

Standardized Patients Provide Realistic and Worthwhile Experiences for Athletic Training Students

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Context: Standardized patients are more prominently used to both teach and evaluate students' clinical skills and abilities.

Objective: To investigate whether athletic training students perceived an encounter with a standardized patient (SP) as realistic and worthwhile and to determine their perceived comfort in future lower extremity evaluations with standardized and actual patients.

Design and setting: Cross-sectional. Athletic Training Research and Education Laboratory, on-campus athletic training room, and Clinical Proficiency Evaluation Room.

Subjects: Twenty-nine undergraduate athletic training students (17 female, 12 male) at a Midwestern CAATE-accredited institution who had completed a lower extremity orthopedic evaluation course in the past 12 months.

Measurements: A Standardized Patient Encounter Feedback Form consisting of 5 Likert scale items (1 = strongly disagree; 5 = strongly agree) regarding the participants' perceptions of SP encounters with foot/ankle and knee orthopedic cases (eg, worthwhile, realistic, confidence with future SPs and actual patients). Data was analyzed using descriptive statistics. Written comments regarding the strengths and weaknesses of the encounters were analyzed inductively.

Results: The participants indicated (90%-100% of the time) that: they agreed or strongly agreed that the encounters were worthwhile and realistic; the cases presented were appropriate; they were provided with adequate performance feedback by the SPs; and that their lower extremity evaluation skills were helped by the experiences. The participants indicated (86%-93% of the time) that they agreed or strongly agreed that the encounters made them feel more comfortable about future evaluations with standardized and actual patients.

Conclusions: It appears that SPs provide realistic and worthwhile experiences for athletic training students. Thus, cases could be developed to evaluate athletic training clinical proficiencies in the future.

Key words: simulation, clinical proficiency evaluation, clinical education, clinical skills

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Standardized Patients Provide Realistic and Worthwhile Experiences for Athletic Training Students

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Over the past 30 years, standardized patients (SPs) have been used in medical education to teach and evaluate students' communication and physical skills.¹ SPs are individuals formally trained to portray an injury or illness's symptoms and affects (eg, frame of mind, reaction to pain, etc.) in a consistent or standardized fashion to multiple students. Using SPs affords students patient-centered experiences that could include history-taking, physical examination, interpretation of laboratory results, and/or counseling and patient education.² Students are evaluated on their performance (eg, history taking techniques, listening skills, physical examination skills) by the trained SP and/or the faculty/clinical instructor. It has been reported that 75% of medical schools use one or more SP examinations to teach and evaluate skills in an introductory skills course,³ and that 85% of medical schools at some point use SPs to teach or evaluate students.⁴

SPs, initially called programmed patients, were first reported in the literature in 1964 by Barrows and Abramson.⁵ The "programmed patient" was a professional live model or actor hired to simulate the signs and symptoms of an individual in need of a neurological evaluation. This educational experience was created out of a need to provide students with a patient-centered and realistic experience. It was felt, at that time, that depending on patients simply presenting random ailments during their clinical experiences, students may never perform a neurological evaluation. During the 1970s and through the 1980s, Barrows and others continued to use programmed patients.⁶ In 1984, the conference, "How to Begin Reforming the Medical Curriculum," brought the use of SPs into mainstream medical education. SP evaluations were then viewed as a valuable tool for student assessment. They were also considered a means for identifying strengths or weaknesses in the curriculum and empowered educators to modify the curriculum accordingly.⁶ Following this conference, researchers began to investigate the feasibility, reliability, validity, and psychometric properties of SP evaluations, establishing that with proper training, the same SP case can be portrayed by different SPs in a standardized fashion to multiple students. Simply put, multiple SPs can be trained to portray the same case, and students will have a consistent experience regardless of the SP with whom they interact. In addition, with proper training, the SPs can complete the evaluation checklists on their students.⁷

In 1995, the National Board of Medical Educators (NBME) endorsed the use of SP examinations as part of the United States Medical Licensing Examination (USMLE) Step II exam⁸ which all medical students must pass to become licensed to practice medicine in the United States. Implementation of SP use in the USMLE began in 1998.⁹ Medical schools often have one or more staff members who are hired to implement and maintain the SP program. These individuals are responsible for case and checklist development, SP training, SP recruitment, and examination

administration. In addition, there are often other SP trainers hired to assist in case development and SP training. Faculty time is used to assist with case development, but mainly focuses on student feedback and evaluation. SPs themselves are often paid anywhere from minimum wage to \$50 per hour for their services, depending on the intimacy of the case (eg, pelvic examination).

