an accurate reflection of their responses.

The analysis of the transcriptions followed an inductive process. This process began through reading and rereading the transcriptions to organize the data. The transcriptions were read line by line to make sure they made sense and to understand fully what the interviewees were saying. Through this process the data were separated into workable units,

developing codes called *open coding*.<sup>18</sup> Data then were sorted according to topics, themes, and issues important to the study. During this open coding, notes were made in the margin of the transcriptions.

Continuing through the data analysis, the small segments were incorporated into larger and broader themes from which to make comparisons of similar themes across the categories. Each interview was analyzed this way, and then the data were merged together to make a master list. From this master list relationships among categories were created to develop conclusions.

The final step of data analysis was interpreting the findings inductively, synthesizing the information, and drawing inferences.<sup>18</sup> From the themes data were interpreted to develop tables, which created a structural description of the information gathered from the interviews. From these tables the information was layered to present comparisons. A colleague with experience in educational and qualitative research was included to review and verify the data analysis. This process included asking the colleague to examine the transcription notes and determine themes to verify any similarities. From this structural description that was created from themes that emerged, a “rich description” was developed regarding how PAL impacted graduates.

### Data Credibility

To ensure consistency and authenticity, data credibility was assessed through triangulation, member checking, peer debriefing, and conducting of a pilot study. Triangulation involved seeking the convergence of findings, cross validation among different sources and methods or data collection.<sup>17</sup> Triangulation included using both transcriptions and interview notes. Member checking involved asking the participants to review interpretations and conclusions and having the participants confirm the findings.<sup>17</sup> All research participants received via e-mail a copy of the interview transcripts for review, clarification, and suggestions. Before data collection began several peers reviewed the interview protocol and data collection procedures to ensure methodological rigor. Peer debriefing involved asking 2 colleagues to review the study for credibility and to determine whether the results seemed to follow from the data.<sup>17</sup> Both of the colleagues had conducted studies in education and qualitative research and had no connection to any of the programs interviewed. A pilot study was conducted to refine the interview protocol. Through triangulation, member checking, peer debriefing, and conducting of a pilot study, credibility and validity improved.

## RESULTS

Six themes emerged from the data: improved communication and confidence, enhanced teaching skills, better clinical reasoning, improved socialization, and a deeper understanding contributing to success on the Board of Certification (BOC) examination.

### Improved Communication

For most participants, being involved in a PAL curriculum influenced their communication skills. Nine of the 13 participants stated that through the PAL curriculum their

communication skills improved as an entry-level athletic trainer. Athletic training students reported they used medical terminology and developed communication skills that assisted in their transition to an entry-level professional as a result of experiencing the PAL curriculum.

Participant 1 stated that “communication skills are important in my current practice, and this was gained through my peer mentoring.”

Participant 2 stated:

*Peer mentoring gave me the opportunity to practice the skills I need to be a better athletic trainer. It gives me the opportunity to approach situations differently than I had in the past. I understand the need to explain to students what is injured, how the injury occurred, and what needs to be done in order for them to return to play. I try to explain the injury in simple terms that make sense to the athletes. I learned that amongst peer mentoring we were able to use medical terminology but when you turn around and use it with a high school athlete there may be a lot of confusion . . . I was able to learn to kind of simplify the terminology when speaking to athletes.*

Participant 3 stated that through peer mentoring, she noticed they were better able to communicate with athletes regarding their injuries:

*I think just working with other people . . . has helped me to kind of organize my thoughts and how to explain things to other people. Whether it be an athlete, trying to explain an injury that they may be going through or trying to get them to understand what is going on with their body after they have been injured or sick. I think that has been helpful to also explain things to other athletic trainers that may be more knowledgeable. Trying to explain at the different levels of understanding, you are able to explain it more to an athlete who may not know necessarily the intricacy of human physiology and all that sort of stuff and you may go on to explain to another athletic trainer or doctor in a more complex sense. I think that kind of came from the peer mentoring atmosphere.*

Participant 4 also felt that peer mentoring influenced her current role as an athletic trainer and how she speaks to athletes. She learned to communicate effectively:

*Just learning to communicate with someone and how to teach someone is different than teaching yourself; you have to learn how to communicate effectively, and I think that was really beneficial to be able to explain how things work and be able to explain to [a] younger student who is just learning. It was really helpful for me to just learn how to explain it to them, which helped me be able to communicate effectively to my athletes as well regarding trying to communicate to them with what was going on with different injuries and stuff like that.*

Participant 12 supported the statements of Participant 2 in regard to peer mentoring in that she learned to communicate effectively with athletes regarding their injuries and not to use terminology that may confuse the athletes:

*When working with athletes and talking to them about injuries, I have learned to break it down like you would when you are mentoring a young athletic training student . . . having to learn to do this with younger students has allowed me to be able to do that with athletes and do it in a way that is just explaining and not talking down to them.*

Participant 5 also stated that peer mentoring assisted with being able to communicate better with the athletes. Through the peer mentoring, Participant 5 was required to communicate with fellow peers and “explaining to someone the way the modality works carries over to trying to explain it to a student athlete when you’re persuading them to go a certain route with their rehabilitation or their treatment process.”

