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ORIGINAL RESEARCH

Simulations and Standardized Patients in Athletic Training: Part 2 Athletic Training Educators' Perceived Barriers to Use

Jennifer W. Cuchna, PhD, LAT, ATC*; Stacy E. Walker, PhD, ATC, FNATA†; Bonnie L. Van Lunen, PhD, ATC, FNATA‡
*Athletic Training Program, Longwood University, Farmville, VA; †School of Kinesiology, Ball State University, Muncie, IN; ‡College of Health Sciences, Old Dominion University, Norfolk, VA

Context: Simulations and standardized patients (SPs) are currently being used by athletic training educators to teach and evaluate students. There is currently a lack of information about the ways in which simulations and SPs are used in athletic training education. Understanding their use and any barriers to their use could assist with development of future resources for faculty.

Objective: The purpose of this study was to explore how athletic training educators are using simulations, including SPs, and their associated perceptions of the barriers to the use of these strategies.

Design: Qualitative.

Setting: Conference room with table and chairs.

Patients or Other Participants: Twenty-one athletic training educators (6 males and 15 females, 39.4 ± 7.96 years) participated who currently used SPs and/or simulations in the education of their students.

Main Outcome Measure(s): Semistructured focus group interviews, lasting 45 to 50 minutes, were conducted, and a general inductive approach was used to analyze the data. Trustworthiness was established via member checking, peer debriefing, and multiple-analyst triangulation.

Results: Four themes emerged: (1) standardized patient encounters, (2) simulations, (3) valued educational experiences, and (4) barriers. This article will focus on the theme of barriers. Six of the 21 participants were using SPs in the education of their students, while all participants were using some form of simulations. The overarching theme of barriers was further divided into the subthemes of faculty time, access to resources, and financial cost.

Conclusions: Barriers exist regarding the implementation of simulations and/or SP use in athletic training educational curricula. These barriers place restraints on faculty time and institutional resources. Institutional and program access to resources as well as the financial cost associated with the use of SPs and/or simulations are concerns that should be discussed when considering the use of these educational strategies within a program.

Key Words: Focus groups, qualitative, clinical education, clinical skills

Dr Cuchna is currently Assistant Professor and Clinical Education Coordinator of the Athletic Training Program at Longwood University. Please address all correspondence to Jennifer W. Cuchna, PhD, LAT, ATC, Athletic Training Program, Longwood University, 201 High Street, 106 Willett Hall, Farmville, VA 23909. cuchnajw@longwood.edu.

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KEY POINTS

- Simulation-based learning and assessment is becoming more commonplace within athletic training in the acquisition of clinical skills.
- Time for implementation, access to resources, and financial cost were barriers experienced by participants.
- Participants identified perceived barriers to simulation-based learning while also recognizing the value of such use within their curricula.

INTRODUCTION

The athletic training profession has developed through changes within education to align with other health care professions in delivery of content. In doing so, athletic training educators are using more educational tools and strategies used by other health professions during the clinical preparation of their students.[1,2] Educational strategies, such as simulations, that foster the application of knowledge and skills into real-world patient encounters have been successful in other health professions such as medicine,[3–7] nursing,[8–12] physical therapy,[13–15] and athletic training.[16–19] The risk-free environment that simulations provide is a beneficial strategy that helps students develop various skills which prepares them for successful clinical practice and patient care.[20] Simulations can be considered an umbrella term to include educational strategies such as role play, simulated patients, case scenarios, the use of a simulator, or standardized patient (SP) encounters and often includes varying levels of realism based on the technology involved.[1,20,21] Standardized patients are individuals trained to portray an injury or illness in a consistent manner to multiple learners.[22] Whether for teaching or evaluating a student's performance, SPs have been used by many health care professions in the clinical preparation of students.[6,23] The unpredictability found in clinical education for both quantity and quality of learning experiences has resulted in educators using simulations, including SPs, to provide a well-rounded preparation of their students.