Recently, SPs have been integrated into physical therapy¹⁰⁻¹² and nursing programs^{13,14} to teach and/or evaluate students' communication and clinical skills. Current research in these areas shows that SPs enhance learning more than traditional lecture and skill practice. For example, physical therapy students who practiced gait training with an SP, as opposed to peer practice, and who were then later evaluated by a different SP, had improved their safety awareness, communication skills, and emotional sensitivity to patients.¹⁰ In another study, physical therapy students were pre- and post-tested on a "Self-Efficacy Pre- and Post-Course Survey Tool" to determine the effects of their interaction with an SP. All participants interacted with an SP instead of participating in traditional class discussions regarding management of difficult ethical cases (eg, patient with a fracture has been staying with family, but is causing strain on that family; patient whose ambulation has declined over the years and needs an intervention, but a physician disagrees).¹¹ All students scored significantly higher than their pre-test scores on the "Self-Efficacy Pre- and Post-Course Survey Tool."

In a family and adult geriatric curriculum for nurse practitioner students, SP experiences were implemented at the end of each semester to improve student satisfaction with the evaluation process. Students felt that the SP experiences were realistic and that feedback from the SP was helpful.¹³ Another investigation with nursing students compared the effects of two teaching methods on clinical competence.¹⁴ A control group completed traditional lectures and laboratory practice with an anatomical model. The treatment group also completed traditional lectures, but had laboratory practice with an SP (eg, taking a complete history, patient with paralysis who needed assistance with hygiene). Students who were exposed to the SP experience improved their clinical judgment, clinical skills, and communication skills significantly more than the students in the traditional laboratory experiences.¹⁴

Certainly in athletic training, students may or may not have the opportunity to apply and practice important evaluation skills on patients. Barriers such as inadequate volume of injuries and illnesses and patient health care priorities prevent us from guaranteeing that students are practicing all their clinical skills on patients.¹⁵ The majority (71.9%) of athletic training educational programs report that their students are being evaluated on their clinical proficiencies in real-time (ie, on actual patients) less than 50% of the time.¹⁵ A benefit of SPs, especially for our athletic training students, is that, unlike actual patients, SPs can

be available at any time and in any setting.¹⁶ For example, as athletic training students initially learn and practice orthopedic evaluation skills in their coursework, SPs could be used to ensure that students had uniform, quality learning experiences in lower extremity evaluations. The students could also receive immediate performance feedback from a more trained SP (often difficult for the busy clinician).

We expect that interacting with SPs would help athletic training students to develop clinical skills through meaningful patient-centered experiences. The purpose of this study was to investigate whether athletic training students perceived that encounters with SPs are realistic and worthwhile, and whether the students would feel more comfortable interacting with actual patients in the future after working with the SPs. The following research questions guided this investigation:

1. Does an athletic training student believe an encounter with an SP feels like a “real” clinical experience with an actual patient?
2. Does an athletic training student feel more comfortable about future lower extremity evaluations with an SP following an encounter with an SP?
3. Does an athletic training student feel more comfortable about future lower extremity evaluations with an actual patient following an encounter with an SP?

METHODS

Training For the Use of Standardized Patients

To adequately prepare to conduct research with SPs, the investigators visited the Director of the Clinical Performance Center at the University of Illinois at Chicago Department of Medical Education. The primary investigator also attended a “Training and Using Standardized Patients Workshop” at the Southern Illinois University School of Medicine. The purposes of the workshop were to teach educators how to develop SP cases, train SPs, use SPs to assist in teaching and evaluation, and to conduct SP research.

