ATHLETIC TRAINING EDUCATION JOURNAL

www.nataej.org
ISSN: 1947-380X

Editorial Board

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2011 ATHLETIC TRAINING EDUCATORS' CONFERENCE

February 25-27 • Washington, DC

LETTERS

POSTER ABSTRACTS

Dear Athletic Training Educators,

We are pleased to present this special issue of the Athletic Training Education Journal. The NATA Continuing Education Committee is excited to partner with the Journal to publish the abstracts presented at the 2011 NATA Athletic Training Educators' Conference (ATEC).

I am very excited that the theme of this year's ATEC is Creating a Culture of Evidence Based Practice. We are at a crucial point in the maturation of the athletic training profession. As the nation's health care system becomes increasingly more regulated it is crucial that athletic trainers be armed with the most effective tools for improving patient outcomes. Undoubtedly this process begins with infusing the concepts of evidence-based practice into professional preparation programs. We encourage you to attend the general sessions and twelve breakout sessions dedicated to this very important topic.

The poster sessions presented at ATEC are more inclusive of broader issues related to athletic training education beyond just the theme of the conference. This year I am excited to introduce a new format for how the posters and associated abstracts presented in the Athletic Training Education Journal were reviewed and are ultimately categorized. Drawing from the work of Ernest Boyer, abstracts have been grouped in terms of the four types of scholarship. The Scholarship of Teaching and Learning encompasses scholarly activities that are directly related to pedagogical practices. The Scholarship of Discovery involves systematic modes of inquiry designed to identify problems, state hypotheses, collect data, test hypotheses, and develop conclusions concerning the solution of problems. The Scholarship of Application encompasses scholarly activities which seek to relate the knowledge in one's field to the affairs of society. The Scholarship of Integration involves making connections across the disciplines, placing the specialties in larger context, and illuminating data in a revealing way.

As we move forward with this new format of categorizing the abstracts we continually try to improve and make the review process transparent. Our goal is to be as inclusive as possible while maintaining the high level of scholarship readers expect of the Athletic Training Education Journal. We appreciate the feedback we have received from authors, and suggestions are always welcomed on how to further improve the process.

I would also like to take this opportunity to extend a special thanks to Anita James, Knowledge Initiatives Manager for the NATA, and other members of the Meetings Department whose attention to detail and dedication has made coordinating this event an absolute pleasure. The members of the ATEC subcommittee, Mary Barnum, EdD, ATC; David Berry, PhD, ATC; and Stacy Walker, PhD, ATC, deserve a significant amount of credit for committing to the theme of evidence-based practice, reviewing breakout session proposals, and determining the overall content of the conference. Additionally, I would like to thank Kirk Armstrong, EdD, ATC; Stephanie Mazerolle, PhD, ATC; and William Pitney, EdD, ATC, FNATA, for their long hours of reviewing abstracts for the poster presentations. Lastly, I wish to thank Aaron Blum, MS, ATC and William Pitney, EdD, ATC, FNATA with the editorial office of the Athletic Training Education Journal for making this issue possible.

I look forward to seeing you in Washington, DC.

Sincerely,

Jolene M. Henning, EdD, ATC
Chair, Athletic Training Educators' Conference Subcommittee
NATA Continuing Education Committee

Scholarship of Application

Using Social Media to Disseminate Evidence

Curless CT, Walker SE

Ball State University, Muncie, IN

Context: Traditionally, evidence has been disseminated through conversation or email. Professionals are now sharing information such as news and evidence through social media. Social media are media through social interaction or networking such as Facebook, Twitter, LinkedIn, etc.

Objective: To demonstrate how social media can be a method of disseminating evidence.

Background: Social media has changed the way colleagues share news, events, and evidence. When evidence is found, such as a peer reviewed article, colleagues can send a hyperlink of that that article to a friend or post in on Facebook, Twitter, LinkedIn, etc. Once this hyperlink is published it has the potential to go viral through internet sharing with other colleagues across the United States and even internationally.

Description: This poster will demonstrate how social media platforms like Facebook, Twitter, and LinkedIn can propagate evidence to clinicians in all athletic training settings supplemental to traditional means. A flow chart will follow the actual progression of a peer-reviewed article through various social networks reaching over five-hundred athletic training clinicians.

Clinical Advantages: Social media platforms are a convenient and versatile way to spread athletic training research evidence to aid clinical decision making and best practice. Similar to grass roots movements, these techonologies allow the members of various professions to share evidence to their own network of peers and collegaues.

Conclusion: Using social media can be an effective way to disseminate evidence. This is clear by our demonstration as to how one post on a social network was able to reach over 500 athletic training clinicians.

Athletic Training Education: A Pathway to Internationalization of the Profession

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Context: Athletic training is a profession that is largely found in North America. Despite years of growth in the United States, international acceptance of the profession lags far behind. With increasing global emphasis on quality, coordinated health care, it follows that the use of an athletic trainer as a physician extender in various settings can provide both quality and coordinated health care. The internationalization of the profession can take numerous forms including study abroad tours, athletic training short-term workshops, re-tooling of other health care professionals (physiotherapists), etc. The introduction of university-based athletic training curriculum should encourage and sustain development of the profession.

Objective: The objective of this project was to introduce athletic training education curriculum to international faculty and students in order to solidify the profession of athletic training in international systems of health care delivery.

Background: There have been a number of activities related to athletic training between the University of Wisconsin – La Crosse (UW-L) and Johann Wolfgang Goethe University of Frankfurt (JWGU), Frankfurt, Germany. Particularly, student exchanges have occurred since Summer, 2005. UW-L athletic training faculty began teaching German students (n=28) athletic training skills and techniques. This activity spurred interest by several students to study abroad at the UW-L in the spring and fall of 2006. In the summer of 2006, UW-L faculty returned to teach additional coursework in musculoskeletal evaluation of the upper extremity (n=52 students). Although interest was perceived, the cost of study abroad programs limited further development. A funding opportunity was discovered in the fall of 2008 that would alleviate the cost of study abroad programs for designed curriculums.

Description: In March, 2009 faculty from JWGU traveled to the UW-L to develop athletic training educational curriculum both in the European Union (EU) and in the United States (US) that would foster further development of the profession. The UW-L is developing an International Sports Medicine Minor to be offered to students enrolled in the athletic training education program (ATEP) and the JWGU is developing a certificate for students as a Sports Medical Athletic Therapist in the programs. Student and faculty mobility funding is anticipated through an ATLANTIS grant from the EU and the US. In August, 2010 this investigator will be presenting the athletic trainer physician extender model to physicians joining the Sports Physician Federation of Hessen as part of their Sports Medicine Certificate training. The long term goal of this program is to establish fully accredited and recognized ATEPs.