Though historically there has been an abundance of literature to support the use of simulations within medical education,[3–7,24–28] there has only recently been evidence to support such educational strategies within athletic training.[16–19,21–23,29] Even so, the research available in athletic training has been limited to small university samples, with very few studies identifying the perceptions faculty have of the educational strategy, much less the barriers that exist in the use of the educational strategy. The purpose of this study was to explore how athletic training educators are using simulations, including SPs, and their associated perceptions of the barriers to the use of these strategies within an educational program.

METHODS

Methodological Design

A phenomenological research approach was used to complement the emergent nature of the study design. Through the participants' description of their lived experiences, the researchers gained a better understanding of the participants' perceptions of simulation and SP use within their curricula and the barriers to such use.[30] Inherent to the design of this study was the use of a social constructivist paradigm which can be seen in the multiple contextual perspectives of the participants and the knowledge being sought through the social interactions created by the simulation and SP encounters.[30]

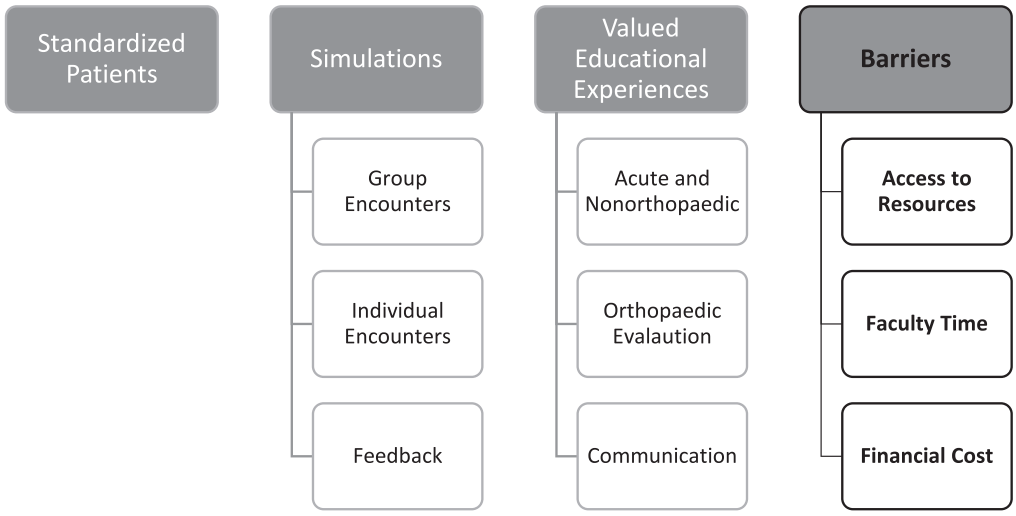
Given the process of inquiry involved in general inductive analysis, multiple research team members were necessary. A research team trained in qualitative inquiry and analysis was formulated to capture the multiple perspectives and opinions that arise in qualitative data inquiry and aid in the reduction of researcher bias. The research team consisted of 4 athletic trainers: 3 researchers (J.W.C., S.E.W., B.V.L.) comprised the core research team, while 1 additional athletic trainer served as the peer debriefer (not an author). All research team members and the peer debriefer were trained in qualitative inquiry. The use of a peer debriefer provided objective bias to ensure the data was appropriately analyzed and the multiple perspectives of the participants were readily seen.