SP Case Development

For the purposes of this study, two equally challenging cases were developed (foot/ankle, knee) for use in the SP encounters. A template was provided by the Clinical Performance Center at University of Illinois at Chicago’s Medical School, and was adapted with permission to develop both cases. One case involved a 21 year old male/female complaining of pain along the posterior aspect of the 1st metatarsophalangeal joint. The second case involved a 20 year old male/female complaining of pain along the anterior knee. Appendix 1 presents the foot/ankle case. Both cases were developed by the primary investigator, and then reviewed by four other athletic trainers regarding difficulty, accuracy of the signs and symptoms, and fidelity (ie, authenticity, realism). Students were not informed of the exact nature of the

encounter, only that they would be interacting with standardized patients complaining of a foot/ankle or knee condition.

Participants

IRB approval was obtained prior to initiating the study. All participants consented to being videotaped. Athletic training students in a CAATE-accredited (Commission on Accreditation of Athletic Training Education) athletic training education program (ATEP) from one Midwestern institution were recruited to participate in this study. All participants (n = 29; 17 female, 12 male) had to have completed the lower extremity orthopedic evaluation course during either the Fall 2005 or 2006 semester. The participants were juniors or seniors at the time of this study. All 29 (100%) of the participants completed the requirements of this study.

Instrumentation

Participant Evaluation Form

The Participant Evaluation Form, or checklist, that we used to evaluate the students’ performances was adapted from the literature,^{2,17-19} and is presented in Appendix 2. It consisted of two sections: one collected demographic information (eg, name, date, joint assessed); and the other evaluated the participant’s performance on their history-taking technique (10 items), physical examination (5 items) and closing remarks (2 items) with the SP. The SP used this form to evaluate the students’ performances. These types of forms or checklists, filled out by the SP and/or a separate evaluator, are common in medical, nursing and physical therapy education for evaluating a student’s interaction with an SP.

SP Encounter Feedback Form

An SP Encounter Feedback Form was also adapted from the literature²⁰ to determine the participants’ perceptions regarding the SP encounter. The form consisted of three sections: the first collected demographic information (eg, gender, joint assessed, academic standing); the second included seven questions regarding the encounter (eg, experience was worthwhile; challenge presented was appropriate; encounter makes me feel more comfortable about future evaluation experiences with actual patients and SPs) which participants answered using a Likert scale (1 = strongly disagree, 5 = strongly agree); and the third asked participants to describe the strengths and weaknesses of the SP encounter.

Standardized Patients and Their Training

Eight additional junior/senior athletic training students were recruited to serve as SPs. These students had successfully completed the lower extremity orthopedic evaluation course within the past 12-18 months. All had successfully completed their foot/ankle and knee clinical proficiencies. These students were selected over actors to serve as SPs due to budget constraints. Also, as is the case with medical students,² the

athletic training students were considered easier to train because of their background and familiarity with the cases being portrayed. Research has demonstrated that with careful training of the SP, there are no significant differences of the SPs portrayal of the same case across different testing centers.²¹ In addition, it has been found that SPs with no prior experience of providing medical students feedback on their performance can be trained to provide clear, nonjudgmental, and specific feedback.²²

All SPs underwent approximately 3 hours of training. Very little information is available in the literature regarding actual training of SPs. For this study, two resources were used to design the training. One was the procedures described in the research.² The other was information from the "Training and Using Standardized Patients for Teaching and Assessment Workshop" (Southern Illinois University Medical School).

We used a template provided with permission from the Clinical Performance Center at the University of Illinois at Chicago to initially organize the case information for the SP (Appendix 3). The training was designed to prepare the SPs to portray the two cases consistently, teach them to evaluate the student participants using the Participation Evaluation form (Appendix 2), and help them provide oral feedback to students on their performance. All training was conducted by the primary investigator.

The SPs were provided with the following training materials: 1) case information; 2) Participant Evaluation Form; and 3) SP Encounter Feedback Form. All documents were reviewed with the SPs. They were then oriented as to the sequence of events (eg, videotaping, documentation, feedback) for each patient encounter. Under the guidance of the primary investigator, the SPs also practiced the encounters with each other, and provided positive and constructive feedback based on the items listed in the "Participant Evaluation Form."