Clinical Advantage(s): By educating many students at a time rather than individually, it is hoped that the EU medical community will begin to embrace the specialty skills of professionals trained in athletic training. Establishing educational programs internationally will solidify the athletic training profession in other countries.

Conclusion: Athletic training educational programs offered internationally will develop the profession of athletic training by offering qualified physician extender health care providers to traditional medical settings.

Athletic Trainers' Utilization of Evidence-Based Medicine with the Recognition and Treatment of Exertional Heat Stroke

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Context: Exertional heat stroke (EHS) is one of the leading causes of death in athletes. Certified athletic trainers (ATs) working in collegiate and secondary school settings play a crucial role in diagnosis and treatment of the condition. ATs demonstrate strong knowledge regarding recommended practices with EHS, but are apprehensive in implementing two basic procedures: rectal temperature assessment (Tre) and cold water immersion (CWI). This apprehension may lead to preventable EHS deaths.

Objective: Investigate the disconnect that exists between knowledge and practice regarding diagnosis and treatment of EHS in collegiate and high school ATs.

Design: A basic qualitative design using in-person focus group (FG) interviews.

Setting: In person focus groups.

Participants: A total of 19 (10 females and 9 males) ATs employed at either the collegiate (n=10) or secondary school level (n=9), age 36±10 years participated in the study. ATs averaged 13±9 years of certification.

Data Collection and Analysis: FG were homogeneous (3=college; 3=HS). Interviews were transcribed verbatim and an inductive analysis was performed. Peer review and multiple analyst data triangulation were conducted to establish trustworthiness of the data.

Results: Five emergent themes explain the lack of evidence based practice (EBP) regarding EHS recognition and treatment. Three themes: lack of knowledge (dichotomy between current clinical practice and previous educational preparation), lack of initiative (being aware of the information but not taking initiative to implement it at their site), and comfort level (possessing cognitive knowledge but lack of training created discomfort with devices) were common in both the collegiate and secondary school settings. Two different themes were present in the high school setting: lack of equipment or coverage (not having and/or being able to afford the proper equipment to use recommended practices or not having coverage at every practice/event), and liability (concern with age of a high school athlete and the possibility of having to expose them to assess Tre).

Conclusions: Findings from this research corroborate previous literature on EBP and EHS. Although ATs, regardless of clinical setting, have basic information regarding recognition and treatment of EHS, comfort level, lack of knowledge and lack of initiative act as barriers to implementing proper practice in the clinical setting. The five themes discussed above are valid concerns faced by ATs. Although legitimate, they are not an excuse of why not to implement recommended practices. We know that obtaining a core body temperature via Tre and cooling with CWI are the recommended methods in recognizing and treating EHS. We believe that with a culmination of more hands-on learning in the classroom, more effective teaching techniques coupled with proper use in the athletic training room, many of the concerns that our participants had regarding EHS will diminish with time.

Theme of Every Other Week: Incorporating EBM and Clinical Reasoning into the Clinical Setting

Preische J, Lippincott E

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Context: As evidence-based medicine (EBM) concepts were being introduced to the profession of athletic training, athletic training educators quickly realized the importance of integrating those concepts into the didactic and clinical portions of our programs. Athletic training students should be taught not only how to proficiently perform a set of standard skills, but also how to use clinical reasoning skills. We saw the link of evidence-based medicine and critical thinking and knew we needed to find a way to implement EBM into our athletic training education program.

Objective: To introduce the Theme of Every Other Week (TOEOW) model as a method of implementing EBM and clinical reasoning into the clinical portion of athletic training education programs.

Background: The TOEOW was initially developed as a skills checklist to increase productivity during clinical experiences. Over the past two years the TOEOW developed into an evidence-based medicine and clinical reasoning assignment.

Description: Our TOEOW offers a variety of learning activities based on students' academic standing. The tasks chosen for the lower level students are often the application of procedural skills and making the connection between the material learned in the classroom and how it applies in real-life scenarios. Our juniors are at a synthesizing/problem-solving stage; while our seniors are given tasks to enhance their ability to analyze and critically think. Students are required to show proficiency in a skill set and then apply the skills during scenarios requiring clinical reasoning (or critical thinking) Students often work collaboratively with their peers at their clinical site to answer the why questions. Questions often require the students to find evidence to support their answers; while other questions require the use of critical thinking and analytical skills. We also require each student on clinical rotation to find an EBM article related to the TOEOW which is then collectively discussed with the clinical instructor.

Clinical Advantages: Athletic training students need to engage in activities that transform knowledge gained in the classroom to best practice outcomes in the clinical setting. By providing real-life scenarios through the TOEOW, crucial appraisal skills are enhanced. The TOEOW also engages the student and clinical supervisor in the learning process while at clinical rotation.

Conclusion: The clinical setting proves to be the best place to incorporate the TOEOW. Due to the involvement of sophomores, juniors, and seniors in the TOEOW, there are small group interactions, cooperative learning, facilitated discussion, and feedback that easily and readily occur. Our goal as educators is to prepare our students to become independent thinkers and proficient clinicians. This can be accomplished through implementing TOEOW into clinical learning.

Sustainability Practices in Athletic Training Educational Programs

Perusek A

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Context: In current times of economical and ecological instability, many institutions looking for ways to save money and find better, more efficient ways to run their programs. At the same time, institutions are emphasizing environmentally sound practices throughout their campuses. One way an athletic training education programs (ATEP) can decrease cost while making ecological impact is to revise the way they distribute, file and assess student learning and program progress.

Objective: 1) Discuss the importance of sustainability practices in athletic training educational programs; 2) Analyze how athletic training programs use sustainability practices in the area of disseminating, collecting and filing paperwork for clinical education in athletic training programs across the country; 3) Recommend ways for ATEP administrators to become more ecologically and environmental sound through use electronic programs; 4) Demonstrate and provide simple templates for assessing student's progress and ACI/CI development.

Background: The Commission on Accreditation of Athletic Training Education (CAATE) requires documentation in order to substantiate a program's viability. At the same time the BOC Standard of Professional Practice states certified athletic trainers (ATC) are to "use professional skills and responsibility to positively impact the community." (BOC pg. 4) In order to meet the requirements of both organizations, ATEP administrators must do their part in decreasing the ecological foot print on our communities while validating their programs.