Participant 2 also stated that PAL influenced how she communicates with other health care professionals as well. She stated that “just knowing how to handle situations and how to communicate with doctors, ER staff, physical therapists, occupational therapists, and any kind of allied health care professional that you work with.”

Most participants reflected on their communication skills and stated that PAL impacted the way they communicate with peers, coaches, athletes, and other health care professionals. *Communication skills* was the most commonly given answer when participants were asked how PAL impacted the graduate’s current position.

### **Improved Confidence**

Students perceived that through a PAL curriculum, they felt more confident in their skills as an athletic trainer. Seven of the 13 participants stated that their confidence was impacted through the PAL curriculum. Participants explained that they gained confidence in their athletic training skills through teaching skills to another peer. Participant 3 said that through PAL “I think I am able to apply my skills more now with confidence.” Participant 4 also stated that:

*Peer mentoring impacted confidence through knowing that I knew the information from explaining and teaching it before. It helped me to be more confident in what I was doing and be confident when I was talking to an athlete and when I was on my own. And just being able to explain to them what I was doing and what I was looking for and explaining injuries and stuff like that.*

Participants 11 and 12 acknowledged that they gained much of their confidence through the PAL curriculum. Participant 12 stated “I think that this confidence and this self-assuredness came from the encouragement and support that I received through a peer mentoring program.”

When Participant 9 brought up improved confidence it was mentioned that he felt more confident in his evaluation skills as a result of the PAL curriculum:

*Oh yea, confident. I would say in an evaluation setting, confidence is one of the most important things you can have. You need to gain [the] confidence of the patients, and if you aren’t confident they are not confident in you. So, in my setting now I am definitely confident because of the*

*confidence I gained from my hands-on experience and peer mentoring.*

### **Enhanced Teaching Skills**

Nine of the 13 participants stated that the PAL experience helped them learn and develop critical teaching skills that are presently assisting them as they instruct and work with students. These teaching skills also assist them in educating coaches, parents, and athletes regarding athletic injuries in their present work settings. Currently, 12 of the participants have a role in teaching students ranging from high school to college students.

Participants 2, 3, 4, and 11 all stated that one has to have a deeper understanding and must know the applicable concept well in order to teach students. Participant 2, who is a current preceptor, emphasized the learning through teaching:

*The more time you are given with tutoring and mentoring the underclassman the more you improve your skills. The more you do the skill the more you explain it, the better you can learn it and the more efficient you become at it.*

Participant 4 explained that PAL helped to explain and teach athletes about their injuries:

*Just being able to explain stuff to a younger student and having to think it through in your head and being able to teach it helps you to also be able to teach that to your athlete when they have questions . . . I feel like it was easier to answer some of the athletes’ questions because I had already explained it before to somebody.*

She said the following when asked about any benefits that she gained through serving as an upper classman mentor:

*I definitely think that I gained a little bit of teaching experience in a way. I learned how to answer questions and look at things differently. I am in graduate school and I have a teaching assistantship, and I can definitely see those same qualities of where I needed to look at things differently and try to understand where someone is coming from who doesn’t understand the material, necessarily. Like I can teach it, but if I understand it, it might be hard for me to flip it around and try to understand why somebody else might not understand it. I definitely think that helped me out a lot. Because I would teach a lot of the underclassmen and I would hold tutoring sessions for them or review sessions and come in extra hours and help them study for practicals. So I think it really came to my advantage with being a teaching assistantship in graduate school just the different characteristics and traits that I learned from doing that (peer mentoring).*

Participant 12, within her role as a graduate teaching assistant, developed her teaching methods and learned different learning styles through PAL. Participant 12 explained that:

*I learned how to answer questions and look at things differently. I think it really came to my advantage with being a teaching assistantship in graduate school just the different*

*characteristics and traits that I learned from doing that . . . working with all types of students in my undergrad really helped to reinforce how to approach each of the different learning styles appropriately.*

Participant 10 also stated that through PAL she learned different teaching styles: “I think that being a peer mentor helped me kind of know how to work with students and teaching people different skills in athletic training.”

In the current role of a high school athletic trainer, Participant 11 works with his student aides in the athletic training facility and reported that he gained teaching skills through the PAL curriculum:

*I think it helped me; you learn to interact with people. It really helps with interaction and fine tuning and explaining things to people and teaching skills. I use a lot of those things that we did when I was in college, and any time any kind of learning point comes up, I try and take the time with them (high school student aides) in the same fashion that I learned things or particular skills.*

The majority of the participants teach in their athletic training role. Nine of the 13 stated that the PAL pedagogy had an impact on their teaching skills that included improved skills in teaching, deeper understanding of learning styles, “teaching while working,” and, additionally, learning while teaching.