Participants and Participant Recruitment

Institutional review board approval was obtained before this study. Twenty-one athletic training faculty (6 males, 15 females) met the eligibility criteria and participated in 1 of three 45- to 50-minute focus groups. Participants were eligible if they were athletic training faculty attending a regional educators' conference, used simulations, including SPs, in their curriculum, and were willing to participate in 1 of the 3 focus groups. The average age of the participants was 39.4 $\pm$ 7.96 years, with 1 participant not disclosing their age. Eleven of the participants were program directors, 8 were clinical education coordinators, and 2 were athletic training faculty of professional athletic training programs at the undergraduate level ($n = 20$), postbaccalaureate ($n = 1$), and 1 participant taught in both an athletic training program at the undergraduate level and within an accredited postprofessional athletic training program. More detailed participant information can be found in our other similar study.[31]

Participants were recruited via e-mail and onsite at the Southeastern Athletic Trainers' Association (SEATA) Educators' Conference and the SEATA Athletic Training Student Symposium for participation in the study. An e-mail containing a description of the study and a survey link was sent to all registrants and/or assisting faculty for the student symposium 5 days before the focus groups. Participants were asked if they were attending the SEATA Athletic Training Educators' Conference or the SEATA Athletic Training Student Symposium, if they used simulations, including SPs, in their program, and if they would be interested in participating in 1 of 3 focus groups at the upcoming conference and to choose a focus group to attend.

Figure. Themes and subthemes.



Data Collection Procedures

Upon arrival to the focus groups, participants signed informed consent along with completing a demographic questionnaire (see table 1 in Cuchna et al[31]). Given that no previously established interview guide addressed the specific research aims of this study, the researchers developed a new semistructured interview guide before the data collection. The unique protocol consisted of 5 open-ended main questions and 5 more focused open-ended questions (see table 4 in Cuchna et al[31]) with potential questions used to probe more thoroughly when the researcher believed it was necessary. Content validity was established by sending the interview guide to two athletic training faculty members for review. The interview guide was piloted with one athletic training faculty member, and only minor modifications were made. The pilot interview was not used in the data analysis portion of the study.

Data Analysis and Management

All focus groups were transcribed verbatim, and an inductive content analysis was used to analyze the data.[30] Two members of the research team (J.W.C., S.E.W.) individually read through the transcripts and coded the data with labels. Each label was given a clearly defined meaning. Those codes were then organized into themes and then further analyzed to identify lower-order themes.[30] The two researchers then shared their themes, and consensus coding was established for each code meaning.[30] The themes and subthemes were used to create a final codebook. The accuracy of the codebook was confirmed through the use of the peer debriefer (not an author), who validated the content and accuracy of the findings as well as ensured that the subjective voices of the participants were well represented by the codes and themes that emerged. A more in-depth discussion of the data analysis and management procedures for this study were described in an earlier study.[31] The Figure displays the themes and subthemes that emerged.

Trustworthiness was established through member checking, multiple-analysis triangulation, and peer debriefing. The member-checking process used in this study allowed the researchers to send back each participant a copy of their focus group interview transcript for review with the use of their assigned pseudonym. Each participant could review the transcript for accuracy and clarity providing authenticity, sampling adequacy, and substantive validation before the study completion. By having more than one research team member code the transcripts and the review of the finalized codebook by the peer debriefer, multiple-analyst triangulation was established.

RESULTS

Four themes emerged from the data analysis: (1) SP encounters, (2) simulations, (3) valued educational experiences, and (4) barriers. This article focuses on the theme of barriers. The themes of SP encounters, simulations, and valued educational experiences were addressed in a different article, Part 1.[31]

Barriers was identified as the final theme that emerged from the data and was subdivided into faculty time, access to resources, and financial costs. This theme relates to the time, cost, and access to resources that are needed to implement simulation experiences, including SPs, within an educational curriculum.