Description: This poster presentation suggests ways for ATEP administrators to use environmental and economically sound practices through the use of computer programs. The author introduce suggestions of how to use institutionally owned software programs such as Blackboard (WebCT) to organize clinical paperwork used by students and administrators. In addition, simple word document templates are provided for assessing student's progress and ACI/CI development.

Clinical Advantage(s): The advantages of restructuring the dissemination, filing and assessment of clinical records into electronic format while eliminating the use of hard (paper) copy documents are many. Due to less use of paper, cost for purchasing along with copying and a decrease in man hours to manually file paper copy documents an ecological and economical impact occurs. Space requirements for filing hard (paper) copy are lowered along with a more accurate filing system is possible due to electronic record keeping.

Conclusion: Sustainability in our world is vital. ATEPs must use economically-sound ways to adjust to the present needs of society while still meeting the needs of present and future generations. Computer base software programs are an excellent, inexpensive source which decrease cost and increase efficiency.

Scholarship of Teaching and Learning

Utilizing Standardized Patients to Teach Interpersonal and Clinical Skills

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†Ball State University, Muncie IN

Context: Standardized patients (SPs) have been valuable in teaching and evaluating the interpersonal and clinical skills of physical therapy, medical, nursing, and pharmacy students, and are now being integrated in athletic training education. It has been reported that students who participated in a SP encounter exhibit superior knowledge over their peers. In addition, encounters with an SP assist with the acquisition and application of essential interpersonal skills.

Objective: To demonstrate how SPs can be utilized to teach interpersonal and clinical skills to athletic training students.

Background: Live patient encounters are preferred over simulations to evaluate athletic training students' clinical and critical thinking skills. These live encounters unfortunately do not coincide with the content taught daily or weekly in the classroom and/or laboratory (eg, performing a secondary assessment). Standardized patients are individuals who are trained to consistently and accurately portray a specific injury, illness, or condition to multiple students. SP encounters can be utilized to provide students the opportunity to practice essential interpersonal and clinical skills in real-time (eg, counseling a patient with an eating disorder, conflict resolution with a peer/coach).

Description: A SP encounter provides novice students an opportunity to practice essential interpersonal and clinical skills at the needed time during didactic and clinical education. SPs are trained for consistency amongst student examiners therefore, a consistent learning experience is provided for all students. Also, students can be evaluated and provided immediate feedback on their clinical decision-making and critical thinking skills. Standardized patients are superior to simulated patients because they consistently portray accurate physical findings and also provide immediate feedback to the student on his/her performance. A SP experience is a more detailed process to create than role play or simulation. The case a SP portrays (eg, patient with shoulder pain) must be developed ahead of time, the SP must be trained to portray the case, and the student evaluation methods need to center around performance objectives of that particular SP encounter (eg, asking thorough history questions).

Clinical Advantages: A SP encounter is patient-centered and enables students to develop a process-oriented approach to health care. Students must focus on the patient instead of focusing on one specific interpersonal or clinical skill. Students interact with the SP in small groups or one-on-one, and receive immediate feedback regarding their performance. The students practice their interpersonal and clinical skills with the SP in a realistic fashion, providing an authentic patient encounter

similar to clinical practice. By understanding the benefits of utilizing SPs for teaching interpersonal and clinical skills, athletic training educators can develop more timely, meaningful learning experiences for their students.

Conclusions: Standardized patients are an evidence-based teaching strategy that enhances didactic and clinical education. One of the benefits of utilizing a SP includes the ability of the educator to shape the athletic training students thinking in real-time, rather than recalling information after the encounter is complete. As a result, teaching and assessing interpersonal and clinical skills can be executed with greater validity and fidelity.

Building a Comprehensive Master Assessment Plan

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Context: Scholarship of Teaching and Learning. Objective: To illustrate the use of a pre-designed master assessment program and the ease of creating your own.

Background: Current curricula within higher education, particularly programs that involve medical care, are integrating evidence-based education. Assessment of student learning outcomes involving aggregate statistics from cohorts is a necessary element of this movement. Challenges encountered by ATEPs include the lack of comparison to existing assessments of student learning outcomes, the lack of evidence over multiple years, and the lack of knowledge in creating an assessment plan. These problems require a strong infrastructure of technical knowledge and support. A difficulty for ATEPs is obtaining a faculty consensus as to what should be achieved, (ie, what and how to measure student learning outcomes). Once these challenges are overcome, the challenge of actually implementing and sustaining that comprehensive master assessment plan follows.

Description: Comprehensive assessment management plans that can help meet these challenges are available to higher educational institutions. A higher education program managed by Nuventive solutions is TracDat. Stephen F. Austin State University purchased the TracDat service during the 2009 academic year in preparation for the Southern Association of Colleges and Schools comprehensive review in 2013. This was a campus-wide implementation mostly used to track student learning outcomes. The aggregated data gathered from this instrument has helped many of SFA's programs meet the requirements of their respective accrediting bodies.

Clinical Advantages: Some of the highlighted features of the web-based TracDat are the ability to tie a program's outcomes/objectives to the missions of the department, college/school, and university levels; detailed assessment methods; report on action plans; attach evidence to a document repository; and create data reports, thus allowing a program to address weak areas. Although TracDat can be purchased at a discounted rate for individual departments, the cost may prohibit programs from utilizing it. At Troy University, the Department of Athletic Training created a means to track, measure, and report student learning outcomes using TracDat data reports as a template while overcoming the common challenge of faculty wanting to create, implement, and maintain a collaborative assessment framework from scratch.

Conclusion: A comprehensive master assessment plan that measures and addresses students learning outcomes can either be a purchased program or a university generated plan.

Almost Real: Use of High Fidelity Simulators in Athletic Training Education

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Context: On-field care of a spine injured football player in respiratory or cardiac arrest requires teamwork and expediency in the proper removal of equipment to access the airway and the chest for resuscitation. Although the students had practiced this procedure many times before with role-playing, the high-fidelity simulator created a very realistic situation where the students were required to assess vital signs and take appropriate action.

Objective: To evaluate students' performance and confidence in caring for a spine-injured football player in respiratory or cardiac arrest through a realistic simulation.

Background: This simulation utilized a high-fidelity simulator (iStan, METI Corporation) in football equipment lying prone on the "field" in respiratory or cardiac arrest. Students were required to assess the situation and provide life saving measures while maintaining spinal stabilization.