Procedures

Over both semesters of data collection, the SP foot/ankle encounter was scheduled one week, followed by the knee encounter the next week. Each encounter lasted approximately 15-20 minutes and was videotaped (so that the primary investigator, also an approved clinical instructor, could watch each encounter to determine if each student passed the clinical proficiency). Each encounter occurred in 1 of 3 rooms: the Athletic Training Research and Education Laboratory, a small satellite athletic training room, or the Clinical Proficiency Evaluation Room. Prior to beginning the encounters, the SPs once again reviewed the case information. The SPs were provided with a pen and the Participant Evaluation Form. The form was hidden from the participant either under a pillow or in a drawer.

Before entering the room, each participant was provided with a pen and clipboard containing basic information regarding the SP (eg, name, age, sport, primary complaint, vital signs); an anecdotal injury report form (used in athletic training facilities during on-campus clinical experiences); and the SP Encounter Feedback Form. Prior to each encounter, the primary investigator

or a graduate assistant read and explained the instructions (Appendix 1) to each participant and answered any questions. The participant then entered the room. As the encounter began, the SP activated the video camera. Following the encounter, the SPs stopped the camera and the participants were then instructed by the SP to complete the anecdotal injury report form. At this same time the SPs completed the "Participant Evaluation Form." When all forms were completed, the SP briefly (5 minutes) discussed the participant's performance with them using the "Participant Evaluation Form." The SP then instructed the participant to complete the "SP Encounter Feedback Form" and give it to a graduate assistant who was waiting outside the room.

Data Analysis

Descriptive statistics were computed on combined items from the SP Encounter Feedback forms for the foot/ankle and knee orthopedic cases. Participants' comments regarding the strengths and weaknesses of the experience were also compiled and analyzed inductively. We did not analyze any of the data from the "Participant Evaluation Form" as this form was only used to assist the SPs in providing feedback to the participants on their performance.

RESULTS

Descriptive statistics for the combined items on the SP Encounter Feedback forms for the foot/ankle and knee encounters are presented below (individual items for each encounter are presented in Tables 1 and 2). The participants agreed or strongly agreed 100% of the time that learning was enhanced through the SP encounters. They agreed or strongly agreed 86% of the time that the encounters made them feel more comfortable about future evaluations with actual patients and more comfortable about future evaluations with SPs. The participants agreed or strongly agreed 98% of the time that the experiences were worthwhile. They agreed or strongly agreed 98% of the time that the experiences were realistic. The participants agreed or strongly agreed 95% of the time that the challenges presented were appropriate. They agreed or strongly agreed 100% of the time that they were provided adequate feedback by the SPs on their performances. The participants never reported disagreement or strong disagreement with any of the statements on the SP Encounter Feedback Forms.

Written comments regarding the perceived strengths and weaknesses of the encounters were analyzed (see all representative comments in Table 3). The emergent themes regarding the strengths of the counters were: 1) fidelity (eg, "SP acted as if they had no idea what was happening to them" and "realistic encounter of an injury situation"); 2) educational value (eg, "so I feel stronger and more confident if an athlete were to really come to me with a foot or ankle injury" and "she asked questions about her injury which allowed me to do some critical thinking along with my evaluation.") of the experience; and 3) positive feedback from the SP (eg, "the feedback was really good, it made me realize the important parts of an evaluation that I forget a lot" and "the SP gave great feedback"). The emergent

Table 1. Standardized Patient Encounter Feedback — Foot/Ankle Case (Frequency [%])

Question	Neutral	Agree	Strongly Agree
The experience was worthwhile.	0 (0.0)	18 (62.1)	11 (37.9)
The standardized patient encounter was realistic.	3 (10.3)	16 (55.2)	10 (34.5)
The challenge presented was appropriate.	3 (10.3)	17 (58.6)	9 (31.0)
My learning in lower extremity evaluation was helped by this experience.	0 (0.0)	14 (48.3)	15 (51.7)
This encounter makes me feel more comfortable about future evaluation experiences with standardized patients.	4 (13.8)	10 (34.5)	15 (51.7)
This encounter makes me feel more comfortable about future evaluation experiences with actual patients.	4 (13.8)	10 (34.5)	15 (51.7)
I feel I was given adequate feedback by the SP on my performance.	0 (0.0)	11 (37.9)	16 (55.2)

*None of the participants Strongly Disagreed or Disagreed with any of the above statements.