### **Better Clinical Reasoning**

Many students stated they learned to “throw ideas” off each other that assisted in differential diagnosis skills and that they use this improved decision-making skill as athletic trainers. Eight of the 12 participants stated that their clinical reasoning improved as a result of their involvement in a PAL curriculum. Of the remaining 4 participants, 1 stated that it might have helped a little, while 3 of those participants felt that critical thinking was developed through more time and experience in the profession, not related to PAL. Most participants stated that while working with their peers in PAL they learned to clinically reason through bouncing ideas off each other during their athletic training education, developing skills that prepared them to think critically and to differentially diagnosis on their own. Geisler and Lazenby<sup>3</sup> state that *clinical reasoning* is athletic trainers making multiple decisions based on myriad dimensions of knowledge and skill sets; the skillful gathering of subjective and objective data; complex interactions with the patient, family members, and other providers; and real-time problem solving. This definition of clinical reasoning accurately describes how the students feel the PAL pedagogy impacted them as graduates.

Participant 12 said that because of the PAL curriculum she learned to talk through situations that helped with clinical reasoning. Through the peer mentoring, her classmates would have discussions, which, she stated:

*. . . allowed me to feel confident in my decisions that I make when I am alone when I don't have anyone else to consult because I have talked all these situations out before. It really has allowed me to feel confident in the decisions that I make when there is nobody else there.*

Participants 5 and 11 agreed that through the PAL curriculum, they were able to look at the big picture and be able to use differential diagnosis with their peers. This has now carried over to their current positions. Participant 5 stated that:

*Sometimes I get caught up on one specific thought or injury that I think it is. Through mentoring peers I am now reminded by students that I am mentoring or by my peers who are asking questions, and I am reminded about other things that I need to look for, other things that I might have missed.*

Participant 11 said that “it helped me to understand the entire evaluation process,” and when asked if peer mentoring assisted with her clinical reasoning, Participant 8 stated that she is not narrowly focused because of the PAL curriculum:

*I know it happened in my undergrad and it happens less now, but when an athlete would come in through undergrad and they would say “my knee hurts” or “my ankle hurts,” I would get too focused. And I would essentially get tunnel vision, and I get 1 or 2 positive tests and I would leave out other things. And I would do the same thing with my classmates, and we would practice our evaluations and they would say “make sure you rule out everything else,” and it would help my brain moving and keep my brain flowing so I didn't get stuck in the tunnel vision.*

Eight of the research participants felt the PAL curriculum assisted in their transition from an athletic training student to an entry-level professional because they were able to think clinically and differentially diagnose on their own.

### **Improved Socialization**

Participants stated that through the PAL curriculum they developed relationships with their peers, and several participants learned skills important in socializing and networking with other health care professionals. Six of the 13 participants stated they gained socialization skills through the PAL curriculum. Generally, participants said they developed relationships with their peers, and 3 of the 6 stated that they developed skills in socialization with other graduate assistants and health care professionals. Those acquired skills in socialization were beneficial in their current jobs.

Participant 7 served as an upperclassman peer mentor and felt that her role was to mentor and help the underclassmen develop “companionship” with her and fellow peers. When Participant 13 was asked what benefits he gained from being involved in the peer interaction, he stated that:

*Networking and socializing and getting to be friends with 1 or 2 of the students that are a year ahead of me. This helped me out later on down the road. When they got out of school and had a career and I networked with them and [it] made a few opportunities available to me that way, just because I had gotten to know them.*

Many of the research participants felt the socialization that occurred during their PAL experience was extremely important, and they transferred this to their current practice as an athletic trainer. Learning these important socialization skills

provided benefits working with other graduate assistants, athletes, coaches, and other allied health care professionals.

### **Deeper Understanding Contributing to Success on the BOC Examination**

Ten of the 13 participants stated the PAL curriculum deepened their understanding of athletic training content required of them as an entry-level professional, and 6 of the 13 participants stated that success on the BOC examination was due to their involvement in a PAL curriculum. The majority of participants responded that through teaching fellow peers skills and content in athletic training, they had a better understanding of the concepts and that this assisted them in review of material that led to their success on the BOC examination. Two interview participants even stated that through the PAL curriculum they were able to review for the BOC examination. Participant 8 stated that:

*[It] gave me a chance to help review for the BOC and some of the questions and concepts that they were reviewing. It helped them and helped me because I remembered being at the same spot. And I was trying to break things down to a level so they wouldn't have to try and figure things out on their own or research about the concepts and ideas that they were learning in class or that we would discuss when we had questions.*

Participant 11 also reflected that it was key to

*Study for the exam which I was getting ready to take. I wouldn't say I forgot about stuff, but it kind of gets in the cobwebs and then when you get that underclassman asking for help it is a good process of really reviewing and you realize that you know more about it then you thought you did. Going over it with them is a great way of learning as well.*