Faculty Time

The subtheme of faculty time related to the added time and effort it takes to prepare for, conduct, and evaluate a simulation and/or SP encounter. Statements that related to physical time constraints of faculty, time required for simulation and SP training, and time to create each encounter represented this theme. Owen stated:

> *The challenge is that we do our practicals at the end of the semester, and so it's tough to get them back in to get the feedback and make any corrections before the semester ends. So that is our question, is when do you do it [SP encounters]? If we do it too early, they haven't had enough time to really practice their skills, or they haven't gotten those skills down.*

Additionally, Owen described the challenges associated with timing of the encounters and being able to have enough time

to go back through and review the encounters for feedback and grading:

> *You got a lot of students, and you got all these evaluations. . . it could be a 4-, 5-, 6-hour day to do practical exams, and at the end of the semester, you've got 3 classes of that for a final practical!*

Leah described the time restraints when providing feedback to her students and how she is unable to be present at times due to the volume of students:

> *[Students] debrief with each other. We like to put a preceptor in there as well. It kind of depends on how many people we have going at once because someone still has to run the scenario for the next group.*

Additionally, April commented on the struggle she has being the only faculty member in her program to conduct the simulations:

> *Mainly. . . because there's only 1 of me, and there's quite a few [students]. I go from group to group, make sure that each group is working cohesively, and that they're communicating and there's feedback going on within their group. . . And then we go into our practicals, which is very similar. . . long, long amounts of time!*

Louise was able to describe her thoughts about the excessive faculty time involved, but also the value of having simulations in her program with the following statements:

> *It's huge, I think. I wish they weren't so time consuming. But that's the key, it makes you know if you really want to do it right, to have that debriefing, to have them walk out the door and talk about it a couple days later. Even watching the video with them a couple of days later, it's not that immediate feedback, especially with that emergency care. So, what I really wish, half the time, is that we weren't grading because I think that's sometimes-what hampers learning. I think it's so artificial half the time. And they kind of know what they got, and if not, it takes time to know if they're comfortable doing it in real life or not. But I think active assigning of a score really hampers learning, in many ways. Those are the 2 things for me, time and having to grade it.*

Meredith commented on the time it takes for faculty collaboration in the creation of SP encounters:

> *We sit down as a faculty, and we bring in a physician from our College of Medicine, as well as a nurse from our College of Nursing, and we sit down and come up with what type of criteria within these scenarios that we feel the students should be [exposed to] key things.*

Julia also made supportive statements with regards to the faculty time involved in conducting simulations and SP encounters:

> *I think, for us, the patients, the SPs, the time it takes to [train], because we mentioned training and we spend maybe an hour, hour and half training 1 SP, and we do this 4 times a semester, and then they come back the day before we do a case, and we'll do a refresher, which is about another 45 minutes. That's not our class time. That's just our time. And then during the night of planning the SPs, we do 1 cohort, 22 students. We have 2 rooms running at 1 time, and we don't allow the students to go over 20 minutes. Usually, it's 15 minutes, but then the time, this is usually where it comes in, the time of watching all of those videos over.*

Providing realistic experiences for students to practice their skills is not a simple task for athletic training educators. The time needed to carefully create, complete training, and assess these encounters creates a barrier for the participants. Of the barriers identified by our results, faculty time was by far the most often mentioned by the participants.

Access to Resources

Access to resources relates to the participants ability to provide simulations, including SPs, through the use of a lab or center on campus, finding individuals to be trained as SPs or patients in a simulation, and preceptors being present to provide feedback. Doreen provided the following example of where, at this time, her program does not have access to the SP lab, which is on campus: "We use the simulations because of not being able to use the [SPs]. We don't have the ability to do that right now." A lack of access to resources to provide SP encounters was described by 1 participant by noting that his or her program could not find enough people to play the role of a patient. April made the following supportive statement about lack of resources: "So we'll use live patients, but due to the volume of student and the lack of live patients, we have to use adjuncts that we provide scripts. . . providing a pseudosimulated patient assessment." Other faculty expressed the lack of resources available directly to them at their institutions, even when simulation and/or SP labs were in other programs on campus. Anana made the following supportive statement for this by stating:

> *For us, I guess we use simulated patients. We have a brand-new medical school with an entire floor of SPs which we unfortunately do not have access to; however, we have used simulated ones for 4 years, and I think it's been beneficial.*

Even when labs or spaces on campus exist where other health care professionals engage in simulations, including SP encounters, it does not guarantee access. Aaron described the challenges in scheduling use of facilities by making the following statement:

> *We have to identify weeks, months in advance that we want the [simulation lab] for this evening, for this day, or that we want to be able to set up the patient for this scenario. So that's 1 of the resource concerns we have.*

Most faculty voiced their support for having access to use facilities and technology but still recognize the barriers that exist to having that access. While many participants had direct access to a simulation center, not all participants did. Those that did not have direct access to these resources had to implement simulations in creative ways. The lack of access to resources was often tied directly into the barrier of financial cost.