Table 2. Standardized Patient Encounter Feedback — Knee Case (Frequency [%])

Question	Neutral	Agree	Strongly Agree
The experience was worthwhile.	1 (3.4)	16 (55.2)	12 (41.4)
The standardized patient encounter was realistic.	1 (3.4)	20 (69.0)	8 (27.6)
The challenge presented was appropriate.	0 (0.0)	20 (69.0)	9 (31.0)
My learning in lower extremity evaluation was helped by this experience.	0 (0.0)	15 (51.7)	14 (48.3)
This encounter makes me feel more comfortable about future evaluation experiences with standardized patients.	4 (13.8)	15 (51.7)	10 (34.5)
This encounter makes me feel more comfortable about future evaluation experiences with actual patients.	4 (13.8)	13 (44.8)	12 (41.4)
I feel I was given adequate feedback by the SP on my performance.	0 (0.0)	20 (69.0)	8 (27.6)

*None of the participants Strongly Disagreed or Disagreed with any of the above statements.

themes regarding the weaknesses of the encounters were:

1) videotaping (eg, “though the video tape was a bit nervous for me, I quickly forgot it was even there” and “kind of awkward being video taped!”); and 2) knowing the SP was not really injured (eg, “It didn’t feel real just because I knew the student was acting as an SP” and “It was realistic, but I guess I still know that the injury is fake so it is a little harder to really get the most out of this”).

DISCUSSION

Our study results indicate that athletic training students feel that encounters with SPs provided worthwhile and realistic patient-centered experiences. They found interacting with the SPs to be a “real” positive learning experience and felt more confident about future lower extremity encounters with SPs and actual patients. The primary investigator viewed all encounters and felt that participants had successfully completed the foot/ankle and knee clinical proficiencies. It seems logical to assume that SPs

would have value in teaching and/or evaluating athletic training students’ clinical skills.

A study with nurses revealed similar positive results. Graduate nursing students interacted with an SP in need of nutritional counseling.²³ Prior to the interaction, students self-assessed their need for further information on nutritional counseling, studied referenced materials, and determined the counseling technique they planned to practice with future patients/clients. After this self assessment and planning, the students interacted one-on-one with an SP who needed nutritional counseling. All (n = 17) of the nursing students indicated the experience with the SP was positive, and considered the performance feedback from the SP to be important. It was concluded that SPs would be used in future graduate courses. Further support on the use of SPs was documented by a nurse practitioner program that implemented SPs in their 4 semester family and adult geriatric curriculum.¹³ SP encounters were conducted at the end of each semester. The first semester students were to perform a complete history and

Table 3. Standardized Patient Encounter Feedback — Representative Written Comments Regarding Strengths and Weaknesses

Strengths	Weaknesses
“This was a great practice. It was very realistic and I was happy with my comfort level once I got going. Very worthwhile and I would like to work with the knee too. “	“I felt this was very worth while. Though the video tape was a bit nervous for me, I quickly forgot it was even there. I’m writing all good stuff, so I do not have any weaknesses.”
“The SP was very realistic. She presented as a real athlete and showed no prior knowledge of the injury. She asked questions about her injury which allowed me to do some critical thinking along with my evaluation.	“It didn’t feel real just because I knew the student acting as an SP. Also, this was more my fault but because her pain was in a specific location I skipped some questions and was just focused on seeing if I was right with what I thought her injury was.”
“The feedback was really good, it made me realize the important parts of an evaluation that I forget a lot. Writing the SOAP note was a strength because I hardly ever write them so it made me realize I needed to review how to write one and practice.”	“The weaknesses of this activity were few. I thought that it would have been better in an actual A.T. room and if the camera was not there. However, I know it needs to be.”
“Was more realistic than an OP”	“Kind of awkward being video taped!”
“It was a lot to practice. It made myself refresh my memory over the foot and ankle before coming in here. So I feel stronger and more confident if an athlete were to really come to me with a foot or ankle injury.”	“It was realistic, but I guess I still know that the injury is fake so it is a little harder to really get the most out of this.”
“Realistic encounter of an injury situation; helps feel more comfortable about assessing real patients with less pressure.”	“Did not know how detailed I needed to be with the test if I needed to do more than what I thought it could be.”
“I liked the setting without a practitioner because it seemed like a more typical setting. “	“It was a little difficult to pretend it was a real situation because I knew the patient. I felt dumb introducing myself to her.”
“Working in simulated real-time evaluations are great and are really good for my confidence.”	“There were no actual physical signs I could see or feel.”
“Not an everyday injury”	“I feel I was all over the place with my evaluation, which made it hard for me to get the full experience I could from this activity.”
“It was like real life because they kept asking what we were doing? The athletes always want to know what’s going on.”	
“I love the fact that its only another student with me because it helps me to relate to a student-athlete situation.”	
“All the answers and the situation was realistic. This could easily be a real life situation.”	
“The SP gave great feedback. Was realistic. I didn’t talk like she knew answers. She acted as a real patient. The one-on-one encounter was very helpful.”	
“SP acted as if they had no idea what was happening to them. Good because that is how athletes are going to be.”	