Participant 2 said that PAL impacted her BOC examination, and when asked to clarify she stated:

*Through my peer mentoring experiences with my fellow students I was able to recall what I had learned much easier than just memorizing a textbook. At our clinical rotations, once practice had started and the athletes were no longer needing our attention, the athletic training students would practice special tests, review anatomy, go over position statements, review medical terminology, and other things. You name it, we reviewed it. We went through any evaluation, upper extremity, lower extremity; we would go over concussion evaluation; how to handle different injuries; we would discuss general medical conditions; we would review rehabilitation; it was kind of like we used each other as an open book study guide. Instead of just reading a book we were able to quiz each other.*

Participant 8 also reported success on the BOC examination due to his PAL curriculum:

*It definitely helped. Athletic training is tricky in that we learn out of the textbook but we have to learn and practice on real patients. Maybe it's just me, but I really struggle with some of the concepts until I can actually put them into practice. So having someone to just review the concepts together and make sure that I was doing them correctly, and just reviewing the*

*concepts in and of themselves, was really helpful to my success on the BOC.*

When Participant 9 was specifically asked how the PAL curriculum led to success on the BOC examination, this was explained:

*When I took the BOC exam the questions weren't worded in a way that you would get from a textbook. They were basically scenarios that you would have to draw knowledge from the textbook. They were scenarios or kind of fake experiences, and you had to figure out how to use the knowledge that you learned in the classroom. So I think the experience with peers and the hands-on stuff that I did with them helped me with that (BOC exam) because I had already done some of that.*

Participant 11 felt that through the PAL curriculum he was better prepared for the exam and stated that he “contributed a lot of the students passing (the exam) in the past because so much of peer mentoring in school helped. When I got to the test it was sort of a breeze.”

## **DISCUSSION**

All participants in the study presented here stated they benefited from their PAL experience through their athletic training education. This is supported by literature from previous research<sup>2,6-16</sup> that had investigated the benefits of PAL in health-related fields. However, most of the research that has been conducted thus far has been on the immediate benefits from a PAL curriculum rather than on looking at long-term or postgraduation impact. This study investigated the students' experience 1 to 2 years after graduation and how this pedagogy impacted them within their first job.

### **Improved Communication**

Research participants consistently stated that communication skills had the greatest impact on their practice as an athletic trainer. Athletic trainers take on many roles while overseeing an athlete's medical care, and therefore good communication skills are vital. Athletic trainers must effectively communicate with athletes, coaches, parents, athletic training students, team physicians, other health care professionals, administrators, and educators.

Formal education can only go so far in preparing students to communicate effectively in their first jobs. Massie et al<sup>20</sup> investigated the educational preparation of athletic trainers working in the clinical setting and found that while employers were satisfied with graduates' technical skills, they were less satisfied with the graduates' interpersonal and communication skills. Schilling<sup>21</sup> also looked at graduates in clinical settings and found that they felt well prepared for the clinical setting but were weak in the areas of insurance and communication skills. Carr and Volberding<sup>22</sup> also found that employers most commonly cited interpersonal communication as a weakness of athletic training graduates.

Research participants in the study presented here stated that the PAL curriculum assisted in developing communication skills with not only health care professionals but also with coaches, parents, athletes, and fellow peers. Thus, PAL may be able to impact the students as they transition to a

professional role in which they are required to communicate effectively with their sports medicine team.

Researchers<sup>7,12,23-25</sup> have investigated PAL and determined that through this pedagogy, communication skills improve. Kerr and MacDonald<sup>24</sup> investigated if students could effectively communicate health promotion to peers. The students took part in a creative course in which they worked together through simulations. Results from Kerr and MacDonald<sup>24</sup> showed that students' communication skills improved. Buckley and Zamora<sup>7</sup> investigated the effects of PAL that involved upperclassmen peer-tutors instructing underclassmen in reviewing examination procedures of particular body systems and found that participants who served as a peer-tutor enhanced their skills for practical teaching, confidence with speaking to groups, and communication skills. Mackey et al<sup>12</sup> found similar results with a PAL pedagogy in which students developed better communication skills. The findings from this study support the research literature demonstrating that PAL benefits students in communication skills postgraduation.

### **Improved Confidence**

Entry-level athletic trainers must be confident in their skills as they transition from completely supervised educational experiences to experiences as independent health care practitioners who make clinical decisions. Many of the research participants in the study presented here stated they believed they were able to apply their skills with confidence in their current role as a result of their experiences in the PAL curriculum.