Financial Costs

The cost associated with the facilities, technology (simulators with varying fidelity, partial task trainers), and the hiring of SPs and/or simulated patient, refers to the theme of financial cost. Louise made the following remarks with regard to the financial cost involved in paying an individual to portray the patient:

We pay our graduate students, and for some practicals that aren't really simulations, they're strictly technique, like modalities for [physical therapy] and [athletic training] students, we do pay people to come in and have 20 ultrasounds done on them. So, we have some budget for that.

The following statement by Amber supported the financial cost and resource access issues that directly affected her budget:

The issue that I have specifically is access. We are housed in education and not with our nursing program. The nursing program has a whole floor of stuff, and we are not allowed up there, so they lend some models for airway. So other than that, we don't have access, so we've had to budget.

Peter richly describes his program's limited access to the simulation lab due to the inability to pay for the excessive financial costs associated with use of his on-campus facilities and resources:

We actually did a nice tour of our simulation lab at the nursing school. Very impressed. It was going to be $1500.00 an hour for us to use it. We are at the same school, same dean, who is the dean of 2 colleges. So they said they would give us a discounted rate of $1100.00 an hour. I don't understand. There are often times when the simulation lab is not being used, and they kind of recruited us. It felt as if they were saying, "Oh, this is someone who could come here and pay for some of our salaries to run this place." And I'm thinking, "Wow, it's a state school, and I pay taxes." So it was very frustrating, and we had a tour of where they had their SPs as well as their high fidelity [simulators].

Even with access to facilities to provide encounters, faculty recognized the financial burden placed on an institution and program in using simulations, including SPs. Louise made the following statement with regard to the cost of their facility and additional associated costs:

We actually—we spent three-quarters of a million dollars on it, and it's a 30-bed room in our basement lab. And we use it for clinical reflection. And faculty just said, "What would we want it to be able do?" We didn't know how much it was going to costs until the end. From the technology side, it's difficult to be able to see a recording very quickly, and that's what cost so much.

Participants also identified the barrier of financial costs that are associated with the use of simulations within their curricula. Financial costs could be related to the payment for use of the facility for their simulations, the simulators themselves, or even the monetary payment of individuals to play the role of an SP or simulated patient.

DISCUSSION

The results of the data analysis revealed the theme of barriers, which was then further divided into the subthemes of faculty time, access to resources, and financial costs. Faculty time was a concern for many and often deterred faculty from providing more encounters throughout the semester. Participants using SPs elaborated on the time involved in training and retraining SPs for a case, reviewing video of simulation and/or SP encounters, and also the time component involved in grading encounters. None of the participants were compensated either with additional monetary funds or added release time. Faculty time is not a surprising barrier. Simulations also required additional faculty time and came in the form of simulation setup and the actual operation of a simulator. The skills associated with the use of partial task trainers or mock patients were limited, making the use of simulated patients or SPs necessary for some types of encounters. Creating scenarios for simulations, including SPs, is time intensive.[16] Most medical programs have designated staff who help create the cases, recruit, and train the SPs.[4,16] Video recording both the simulations and SP encounters required the faculty to review the videos for student performance in order to provide feedback and appropriate grading. Viewing the videos was often considered a barrier and was a constraint of time on the participants because it is performed outside of class time. Most of the feedback provided was often immediately after an encounter, but participants also described written or verbal delayed feedback days after the encounter. The burden of time that is created by having to grade the encounters could be eased by eliminating the grading component for some encounters, as was echoed with support by some participants.