Description: Second year AT students (n= 56) participated in the simulation. Each student completed a self-confidence survey at three different points in the simulation: pre-simulation, post-simulation and post-debriefing. Students were asked to rate their confidence in their ability to perform as part of a team caring for a spine injured athlete and in leading that team. The team was required to assess the downed "athlete" and provide life-saving measures while maintaining spinal stabilization. The groups were debriefed while watching a video of their performance. Pre-simulation confidence in participating as a part of a team in caring for a spine injured athlete was high. 82% rated their confidence as an 8 or better (on a 10 point scale). Confidence in leading the team was lower (50% of the students rated their confidence at 8 or higher). There was no significant difference in overall pre-simulation confidence scores between teams. All students actively participated in the debriefing session that provided an active learning environment to assess their performance and reflect about the experience. The post-debrief confidence levels between teams was significantly different (mean 57.39, sd= 9.578) and decreased across all groups from the post-simulation confidence, presumably because students saw mistakes on the video that were previously not noted. Teams that performed inadequately had lower confidence scores post debrief than those teams who performed well.

Clinical Advantages: This simulation provided a safe realistic environment to practice team skills in the care of the spine-injured athlete. Student feedback after the simulation indicated that they were totally immersed in the simulation and had many of the emotional and physiological responses that would be expected in a real situation (ie, sweaty palms, increased heart rate, etc).

Conclusion: High-fidelity simulators have been minimally used in the field of athletic training. This simulation created a tremendous amount of interest and excitement amongst the students and provided a safe, realistic environment to practice team skills in the care of the spine-injured athlete. Since the initiation of this

simulation, numerous requests have been received from athletic training and other healthcare professionals to allow their staff to complete the scenario as part of their emergency training.

Implementing Problem-Based Learning: Strategies To Enhance Learning Outcomes And Encourage Evidence Based Practice

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Salisbury University, Salisbury, MD

Context: The use of problem-based learning (PBL) scenarios is a constructive approach to observe and assess clinical proficiency throughout the athletic training curriculum.

Objective: To discuss three strategies (multiple group assignment, video recordings, and reflective writing) that can be implemented within the context of PBL to enhance learning outcomes and encourage evidence based practice.

Background: The transition to a PBL curriculum has come with many successes and hurdles. Throughout six years of implementing PBL, potential modifications to the process are constantly evaluated and often incorporated to improve student learning. One noteworthy barrier that has been difficult to overcome is the issue of assessment. Prior to demonstrations, students are exposed to general grading criteria, not problem specific rubrics. This is due to the nature of PBL and its inherent constructivist quality of multiple approaches. As one might expect, students resist this approach. They want to know exactly what the "right way" is and how they will be graded. As a result, students were often disappointed when receiving grades they felt were inconsistent with their performance.

Description: In order to alleviate concerns about grades and, more importantly, enhance student learning, three strategies have been implemented: multiple group assignment, video recordings, and reflective writing. Although these strategies are not novel in education, they are noteworthy in the context of PBL. Students are placed in groups of 3-5 to tackle their PBL task; each group has a different scenario of related content. Students work in their group to prepare for an in-class proficiency demonstration. They must be ready to respond to feedback from a live model which may change the course of their scenario. Additionally, one member of each original group is placed in a reflection group (RG). Each member of the RG is responsible for cognitive competency related to all scenarios, although they are only required to demonstrate clinical proficiency for their original PBL scenario. Demonstrations are video recorded and downloaded to USB drives for grading and reflection. Following demonstration, students are placed in their RG and provided with a grading rubric to critique each RG members' performance for clinical proficiency. Students must cite resources and provide evidence-based rationale for their assessment.

Clinical Advantages: Having students examine their reflection group's actual performance has eliminated the problem of "selective memory" that sometimes occurred when grades were distributed. It has exposed students to multiple scenarios beyond their original assignment and allowed the group members to focus their assessment on process and outcomes, not grades. Students have become more open to learning from their experiences rather than resisting feedback from instructors. Because evidence-based practice is incorporated into the student's classroom activities, it has the potential to transition to their professional practice.

Conclusion: The use of multiple group assignments, video recording and reflective writing in PBL has enhanced learning outcomes and encouraged evidence based practice.

Empowering Future Athletic Trainers: Integrating Evidence-Based Leadership into Athletic Training Education Programs

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Context: Foundational Behaviors of Professional Practice in Athletic Training are basic actions that impact all aspects of the profession of athletic training. athletic training education programs must develop its student's ability to communicate effectively while serving as an advocate for both patients and the profession. Communication and advocacy are essential components of leadership, one aspect of management in the workplace. The instruction and development of leadership skills is an area most athletic training educator's find challenging to integrate throughout curriculums. Most curriculums emphasize task-oriented management skills (ie budget and purchasing) rather than leadership skills; often because leadership is comprised of various factors that are difficult to outline succinctly. Meanwhile, students who acquire leadership skills in the classroom are often deprived of the opportunity to utilize the skills in a clinical setting. Many Approved Clinical Instructors limit a student's opportunity to assume a leadership roles, minimizing their ability to develop the skills needed to become an effective leader.

Objective: To outline evidence based leadership strategies and their integration into athletic training education curriculums.

Background: Research shows that leaders are made, not born. Leadership experts support this conclusion by identifying the need for healthcare professionals at all levels to practice and employ the use of leadership skills to establish strong professional relationships and to foster a perception of credibility. The research supports the need to emphasize the development of leadership skills in the educational process of an athletic trainer to increase job satisfaction and reduce the risk of burnout. Creating and managing a positive working environment is essential to retention within the athletic training profession, especially at the collegiate level. Teaching athletic training students evidence-based leadership and management strategies both in the classroom and clinical setting provides the building blocks for the growth of future leaders. A strong foundation allows students an opportunity to gain confidence and develop a sense of professional and personal empowerment in the workplace. Self awareness and reflection through the classroom setting initiates the process of creating successful managers, but mentors in the clinical setting provide the students an opportunity to model and implement these skills promoting academic and professional growth.

Description: This poster will illustrate methods for developing leadership and communication skills, to be implemented throughout an athletic training curriculum.

Clinical Advantage(s): Recent research has identified a high level of job dissatisfaction and burnout amongst athletic trainers, especially at the collegiate level. Proper instruction of leadership and communication skills can empower athletic training students to make superior managerial decisions in future employment. As future managers, athletic trainers proficient in these skills create a productive and collaborative health care environment serving as advocates for their patients and the profession of athletic training.

Conclusion(s): Proficiency in leadership and communication skills can lead to empowerment in the workplace. Athletic Trainers with high job satisfaction are more productive and collegial; all of which leads to providing superior health care to patients and advocacy for the profession.