Evidence demonstrates PAL improves students' confidence in areas of athletic training, education, nursing, and medicine.<sup>6,7,11,12,14,16,26-29</sup> Vaidya's<sup>28</sup> research found that within education, students reported a greater sense of self-confidence about their knowledge content and emotional and intellectual development as a result of being in the helper role with peer teaching. Mackey et al<sup>12</sup> stated that athletic training students believed PAL to have improved their confidence. Henning et al<sup>6</sup> found that athletic training students were more self-confident when working with peers on clinical skills than when working with clinical instructors. Nursing research<sup>29-31</sup> demonstrates that when nursing students were in the role of a peer mentor, they had improved self-confidence. Buckley and Zamora<sup>7</sup> found that serving as a peer-tutor produced improved confidence when speaking to groups. Athletic training education research<sup>14</sup> has also investigated PAL, providing evidence that 44.4% of students from a peer-tutor group had more self-confidence when practicing psychomotor skills with a peer-tutor. It appears that as students collaborate within their clinical education and practice skills through PAL, they improve their confidence. This investigation, along with the evidence provided, demonstrates that students engaging in PAL can develop more confidence in their skills postgraduation.

### **Enhanced Teaching Skills**

Athletic trainers are often called upon to teach athletes, coaches, parents, and athletic training students as well as other health care professionals about athletic-related injuries. Kurtz et al<sup>31</sup> found that when medical providers discuss with

patients their diagnosis and treatment plans, the patient in turn is educated, which results in positive health outcomes for the patient. Teaching is often part of an entry-level athletic trainer's job. However, during athletic trainers' education, very little time is spent on developing the students' teaching methods. The findings from this study provide evidence that research participants learned valuable teaching skills as well as different learning styles through the PAL experience. Several research participants stated that the teaching skills gained through PAL not only carried over to their current practice with teaching athletic training students but also affected their teaching and work with athletes, patients, coaches, and parents.

Several studies<sup>7,13,16,32-34</sup> have demonstrated that PAL can serve as a vehicle to help health care students learn to teach. Escovitz<sup>16</sup> used senior-level medical teaching assistants to teach underclassmen clinical skills and found that the students became better teachers through serving as teaching assistants. Aviram et al<sup>32</sup> demonstrated that with peers serving as upperclassmen coaches and mentors, the research participants learned instructional techniques. Nikendei et al<sup>13</sup> investigated a purposefully implemented PAL curriculum and found that peer tutors enhanced their personal teaching skills. Silbert and Lake<sup>34</sup> also demonstrated that when students serve as peer-tutors in teaching clinical examination skills, the peer-tutors learned valuable skills and gain experience in teaching.

Buckley and Zamora<sup>7</sup> also found that students who often volunteered to serve as peer-tutors did so in part to improve their own teaching ability as well as their skills. Desire to improve teaching skills was also evident in the study presented here when Participant 12, who currently is serving as a teaching graduate assistant, said she held "tutoring sessions for them or review sessions and came in extra hours to help them to study for practicals." While Participant 12 did show more interest in volunteering for teaching roles in her undergraduate experience, the majority of participants in this study stated that they currently had some involvement with teaching.

Teaching is an important skill for athletic trainers and is often not formally taught in the classroom. With accreditation standards and institutional requirements, athletic training programs are too pressed with classroom time and number of credits to add content in teaching methodology to the education of athletic trainers. As administrators look for innovative techniques for athletic training students to gain valuable teaching skills, PAL may be added without straining faculty and clinical staff loads. Incorporating teaching skills through a PAL curriculum may benefit the student, whose first job may include supervising athletic training students. This investigation, along with previous research, supports the evidence that PAL can enhance valuable skills in teaching.

### **Improved Clinical Reasoning**

Athletic training educators must assist in transitioning an athletic training student to a graduate in an entry-level athletic training job who must think independently and reason clinically. Within the student's clinical experiences, a peer can assist in problem-solving skills that facilitate critical thinking and clinical reasoning. Could PAL be a pedagogical tool that can help students clinically reason on their own as

they become entry-level athletic trainers? A review of literature demonstrated that through PAL, students gain important critical and clinical reasoning skills.<sup>35-37</sup> Ladyshewsky<sup>36</sup> studied the effectiveness of peer coaching on physiotherapy students' clinical performance and clinical reasoning and found that students involved in peer coaching significantly outperformed students not involved in peer coaching in physical examination scores, communication, and clinical reasoning. Bos<sup>35</sup> also found that nursing students enhanced their critical thinking skills and depended less on their clinical instructors through collaborating in the clinical setting. Shamir et al<sup>37</sup> also found that education students developed a greater depth of critical thinking when involved in a PAL program.

Peer-assisted learning helps students to organize their thoughts and creates an environment in which students communicate instructions, responses, and thoughts to one another. Many of the research participants in this investigation stated that through their PAL experiences, they would "bounce ideas" off each other that in turn assisted in their problem solving and in gaining the clinical thinking skills they now use in their current employment. The findings of the study reported here, which are supported by those of previous studies,<sup>35-37</sup> demonstrate that PAL reinforces higher-order thinking and clinical reasoning and that this carried over to participants' practice as entry-level athletic trainers.