physical on a patient. During the second and third semesters, students were to perform a history and physical on an SP with an acute illness and chronic illness, respectively. In the final semester, students completed four SP encounters. Each station had a typical problem encountered by family or adult/geriatric nurse practitioners in primary care. Following each encounter, students were asked to rate three items regarding the experience on a Likert scale (5= strongly agree, 1= strongly disagree). The students felt the patient encounters were realistic (mean = 4.1 to 4.8); the feedback on their performance from the SP was useful (mean = 4.4 to 5.0); and, the challenge in conducting the history and physical exam was about right (mean = 4.4 to 4.8). In addition, students were encouraged to provide written comments about their experiences. They reported that the experience allowed them to practice skills in a realistic fashion, and enhanced critical

thinking skills to integrate theory and knowledge. Thus, these assessments were authentic, providing a non-threatening, yet realistic method, to evaluate student performance.

Standardized patients were also found to be a useful learning tool with physical therapy students. Physical therapy students in an introductory patient management skills course were divided into two groups.¹⁰ Students in the control group (n = 20) practiced gait training skills with fellow students and those in the experimental group (n = 19) practiced these same skills with SPs. A follow-up questionnaire with all of the subjects found that the students in the experimental group rated the experience significantly more useful than did the control group (eg, fidelity of situation,

feedback, improved knowledge). It is apparent that interactions with SPs, regardless of profession (eg, nursing, physical therapy) can provide positive and realistic learning experiences.

CONCLUSIONS

Similar to medical, nursing, and physical therapy education, students in athletic training education must learn an abundance of clinical skills. Unfortunately, injuries or conditions will not always present during clinical experiences so that skills can be applied and practiced. As educators we are challenged to provide our students with realistic and demanding clinical experiences. In this study, we have revealed that athletic training students: 1) believe an encounter with an SP feels like a “real” clinical experience with an actual patient; 2) feel more comfortable about future lower extremity evaluations with an SP following an encounter with an SP; and 3) feel more comfortable about future lower extremity evaluations with an actual patient following an encounter with an SP. The results of this study are promising, but additional research is needed. Future research could include actually measuring the learning outcomes (eg, knowledge, clinical skills, confidence) from interacting with an SP and those outcomes associated with serving as an SP for peers (eg, knowledge, clinical skills, confidence).