Educating Today's Student Through a Blended Course Format

Hetzler TM, Carpenter EA

Missouri State University, Springfield, MO

Context: Meeting the demands of content rich curriculum and expanding class sizes, along with the needs of the 21st century students, may require new teaching strategies. athletic training education programs (ATEP) must constantly evaluate new, engaging ways to deliver content to students. Objective: To present the process and techniques we utilized to develop and teach a blended athletic training course.

Background: Today's ATEPs are faced with 1) meeting the demands of technology dependent students, 2) pressure from administration to develop online/technology based courses, and 3) a need to stay current and teach the continuously expanding content required for entry-level athletic trainers. Many ATEPs are being asked to do all of this with less faculty, fewer resources, and increased class sizes. A blended course format offers one solution to accomplish these challenges.

Description: We offer a description of processes used to develop the course, examples of specific techniques that can be utilized to enhance student learning, feedback from students, as well as lessons learned from the process.

Clinical Advantage(s): Literature from other health care education programs indicates blended courses have the potential to offer many advantages to both instructor and students. This format provides students and instructors the ability to capitalize on great resources and be exposed to different viewpoints they typically cannot access in a face to face course. Blended courses are able to more actively engage students and instructors in the course material. As interaction with the material increases, interest in learning the course material increases as well. Other advantages for instructors include an enhanced understanding and appreciation for online teaching and learning, improved technology skills, and an improved connection with the students.

Conclusion(s): Ideally, blended courses use an approach to teaching that incorporates thoughtfully designed online components into a face-to-face course to engage students and enhance student learning. One's creativity, comfort level with different technologies and University guidelines are the only limits to the formats and advantages of a blended course. We found this to be true in the development and teaching of this particular athletic training course. Student responses to the format included, "I liked how they provided extra videos and links – it really helped me get a visual for how things were supposed to look", and "I liked that all of the class sessions were planned out so I knew what we were going over during class, what I needed to do before class and any homework that must be completed after class." As instructors we recognized the necessity of becoming proficient in the technology that we were going to use and limiting the number of technologies we included in the class. We also learned very early to use our resources and to ask for advice early and often. Most importantly, we found it is imperative that all assignments or activities done outside of the face-to-face meeting time must directly relate to what is planned for the classroom meetings.

Teaching and Assessing Metacognition to Develop the Athletic Training Student's Clinical Decision Making

Hudson MB

Missouri State University, Springfield, MO

Context: This presentation focuses on the scholarship of teaching and learning.

Objective: The presentation will describe metacognition and its relationship to clinical decision making. It will also provide instructional techniques for developing the student's metacognition.

Background: Evidence-based medicine is clinical decision making based on the best research evidence, the experiences of the clinician, and the values of the patient. One factor that influences clinical decisions is the practitioner's personal biases. While it is assumed that the practitioner frames their decisions on making the correct diagnosis and/or deciding the optimal treatment for the patient, the practitioner also incorporates personal assumptions, values, and experiences into the process. A difference between the experienced and novice practitioner is that the experienced practitioner tends to be more aware of the socialization process that developed their assumptions and values. Because of this, they are better able to question their ideas, dissect current practices, analyze practical knowledge, and engage the patient in transformative dialogue.

Description: At the core of making informed clinical decisions is a strong, discipline-specific knowledge base and proficient reflective abilities. The bridge between these two factors is competent metacognitive skills. Metacognition is knowing about how one knows and thinks. It consists of metacognitive knowledge, metacognitive control, and self-regulation. For students to manage their learning, they must assess their metacognitive knowledge. In other words, they must know how they think and solve problems. To develop this ability, instructors should ask students to describe their feelings about how they think, which should lead to value judgments about what they know. Developing metacognitive control requires that students learn when and why to use certain strategies to acquire knowledge. Instructors who share experiences regarding how they gained knowledge can help students develop their metacognitive control. Finally, students must learn how to regulate their factual, conceptual, procedural, and metacognitive knowledge. Quizzes or assignments that address fact checking versus performance enhancement in each knowledge area can help students identify their strengths and weaknesses, as well as enhance their motivation to learn. Instructors must clarify the purposes of these activities and allow for discussion so students may connect new knowledge to old knowledge.

Clinical Advantage(s): While the original definition of metacognition focused on children, educational researchers are concerned that college-aged students have limited metacognitive abilities. Metacognition is also a foundation to clinical decision making. Consequently, it is important that athletic training students develop their metacognitive knowledge, control, and self-regulation.

Conclusion(s): Metacognition supports clinical decision making, and it is the interrelation of metacognitive knowledge, metacognitive control, and self-regulation. Metacognitive knowledge relates to knowing about strategies for learning, thinking and problem solving. Metacognitive control refers to the learner's judgment of when and why to use these strategies. Self-regulation is knowing about one's strengths and weaknesses regarding their knowledge base and learning strategies. It also directs one's motivation to learn. Consequently, teaching students how to develop their metacognitive abilities should support better clinical decision making.

Using Study Abroad Education to Increase Cultural Awareness in Sports Medicine

Jutte LS

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Context: Study abroad programs with an emphasis on sports medicine are becoming more popular. These programs promote multicultural education that may help students value and become more sensitive to patients' diversity.

Objective: The aim of this presentation is to present an attempt at engaging students in the Australian sports medicine culture during a 3 week Sports Medicine Field Study Program in Australia.

Background: As globalization creates a smaller world, health care providers are more likely to interact with patients from cultural backgrounds different than their own. In 2003, Geisler proposed that multicultural education (an education which prepares students to function in a pluralistic society by developing critical thinking skills so that individuals can appreciate situations from others' perspectives) be part of athletic training education. Multicultural education helps students become more aware of diversity, which is one of the first steps towards becoming a culturally competent health care provider, (ie a health care provider who understand how cultural differences play a role in patient care). In the 2006 NATA's Educational Competencies, cultural competence is listed as a foundational behavior of professional practice. Hence, it is imperative that athletic training students, as future health care providers, appreciate and understand differences due to culture, race, social class, religion, gender, and sexual orientation. Colleges and Universities are acknowledging the importance of multicultural education by requiring diversity education that facilitates their knowledge of other cultures, but also aids in developing their own cultural identities. Today there are several opportunities for athletic training students to study abroad where the educational focus is on sports medicine; as athletic training educators we must take advantage of these experiences and enhance our students' cultural awareness.

Description: Fifteen athletic training students from a variety of universities enrolled in a Sports Medicine Field study spending 3 weeks in Australia. Course assignments included a reading assignment about cultural differences, a daily journal and a group paper. In addition to recording their daily thoughts, feelings, and activities in their journals, students were asked to reflect on 4 questions designed to bring about cultural awareness. Group paper topics were specific to comparing and contrasting an aspect of sports medicine between the two cultures. During this presentation, I will examine students' responses and discuss methods for improving cultural awareness.