### **Improved Socialization**

Six of the research participants in the study reported that through the PAL experience they learned socialization skills as well as how to network with other health care professionals. The research of Vaidya<sup>28</sup> and Mackey et al<sup>12</sup> supports this finding. Vaidya<sup>28</sup> found that through peer coaching, students had to increase their interaction between themselves and their peers, which resulted in the acquisition of socialization skills. Mackey et al<sup>12</sup> demonstrated that participants developed stronger relationships with peers.

The findings from this study provide evidence that socialization was important to many of the participants. Research Participant 13 believed that his PAL experience assisted him in obtaining his first job through networking with his upperclassmen peers once they were out in the workforce. Within PAL, students are required to interact with each other in a collaborative relationship as the peer teacher works with the underclassman peer in skills and content in athletic training. In short, PAL can assist students in developing socialization skills.

### **Deeper Understanding Contributing to Success on the BOC Examination**

A student in the role of a peer-teacher spends time preparing and clarifying the material, and through PAL, students work in collaboration through the peer learning, and the student who is peer-teaching gains a deeper understanding of concepts. As has been previously mentioned with PAL, both the peer-teacher and peer-student benefit from this collaborative learning. Glynn et al<sup>38</sup> stated that PAL was a process of exchange and was recognized by both the student learners and the student tutors. Within the PAL experience, the peer who is teaching gains a deeper understanding in the subject matter or

clinical skill. In addition, the peer-student feels more comfortable with the peer who is teaching, as compared with traditional teaching methods.

This benefit of a deeper understanding in content through PAL is supported in education research as well as in the health care professions.<sup>28,38-40</sup> Annis<sup>39</sup> found that students who read material with the expectation of teaching it and followed through with teaching a peer scored higher on a general competence test compared with groups who only read the material and never taught a fellow peer on that content. Similar results were found by Benware and Deci,<sup>40</sup> in a study in which participants who learned thinking they would have to teach someone were more intrinsically motivated, had higher conceptual learning scores, and perceived themselves to be more actively engaged with the environment, compared with the participants who had learned only in the context of being examined. Vaidya<sup>28</sup> found that peer-teachers reported a better understanding and interest of the subject matter, and participants also showed long-term retention of what was learned. Peets et al<sup>41</sup> found that medical students who were involved in teaching small group sessions improved their knowledge acquisition and retention.

Vaidya<sup>28</sup> also found that research participants in education felt that remembering and using learning depends upon restructuring and relating the material to other meaningful experiences. As a peer teaching another peer, Vaidya<sup>28</sup> found that research participants would often organize and reorganize their own learning in order to explain it to a peer. Participants in this study stated similar findings regarding their PAL experience. Participant 3 mentioned that "when you learn something and read it in the book, it is different than when you do it and learn more about it, and then you go and teach it you fully understand what concepts you are trying to grasp." Participant 12 stated that through the PAL process she had to look at things differently; she had to "look at it from their perspective too. It helped reinforce those proficiencies in my head as a senior."

Ten of the 13 participants stated that the PAL curriculum had impacted their current practice as an athletic trainer and that through this teaching strategy they had gained a deeper understanding of athletic training content. These findings are supported in the literature.<sup>28,39-41</sup> Education research<sup>28</sup> has stated that the underlying premise behind a student teaching another peer is that the student who teaches gains a deeper understanding of the subject matter or clinical skill because the process of teaching inherently requires a deepening of knowledge. This was demonstrated through the investigation provided here.

The results of a deeper understanding of the content led to the research participants' success on the BOC examination. Almost half of the research participants in this study felt that their PAL experience contributed to their success on the BOC examination. The participants said that during the PAL experience they had to review information with each other, and Participant 4 stated that this experience was the key to his success on the examination. Within the interview process, success on the exam was not defined. Therefore, how each participant interprets success may be different. The research participants stated through the interview process that the PAL experience helped them prepare for the BOC examination.

Research participants were asked a follow-up question from this response, and participants felt that PAL contributed toward their success on the examination. Half of the research participants stated that PAL did impact their success on the BOC examination.

Evidence in health care fields demonstrates that students obtain higher scores when taught with a PAL curriculum as compared with other pedagogy.<sup>2,8-10,15,42-44</sup> Iwasiw and Goldenberg<sup>2</sup> demonstrated that students taught by their peers had significantly higher cognitive test scores on a surgical dressing procedure. Burke et al<sup>8</sup> also found similar results when investigating PAL-trained students with a musculoskeletal system examination. Data demonstrated that 93% of the PAL-trained students passed the musculoskeletal system examination, compared with 67% of those participating in the traditional curriculum approach.