REFERENCES

1. Boulet JR, De Champlain AF, McKinley DW. Setting defensible performance standards on OSCEs and standardized patient examinations. *Med Teach*. 2003;25(3):245-249.
2. Mavis BE, Ogle KS, Lovell KL, Madden LM. Medical students as standardized patients to assess interviewing skills for pain evaluation. *Med Educ*. 2002;36(2):135-140.
3. Barzansky B, Etzel SI. Educational programs in US medical schools, 2002-2003. *JAMA* 2003;290(9):1190-1196.
4. American Association of Medical Colleges. Emerging trends in the use of standardized patients. *Contemporary Issues in Medical Education, AAMC* May 1998;1:1-2.
5. Barrows HS, Abrahamson S. The programmed patient: A technique for appraising students performance in clinical neurology. *J Med Educ*. 1964;39(8):802-805.
6. Wallace P. Following the threads of innovation: The history of standardized patients in medical education. *Caduceus*. 1997;13(1):13-27.
7. Vu NV, Barrows H. Use of standardized patients in clinical assessments: Recent developments and measurements findings. *Educ Res*. 1994;23(3):23-30.
8. Wallace P. *Coaching Standardized Patients for Use in the Assessment of Clinical Competence*. Springer Publishing Company, LLC; 2007.
9. United States Medical Licensing Examination. Step 2. Available at: <http://www.usmle.org/Examinations/step2/step2.html>. Accessed September 1, 2009.
10. Black B, Marcoux BC. Feasibility of using standardized patients in a physical therapist education program: A pilot study. *J Phys Ther Educ*. 2002;16:49-56.
11. Hale LS, Lewis K, Eckert RM, Wilson CM, Smith BS. Standardized patients and multidisciplinary classroom instruction for physical therapist students to improve interviewing skills and attitudes about diabetes. *J Phys Ther Educ*. 2006;20:22-27.
12. Jensen, GM, Richert AE. Reflection on the teaching of ethics in physical therapist education: Integrating cases, theory, and learning. *J Phys Ther Educ*. 2005;19:78-85.
13. Ebbert DW, Connors H. Standardized patient experiences: Evaluation of clinical performance and nurse practitioner student satisfaction. *Nurs Educ Persp*. 2004(1);25:12-15.
14. Yoo MS, Yoo IY. The effectiveness of standardized patients as a teaching method for nursing fundamentals. *J Nurs Educ*. 2003;42(10):444-448.
15. Walker SE, Weidner TG, Armstrong KA. Evaluation of athletic training students' clinical proficiencies. *J Athl Train*. 2008;43(4):386-395.
16. Barrows HS. An overview of the uses of standardized patients for teaching and evaluating clinical skills. *Academic Med*. 1993;68(6):443-45.
17. Ben-David MF. AMEE Guide No. 18: Standard setting in student assessment. *Med Teach*. 2000;2(2):120-130.
18. Noel GL, Herbers JE, Caplow MP, Cooper GS, Pangaro LN, Harvey J. How well do internal medicine faculty members evaluate the clinical skills of residents? *Annals Internal Med*. 1992;117(9):757-787.
19. McGraw RC, O'Connor. Standardized patients in the early acquisition of clinical skills. *Med Educ*. 1999;33(8):572-578.
20. Lovell KL, Mavis BE, Turner JL, Ogle KS, Griffith M. Medical students as standardized patients in a second-year performance-based assessment experience. *Med Educ Online*, 1998;4(6):1-6.
21. Tamblyn, RM, Klass DJ, Schnabl, GR, Kopelow ML. The accuracy of standardized patient presentation. *Med Educ*. 1991;25(2):100-109.
22. Howley LD, Marindale J. The efficacy of standardized patient feedback in clinical teaching: A mixed methods analysis. *Med Educ Online*. 2004;9:1-10.

APPENDIX 1. Standardized Patient Case Development Template

(Adapted with permission from the University of Illinois at Chicago)

CASE CHIEF COMPLAINT: Patient complains of pain in their big toe.

CASE NAME: Big Toe pain

CASE NUMBER: 001

PRESENTING SITUATION: Patient presents with pain on the plantar aspect of the 1st MP joint.

KEYWORD DESCRIPTIONS: Big Toe pain, writing SOAP notes, (describe the patient's problem, parent disciplines, focus of the case, health risk appraisal, and other key words that characterize the case and the assessment challenge)

DIFFERENTIAL DIAGNOSIS: Contusion, turf toe, sesamoiditis, gout, biomechanical conditions, hypermobile 1st ray (list competing diagnostic possibilities)

ACTUAL DIAGNOSIS: Sesamoiditis/Contusion

DESIGNED FOR: 2nd or 3rd semester AT student. (list what level of student this examination is designed for, such as 2nd year medical student; residents)

ACTIVITIES & TIME REQUIRED: 15 minute evaluation followed by 5 minute post-encounter exercise.

OBJECTIVES: List objectives to be assessed or taught through use of this case:

1. Development of interviewing/communication skills examination skills
2. Enhancement of differential diagnosis and problem solving skills
3. Time efficiency
4. Orthopedic physical examination skills
5. Enhance confidence

STATION REQUIREMENTS: (list what is supplied and/or equipment is needed for this station, including patient and student paperwork)

SP clipboard with evaluation

Goniometer

Brief written summary of case to be provided to the student

Tape measure

Reflex hammer

ASPECT OF PERFORMANCE TO BE ATTENDED TO & METHOD FOR OBSERVING PERFORMANCE: (attach data collection checklist, professional behavior rating scale, and the post-encounter questionnaire regarding findings, diagnostic conclusions, initial management plan, etc., to the blueprint.