Clinical Advantage(s): By enhancing students' knowledge of other cultures, they may become more aware and tolerant of diversity, leading them to be more culturally sensitive health care providers.

Conclusion(s): With the recent increase in the number of international sport medicine learning experiences, educators should take advantage of these opportunities to enhance their students' multicultural education.

Results of a Scholarship of Teaching and Learning Project: Lessons Learned from Service Learning Pedagogy

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Context: Service learning is a pedagogical approach in which educational objectives are linked with service-based experiential learning within a community. Students involved help meet needs of the community partner while gaining further understanding of the course and discipline as well as gain a sense of civic responsibility.

Background: First-year athletic training students (ATS) participated in a 5 week service experience concurrent with a general medical didactic course. After reflecting on outcomes from an initial partnership period, we found it necessary to meet the needs of both the community partner and students more fully. Thus we purposefully revised the general medical course and associated service experience utilizing a service learning pedagogical approach. In order to see if we met desired outcomes with the addition of course interventions such as focused instruction, case studies and self-reflection, we conducted classroom research following a Scholarship of Teaching and Learning (SOTL) framework.

Objective: The purpose of our research was to determine the ways in which students' values, knowledge and skill sets were broadened through complementary direct service learning experiences and classroom activities within course A283 – General Medical Issues in Athletic Training.

Description: Eighteen first-year students (10 male, 8 female) participated in the IRB-approved project during the 2010 spring semester. Data collection included knowledge surveys which assessed students' professional values and perceived skill level prior to and after the service experience. We also conducted initial and follow-up focus group interviews and collected individual reflective journals before, during, and after the service experience. Descriptive statistics were used to evaluate survey data. Qualitative data from interviews and reflective journals were analyzed via inductive content analysis. Trustworthiness was assured via methodological triangulation and member checks.

Clinical Advantage(s): Quantitative results indicated there was no significant difference between students' professional values or patient intake-skills when comparing survey responses before and after the service experience. While quantitative results did not identify a significant difference, preliminary qualitative results indicated students perceived improvement in patient communication, intake and documentation skills. Besides skill refinement, some students also reported intrinsic rewards such as increased feelings of civic responsibility and improved self-efficacy. Barriers to learning included lack of engagement with physicians and uncertainty of service purpose and professional value ambiguity.

Conclusion(s): Focused pre-service instruction on patient intake skills successfully prepared students for their service experience however efforts should be directed toward surveying students' perception of skills, knowledge and professional values upon immediate entry into the ATEP as well as just prior to and after course interventions in order to evaluate outcomes fully. Educational objectives relative to service learning goals, development of values and foundational behaviors of professional practice of the athletic trainer should be emphasized to ATS within service experiences or related classes. Further research specific to service learning, professional values and other issues of civic professionalism should be considered. Data from community partners should also be collected and analyzed through SOTL research in order to fully evaluate outcomes from service learning pedagogy.

Curricular Infusion of Evidence-Based Practice via the Evidence-Based Teaching Model

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Context: Current research urges medical professions to expand the instruction and implementation of evidence-based practice (EBP) for the improvement of patient outcomes. However, few examples of strategies aimed at teaching the EBP process exist in athletic training.

Objective: The Evidence-Based Teaching Model (EBTM) provides instructors with a module to implement EBP within courses at the undergraduate level. Comprised of lecture materials, classroom assignments, and guided discussions, the EBTM focuses on the process of EBP. Most specifically, instruction focuses on, 1) defining a clinical question through use of the PICO format, 2) searching for evidence, 3) critical appraisal skills, 4) using clinical expertise, 5) and determining appropriate treatment methods.

Background: Establishing an expectation that entry-level health practitioners be "evidence users," in that they can locate, evaluate, and incorporate research from an evidence-based process into their clinical practices, must stem into athletic training. Teaching strategies, such as those found in nursing and medical literature, are needed to guide our educators in forming course content that aligns with the 5th edition of NATA Competencies which features EBP-focused items.

Description: The EBTM is meant for instruction over 2 days of lecture and includes student activities relating to article review and clinical instructor (CI) discussion to be completed both within and outside of class time. In-class assignments promote discussion and require the instructor facilitate and foster discussion. The "Make it Stick Article Activity" includes an informal introduction to literature appraisal and critical thinking via a journal article pre-selected through EBTM training. This activity requires students to read an article related to the course; while reading, students place their thoughts on sticky notes. When finished, the students stick their thoughts on the board. The instructor then reviews the notes, and identifies any ideas and areas that are deemed applicable to the content of the course, while combining those thoughts with concepts relating to EBP. The "Clinical Instructor Discussion Activity" allows students to create clinical questions via the PICO format and discuss case-scenarios with CIs regarding decision making. Students and CIs have the freedom to follow the direction of conversation and are not restricted to any one path of content. Variance among students regarding the final developed clinical question, as well as the proposed course of treatment, is encouraged.

Clinical Advantage: Teaching strategies that focus on instruction of core EBP skills such as clinical questioning, literature search and appraisal, and levels of evidence, can be modeled in athletic training clinical practice.

Conclusion: To the best of our knowledge, no other EBP teaching model exists within athletic training education. The EBTM is viewed as successful by educators as it fosters an inquisitive learning environment, critical thinking, and communication. Specific goals achievable through the EBTM include expansion of EBP presence in class and increased student and CI interaction. Overall, the EBTM provides a mechanism to begin incorporation of EBP concepts in athletic training curricula.

Using Computer Based Assessment to Evaluate Student's Higher Order Thinking

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Context: This presentation will provide an interactive demonstration of methods used to assess student's higher order thinking via written tests. Writing test questions that evaluate student's higher order thinking (eg application, analysis and evaluation) are challenging to create. However, by incorporating video, audio and still photography in online testing software through blackboard/ web-ct, instructors can more thoroughly evaluate these skills.

Objective: The objective of this presentation is to demonstrate how video, audio and still photography can be used to enhance testing scenarios done through course based software in blackboard/ web-ct. These scenarios can be used to assess high order thinking skills in students. A secondary objective is to share with the audience "lessons learned" in the many years this testing has been done, and ways to avoid common pitfalls.