Weyrich et al<sup>15</sup> looked at comparing test scores in 3 experimental groups: a PAL group, in which skills lab training was assisted by senior-student tutors; a faculty-led training group, in which training was assisted by consultants in internal medicine with experience as skills lab teachers; and a control group, in which no skills lab training took place. The students were tested on injection techniques, and data supported the notion that PAL students were as successful on the examination as were the faculty-led group, and they were significantly more successful than the control group. The authors were able to conclude that PAL is a successful method of learning and that it can be just as effective as faculty-led training. Heckmann et al<sup>9</sup> found that students participating in the peer-tutor group scored slightly higher on a written test as compared with a control group taught by postgraduate tutors. While data to support PAL-led review over faculty-led review for the purpose of examination success are still limited, education administrators cannot overlook the previously mentioned data that showed that success with PAL added to a traditional curriculum and its impact on test results.<sup>2,8,41</sup>

Presently only 2 studies<sup>43,44</sup> have investigated whether PAL has an impact on the medical or board examinations. Odell<sup>43</sup> investigated if students who participate in a PAL curriculum have greater success in passing the BOC examination. Odell<sup>43</sup> wished to gather first-time pass rates for comparing programs that implemented PAL compared with those that did not. However, her results were statistically insignificant as a result of a lack of programs that were willing to share pass rate data. Wong et al<sup>44</sup> investigated peer teaching in medical schools and gathered data to investigate if students who took part in peer-teaching had academic improvement as compared with students that did not participate in peer-teaching. Wong et al<sup>44</sup> collected data that included US Medical Licensing Examination (USMLE) scores and final medical school grade point average (GPA). Results demonstrated that students who took part in the peer-teaching had significantly higher USMLE scores and final medical school GPAs than did non-peer-teaching students. In contrast to Odell,<sup>43</sup> Wong et al<sup>44</sup> demonstrates that students who participate in peer-teaching benefit on Board examinations.

The findings from this study demonstrated that PAL pedagogy may be a useful aid in the successful completion of Board examinations. Data does show that students improve on cognitive and practical test scores when placed in a PAL

curriculum.<sup>2,8-10,15,42-44</sup> Data are lacking with regard to whether PAL impacts Board examinations. As athletic training students work with their peers in teaching and learning, the previous data demonstrate that students benefit in understanding the content better and review the material that in turn may lead to success on the BOC examination.

## Recommendations

Evidence demonstrates that a PAL curriculum positively influences athletic training students' transition to entry-level professionals. In general, the results reveal that PAL influences the graduates through improved communication and confidence, enhanced teaching skills, better clinical thinking, improved socialization, and a deeper understanding contributing to success on the BOC examination. Previous research supports these findings in other health care fields as well as in education.

An interesting finding from PAL was the graduates' perception of how this pedagogy impacts their ability to teach. Teaching methodology is not a current required content area, as stated by the CAATE.<sup>1</sup> However, athletic trainers naturally have teaching involved in their profession when working with athletes, patients, coaches, administrators, athletic training students, and educators. Entry-level athletic trainers need to be adequately prepared to step into these teaching roles, educating their patients about injuries and treatment plans as well as supervising athletic training students in clinical educational experiences. Kurtz et al<sup>11</sup> demonstrated that when medical providers teach their patients about their diagnosis and treatment plans, the health outcomes of the patient are more often positive. There has also been a push in the medical field to incorporate teaching for medical students as a result of the United Kingdom's General Medical Council statement,<sup>32</sup> which states that medical graduates must be able to demonstrate appropriate teaching skills. However, many institutions don't have the financial support to add more faculty and instructional resources to incorporate teaching into athletic training and medical education. Therefore, faculty and administrators must look at creating new educational environments that can be delivered at a lower cost. A PAL curriculum in which peers collaborate together in clinical education could benefit the peer-teacher in terms of gaining valuable teaching skills.

It was surprising to find that many of the participants stated that their PAL pedagogy had an impact on their BOC examination. No interview questions asked about the Board exam, but 6 of the 13 participants did state that PAL influenced their scores. Presently the CAATE<sup>1</sup> is requiring all athletic training programs to publish data on first-time passing rates. With the new standard, programs are required to demonstrate a first-time aggregate passing rate of 70% on the BOC examination. With these changes, athletic training education administrators are looking for evidence of what teaching methods are effective in helping to prepare students for success on the BOC exam. Many factors can contribute to a student's success; however, with the findings from this study and data from other research on PAL, athletic training administrators have some evidence that PAL could help students in obtaining valuable skills that may be missed in the traditional curriculum.

As was seen in this study, all programs implemented a planned PAL curriculum. Peer-assisted learning can occur in an unplanned or unintentional setting. Participants stated they found benefits as a graduate from a planned PAL curriculum. Participants were required in their respective curriculum to serve as either a peer-student or a peer-tutor. Several participants stated they were required to have proficiencies checked off by a peer before working with a preceptor or before applying skills on a patient population. Participants also stated they were required to meet with a peer to practice and teach clinical skills. Henning et al<sup>6</sup> found that students felt less anxious performing clinical skills on patients in front of their peers than in front of their clinical instructors, which supports this research on PAL. Henning et al<sup>6</sup> concluded that PAL is occurring in clinical education and further stated that PAL should be purposefully implemented in athletic training curricula.