The following two assessments will be utilized to evaluate performance:

1. Standardized Patient Experience SP Encounter Feedback Form (To be filled out by Subject)

INSTRUCTIONS

Patient: Scott Wilson/Stephanie Smith

Age: 21

Chief Complaint: Big toe pain

Setting: Athletic training room

Time of Day: 11:15am

Vital Signs: Normal

STUDENT TASK

You are a second or third semester athletic training student.

You have 15 minutes to:

1. Obtain an appropriate history
2. Perform a pertinent physical examination
3. Give your differential diagnosis and tentative diagnostic impressions verbally to the patient
4. Write up the case as a SOAP note. When you have completed your interview, you will be given 5 minutes to document your findings.
5. Obtain feedback from the Standardized Patient
6. Fill out the Feedback form.

PATIENT'S PAST MEDICAL HISTORY

MEDICATIONS

Over-the-counter: Took some OTC Tylenol for pain

Prescription(s): None

LIFESTYLE/BEHAVIORAL RISKS

Eating Habits: Eats in the dorms, tries to eat healthy.

Exercise: participates in field hockey practice and sometimes plays basketball games at the rec center with friends.

2. Standardized Patient Evaluation (To be filled out by SP and Primary Investigator)

APPENDIX 2. Participant Evaluation Form

Performed = P

Performed Incorrectly = PI

Not Performed = NP

History Taking Technique

Student introduced himself/herself	P	PI	NP
Mechanism of history established	P	PI	NP
Major signs and symptoms established	P	PI	NP
Previous history established	P	PI	NP
Correct pace of questions	P	PI	NP
Correct phrasing of questions (open ended vs. close ended)	P	PI	NP
Questions were asked in an understandable manner	P	PI	NP
Attention paid to answers	P	PI	NP
Answers followed up appropriately	P	PI	NP
Attempts to establish a rapport with patient	P	PI	NP

Physical Examination

Student performed appropriate palpation	P	PI	NP
Student performed appropriate active and passive range of motion	P	PI	NP
Student performed appropriate special tests	P	PI	NP
Student established patient's appropriate muscular strength level	P	PI	NP
Student performed appropriate neurological and circulatory tests	P	PI	NP

Closing Remarks

Student communicated appropriate treatment options to patient	P	PI	NP
Student informed patient of prognosis of injury/condition	P	PI	NP

STANDARDIZED PATIENT TRAINING MATERIALS

HISTORY OF THE PRESENT ILLNESS

Chief Complaint/Reason for Visit or Admission:

Toe has been hurting

Onset:

The ball hit the bottom side of foot yesterday during practice.

Duration:

Aches all the time, especially when standing

Location:

Pain on the plantar aspect of the 1st MP

Character:

Pain that aches

Radiation:

None

Intensity: (On a scale of 1 - 10)

4/10

Aggravating Factors:

Hurts more when I stand on it and hurts at the end of the day

Alleviating Factors:

None except keeping off the foot

Course: (*Getting better or worse?*)

Neither, not getting better, or worse

Context: (*What was the setting/context of the onset?*)

Being hit

Associated Symptoms:

None

Physical Findings:

Pt tender over sesamoid bones

No pain on manual muscle tests or during active and passive ROM

Painful when palpated between 1st and 2nd metatarsal heads but no numbness or tingling

(-) Squeeze test, percussion test, tapping test (although percussion and tapping are a little tender over the sesamoids)

Response to symptoms: (*What has the patient done about the symptoms other than seeking health care?*)

Patient has worn different shoes thinking that may be the problem. She was wearing tennis shoes and changed to a different pair. The patient hasn't noticed any change but it's only been a day.

Consequences: (*What do the symptoms interfere with?*)

Painful when walking up hills and steps. Painful when standing

Meaning of the illness: (*Patient's ideas, feelings, fears about the causes/implications*)