Background: Athletic training educators are faced with the challenge of assessing whether students have the appropriate knowledge and skill to provide high quality heath care to the clients they serve. In order to function in this capacity, athletic training students must learn to think critically. According to Oermann and Gaberson (2009) critical thinking involves drawing conclusions based upon data, information and evidence. In traditional multiple choice tests this data and information is given by the written word, and occasionally pictures. However, using computer based assessment, this information can be given in a more real-world context. Examples include watching a history being taken, looking at a special test being performed, critiquing the performance of that test and evaluating its necessity. These skills are clearly linked to higher order thinking, specifically application, analysis and evaluation. According to Anderson and Krathwohl (2001) these are the very skills that are required to promote transfer of knowledge from one situation to another. Students build connections and develop cognitive frameworks of knowledge, which facilitate this transfer to new and unique situations.

Description: This presentation will demonstrate how video, audio and still photography has been used in testing situations with students to assess higher level thinking. Examples of actual test questions will be used to guide the presentation. Other information that will be shared includes how to best configure the testing software, how to develop a testing bank of pictures and video, and how to avoid common pitfalls in the testing process.

Clinical Advantage: Students possessing higher order learning skills have a stronger cognitive framework on which to transfer knowledge to the unique and unpredictable nature of the clinical experience.

Conclusion: Evaluating higher order thinking is critical to preparing entry level students in the workforce. Being able to assess this using computer based assessment provides a valuable resource for the athletic training educator.

Integrating Information Literacy And Critical Appraisal Skills Into An Undergraduate Athletic Training Education Program

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Context: The ability to seek, find and critically appraise medical information is vital for success in today's rapidly changing healthcare environment. Evidence based medicine practices are based on a clinician's ability to efficiently find information, accurately appraise that information, and be confident that implementing this new found information will result in a positive outcome for their patient. While many healthcare professionals learn these skills in graduate education programs, athletic training is a healthcare profession in which students are eligible for national certification exams at the completion of their Bachelor's degree (entry level credential). Consequently, some ATC's entering the profession will not receive this education unless it is implemented into their undergraduate curriculum.

Objective: The purpose of this project was to develop a learning-over-time information seeking literacy program based on assignments designed to provide fundamental information seeking and critical appraisal skills.

Background: With this in mind, a faculty decision was made in May 2009 to take steps to integrate information literacy and critical appraisal skills into our undergraduate athletic training education program (ATEP). While faculty members were independently requiring students to complete "research" type assignments, there was limited guidance given to the students regarding the most efficient manner to complete these research based projects. Consequently, the outcomes of the projects did not meet the expectations of the faculty members and students were left confused and bewildered.

Description: Subsequently, during the fall of 2009, lessons and assignments were created and implemented across the curriculum from the pre-professional phase of the program (sophomore year) through the professional phase of the program (4 semesters). Sample lessons and assignments will be shared as part of this poster presentation. Objectives for learning included; identifying specific research questions using a PICO format, understanding the differences between disease oriented information (DOEs) and patient oriented information (POEs), selecting and utilizing appropriate search engines and their advanced tools to narrow searches, understanding the strengths and weaknesses of different types of articles (hierarchy of information) as they pertain to our specific profession, and critical appraisal skills. Future objectives will include the ability to critically analyze information and to provide a foundational understanding of statistical analysis commonly found in evidence based medicine articles.

Clinical Advantage: Students developing information seeking skills in the classroom will be more likely to base their current and future clinical practices on best evidence.

Conclusion: Quality of student work on written assignments has subsequently improved. Additional assignments need to be created for the new school year to further develop these skills.

Simulation Meets Athletic Training Education: An Innovative Collaborative Teaching Project

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Context: Simulation is a teaching strategy frequently used in healthcare education that can be extended to athletic training (AT) education. Simulation provides an opportunity for students to have guided practice with technical and communication skills in a supervised learning environment. Simulation also presents a safe and controlled learning environment to students.

Objective: To provide AT students with a simulated scenario of encountering an athlete suffering from an acute asthmatic attack.

Background: The AT students involved in this project were enrolled in the sophomore level course titled General Medical Conditions in Athletic Training. Simulation is utilized widely in nursing education to provide nursing students with simulated clinical experiences prior to and throughout clinical coursework that involves direct patient care. The faculty conducting this project include nursing and AT faculty who have collaborated previously to provide AT students with education on caring for an asthmatic athlete. The nursing program at Indiana University of Pennsylvania houses a moderate to high fidelity state of the art simulation laboratory containing 12 manikins representing various age groups.

Description: Utilizing an existing high fidelity manikin housed in the nursing department, AT and nursing faculty collaborated to develop a simulation scenario that presented students with an opportunity to practice therapeutic interventions for an asthmatic athlete. Following traditional classroom presentation of content on caring for the asthmatic athlete, AT students were provided with an opportunity to participate in simulation scenarios during which the students provided direct care interventions to the manikin. The simulation concluded with a guided debriefing session between AT and nursing faculty and the AT students. The debriefing included a discussion of the quality of the students' interventions, strategies to improve students' future performance with "real" athletes and a discussion of student reactions to the simulation scenario.

Clinical Advantages: Simulation provides a quality alternative or supplement to traditional clinical experiences for AT students. The limited availability of general medical clinical placements coupled with a lack of controlled exposure to various medical emergencies with athletes during clinical experiences can challenge AT faculty. Simulation provides faculty with a teaching learning strategy to bridge these gaps in clinical experiences.

Conclusion: AT faculty who are at a university that also houses a nursing program equipped with a moderate to high fidelity simulation lab may have resources available to them to assist in meeting general medical competency and clinical proficiency requirements. Partnering nursing clinical knowledge with AT faculty expertise provides a quality educational experience for AT students.

First-Year Athletic Training Students' Perceptions of Reflective Journaling As A Pedagogical Tool In Clinical Education

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Context: Clinical education provides athletic training students the opportunity to integrate knowledge and psychomotor skills into discreet, practical clinical skill sets. However, effective integration of knowledge and skills during clinical education does not occur haphazardly. Educators must creatively utilize sound pedagogical strategies to fully capitalize on the learning experiences that clinical education can provide and to help foster deeper levels of learning among students.

Objective: To discuss first-year athletic training students' perceptions of reflective journaling to enhance the experiential learning process during clinical education.

Background: A primary challenge facing all athletic training education programs is to successfully integrate formal classroom and laboratory instruction with clinical education. This challenge is magnified for first-year athletic training students who are confronted with a plethora of new athletic training knowledge and psychomotor skills. The ability to take new knowledge and new skills and decide how to best integrate them into clinical practice is the essence of the clinical proficiencies and the foundation for clinical education. On this premise, we have implemented reflective journaling to help students visualize the ramifications of knowledge and skill integration during clinical education as well as foster deeper levels of learning through an understanding of the learning process. Furthermore, reflective journaling has been employed to assist students in identifying connections between classroom and laboratory instruction and their clinical education experiences.