Weidner and Popp<sup>14</sup> and Morris<sup>45</sup> conducted research in athletic training that investigated intentional PAL. Weidner and Popp<sup>14</sup> assessed the effectiveness of intentional PAL and found that PAL was a valid method of improving athletic training skills and concluded that PAL should be deliberately integrated into athletic training education. Morris<sup>45</sup> investigated intentional PAL and found that students believed PAL was beneficial toward their learning in both the classroom and nonclassroom settings. Weidner and Popp<sup>14</sup> and Morris<sup>45</sup> support the study presented here in which intentional PAL benefits students.

While intentionally planned PAL shows numerous benefits, research also has investigated whether formal instruction is needed for the peer-tutors. The peer who is teaching a peer-student should feel confident in his or her skills and may benefit from having some formal instruction in teaching. Instruction for peer-tutors has been supported through research.<sup>8,9,13,15,46-48</sup> Weyrich et al<sup>48</sup> developed training sessions for their peer-tutors, and they concluded that sufficient tutor training and preparation is crucial for the success of peer teaching models. Peer-mentor training could take place early in the students' athletic training education. As has been demonstrated through the research in other health care fields, when PAL is intentionally planned and implemented with PAL training sessions, both the tutor and peer may see benefits from this pedagogy.

If programs are looking to implement a PAL curriculum, Stevens and Brenner<sup>49</sup> presented several practices to be included in developing PAL experiences from a nursing context. The authors<sup>49</sup> suggested using the following practices to help promote PAL into clinical education: emphasize the mentoring approach to move from concrete to relativistic and contextual thinking; incorporate learning strategies that encourage reflective student-to-student learning as a central component to clinical education; require student preparation and participation in PAL in their clinical education; and provide guided interactive activities that foster collaborative learning. Other research<sup>8,13,33,47</sup> has been conducted that investigated an implementation framework for PAL, and this work is worth reviewing if programs are interested in developing PAL in their respective programs.

Athletic training is moving toward a more evidence-based practice both in clinical and teaching settings; athletic training

educators need to continue to pursue pedagogical research that will ensure their teaching strategies are meeting the needs of students as they enter into the varying workforce. This study was the first to investigate how PAL impacted the students once they were out practicing as entry-level athletic trainers.

## Limitations

Limitations of the study presented here included the following: verification of the experiences that the students had with PAL could not be determined; data were collected through phone interviews rather than face-to-face interviews; and the sample size was small.

While exact verification of how each program implemented PAL within its curriculum was not performed, all participants graduated from intentional PAL programs. Each student's experience was slightly different in PAL; 10 participants served in peer-student and peer-teacher roles, 1 served only as a peer-tutor, and 2 served as peer-students. While students may have had varied experiences, they all discussed the common themes of communication, confidence, teaching skills, clinical reasoning, socialization, and a deeper understanding that contributed to success on the BOC examination.

Data for this study were collected through phone interviews. In qualitative research, face-to-face interviews may allow for a richer description of how PAL impacted the students postgraduation. However, as a result of cost and given the attempt to gather information from graduates of differing athletic training programs, phone interviews were more practical.

Small samples sizes are commonly found in qualitative research. Thirteen participants were interviewed and saturation occurred at 13, and, therefore, no additional participants were required. Small sample size in qualitative research is statistically driven, and one cannot make a generalized statement of the entire population. However, the purpose of the research presented here was to gain a deeper understanding of how PAL influences graduates. The data and results from 13 participants must be carefully generalized to all athletic training students. Future research should involve investigating PAL through quantitative analysis. However, it must also be noted that in a final response from many of the participants, when they were asked if there was anything else they would like to discuss about their experience, they stated that they would recommend athletic training programs implement PAL.

Some participants did mention limitations with PAL. A few research participants stated they often received varied responses to the same question when asking several of their peers, and some stated they received wrong information. One participant mentioned that his education was his responsibility, and he felt that students should still verify peers' answers by looking up the information to ensure that they received the correct answers. When students serve as peer-teachers they must still recognize they are early in their career and are not yet professionals. Often the research participants stated they were asked questions by their peers for which they didn't know the answers. These situations created a learning environment for both the student and peer-teacher as they

collaborated to discover the answers. The participants generally stated that the benefits of PAL outweighed the limitations.

## CONCLUSIONS

This investigation was the first to explore students' perceptions of a PAL curriculum after graduation and how it impacted them in their current jobs. Evidence gathered demonstrated that this pedagogy does impact the students within the first 2 years after graduation; however, additional studies in athletic training should be conducted investigating PAL and how it impacts students when there is formal preparation of the peer-teacher in a PAL setting. As athletic training educators, we must be continuously researching pedagogical tools that provide evidence that the teaching method positively affects the athletic trainer.

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