With regard to access to resources, not all faculty had access to simulators, SPs, or the rooms to house such encounters. For some, these resources were on campus, but for financial or other reasons, they were unable to use facilities, SPs, and/or simulators. The resources available to the participants varied. Some had 1 or more rooms that were available to them with SPs and varying types of simulators (eg, SimMan [Laerdal, Wappingers Falls, NY], iStan [CAE Healthcare, Sarasota, FL]), while others only had access to partial task trainers. Despite little to no access to resources, programs still found simulations and SPs valuable and made efforts to use them. In a feasibility study by Black and Marcoux,[15] the use of SPs was found to put no more financial restraint on the current program budget, providing a cost-effective strategy to facilitate students' needs in transition to practice and the acquisition of clinical skills. The study examined the feasibility of SP usage in a single physical therapy program, but they were only using SPs for 1 activity.[15] Research on learner cognitive load and simulation usage support the notion that small and simple activities are efficient and effective in fostering skill acquisition.[27,32] The quantity and complexity of encounters varies for each educational program, with the ultimate goal being to increase the learner's knowledge, skills, and abilities in a specific content area and prepare the student for real patient care. Faculty of programs just starting out with simulation and SP use may want to start off with 1 or 2 group teaching encounters a semester in the classroom to familiarize both themselves and their students with the process involved in an encounter. One method of introducing SPs is using small SP group encounters where students work together in groups of 3 to 4 and interact with 1 SP. This encounter could occur during and in the same location as regular laboratory or classroom time, helping to ease the cognitive burden on a learner adjusting to a new learning environment.[32] A program starting out could implement 1 or 2 of these per semester. These small SP group encounters have been found to increase confidence, promote reflection,[19] as well as improve psychosocial intervention and referral skills.[29]

Financial costs varied significantly across faculty participants. The financial cost associated with the use of simulations and/or SPs within a program could include, but were not limited to, the purchasing of simulation equipment, payment for use

of a simulation and/or SP learning center, and the hiring and training of SPs. Some faculty collaborated directly with other health care professions on campus, which enabled their use of simulations, including SPs. Collaboration across campus may ease the financial burden for some faculty as the simulator equipment and facilities can be shared, but not all faculty were able to collaborate with other health care professional programs on their campus for use of SPs and/or simulation equipment. The budgetary concerns of the participants varied from having to pay for access to simulation and/or SP facilities on campus to the payment of SPs to portray the cases they developed.

LIMITATIONS AND FUTURE RESEARCH

The results from our study add to the literature and describe the barriers that exist in the implementation and use of simulations, including SPs, within athletic training education. The results of our research are not without limitations. Though data saturation was reached, our results cannot be generalized to all professional athletic training programs. Further investigation needs to be conducted that relates to the effects of the educational strategy on program outcomes and patient care. Additionally, further investigation on the feasibility of simulation use, including SPs, within athletic training needs to be conducted with more robust study design and sampling pools. This study only addressed the perceptions of faculty and the barriers outlined by the participants; therefore, future investigations should examine academic administrative participant samples in an effort to better address the underlying barriers identified by this current study.

CONCLUSIONS

In an effort to continually foster quality and realistic patient encounters, athletic training faculty should continue to search for and use a variety of educational strategies. The support of literature for the use of simulation-based learning and assessment in medical education has been established[3,7,27] and shown to be beneficial in the acquisition of essential clinical skills.[1,3,5,6,12,21–23] The barriers to the use of these educational strategies seem to be exemplified in athletic training education due to several institutional factors. Institutional factors relating to the time constraints, access to resources, and financial cost involved in the use of simulations and/or SPs need to be weighed by individual faculty members when determining the use of either strategy in individual athletic training programs.

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