Description: Development of the reflective journaling project as a pedagogical tool to enhance the learning experience for first-year athletic training students during clinical education is discussed. Students' perceptions of the reflective journaling project were examined for perceived value, impact on immediate role as a first-year athletic training student, and impact on future role as an athletic training student and clinician. Specific examples of journal entries are provided; these entries illuminate the critical role that reflective journaling can fill in first-year athletic training students' development during clinical education.

Clinical Advantages: The use of reflective journaling provides a critical means of dialogue between the student and the clinical instructor during clinical education while helping students draw connections between classroom and laboratory instruction and clinical education. More importantly, reflective journaling provides a powerful pathway for students to analyze their own learning processes during clinical education.

Conclusions: Reflective journaling, when conducted with explicit guidelines and dialogue with instructors, serves as a useful pedagogical tool in the clinical education of first-year athletic training students.

Teaching Anatomy and Physiology Using Student Centered Instructional Methods

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Context: Anatomy and Physiology (A&P) is a widely offered undergraduate course in which students study the structure and function of the human body. Historically, A&P has been taught using teacher-centered approaches grounded in cognitive learning theories of behaviorism and information processing that advocate direct instruction. In teacher-centered approaches, knowledge is transmitted from teacher to students. These approaches have created a variety of concerns and problems. The use of directed instruction has created a culture of unmotivated students who are unable to solve problems and apply knowledge. In an effort to improve achievement, motivation, and foster higher order thinking and problem solving skills, student-centered instructional methods should be employed.

Objective: To inform Athletic Training educators about the benefits of incorporating student-centered instructional methods to improve musculoskeletal knowledge acquisition.

Background: A&P courses have traditionally been taught using directed instruction methodologies which cultivate memorization. As such, students acquire isolated facts and concepts in a passive manner, failing to appreciate the application of what they are learning. While learning boney landmarks and muscular attachments are essential; however, the rote memorization required by traditional anatomy courses often leaves out the opportunity for student creativity in the learning process, restricts the capacity to appreciate the relationship between anatomical structure and function, and obscures the relevance of course content to real life.

Description: Working in groups, students construct an anatomical model depicting the bones, muscles, and their attachments. Each group needs paper, string, tape, and coloring tools. Students tape a piece of butcher paper onto a flat surface and outline a group member in the anatomical position. One half of the sketch should represent an anterior view, the other half a posterior view. As a group, learners first discuss and sketch the bones and boney markings. Learners then label the bones and attach string segments to represent muscles. Once the anatomical models have been created, students "show and tell" their models to the learning community and reflect on their model construction by writing a narrative summary. Students also host a question and answer session during which they quiz each other on the name and function of each part of the model.

Clinical Advantages: An A&P course provides an ideal environment for the application of student-centered learning environments. The application of constructivist methods to teaching A&P assists students in generating their own knowledge through experienced-based activities and enhances student creativity in the learning process. Students demonstrate their A&P knowledge and incorporate lower order thinking (e.g. recall and comprehension of anatomical terms) within the context of higher order thinking (e.g. appreciating relationships between anatomical structure and function), thereby reducing rote memorization of anatomical content.

Conclusions: Creating an anatomical model provides an opportunity for participation within a situated context, use of previous experiences, performance of an authentic activity, and construction of new knowledge. The activity also provides social interactions through collaboration and facilitates higher order thinking. Students must work together to solve the problems of constructing the anatomical model.

Athletic Training Students' Perceptions of the Effectiveness of a Journal Club Activity for Increasing Critical Thinking Skills

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Context: Increasing emphasis is being placed on engaged learning and critical thinking skills across higher education. Educators are always looking for new strategies to keep students engaged in learning and enhance these skills. A journal club activity may be another tool educators can use to meet these goals.

Objective: The purpose of this study was to describe the perceptions of athletic training students on the effectiveness of a journal club activity to enhance confidence in their abilities to critically evaluate current literature, frame an argument, foster collegiality among peers and professionals, and increase awareness of the importance of maintaining current practices using literature.

Background: The activity investigated was held as part of a clinical education seminar which was held weekly though other learning activities were also conducted. Seven journal club sessions were held over the course of the semester. Students were responsible for choosing, distributing, and facilitating a critical discussion of a peer reviewed article. Faculty participated but did not lead the discussion. The primary difference in this journal club was the inclusion of different levels of graduate students and faculty as participants in the discussions.

Description: This was a descriptive study with a researcher-designed paper survey with a four point Likert Scale anchored by 1 (strongly disagree) and 4 (strongly agree) which was distributed to students enrolled in a CAATE accredited entry-level master athletic training education program. The instrument was examined for face and content validity by three experienced college educators from a variety of disciplines. Inter-item reliability for each of the sub-scales were calculated using Cronbach's Alpha and were as follows: Critical Analysis α =.766, Opinion α =.928, Collegiality α =.907, Awareness α =.56 and Satisfaction α =.750. 11 (10 F, 1 M) entry-level graduate athletic training students (6 first year, 5 second year) volunteered to participate (100% response rate). The perceptions data were collected at the conclusion of the semester. As this was a descriptive study, the purpose was to describe students' perceptions of the effectiveness of this activity to increase critical thinking and professional skills. Data were grouped into 5 sub-scales related to each of the items above (critical analysis, opinion, collegiality, awareness, and satisfaction) based on individual question focus. The awareness sub-scale was deleted as the items did not appear to be functioning together (α =.56). Descriptive statistics (means and standard deviations) were calculated for each sub-scale. Since this was a descriptive study no inferential statistics were calculated. Students had a favorable opinion of the effectiveness of a journal club activity on each of the sub-scales, Critical Analysis M=2.89, sd=.413, Opinion M=3.03, sd=.605, Collegiality M=2.98, sd=.562, Satisfaction M=2.59, sd=.539.

Clinical Advantage: A journal club activity can be implemented into athletic training coursework to engage students in research, encourage critical thinking, and bolster evidence based practice.

Conclusions: Overall, the subjects had a favorable perception of a student and faculty journal club activity. Students perceive this type of activity as useful for enhancing their ability to think critically about current literature, frame an informed argument, and discuss literature with peers and professionals.

Building the Foundation: Educational Soundness in Teaching Evidence-Based Practice

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Context: Athletic training educators are challenged with not only utilizing Evidence Based Practice (EBP) to design learning experiences but also to develop mastery of this skill set for athletic training students. Successful implementation of EBP education into the curricula requires not only an awareness of the best techniques, but also the timing to implement these techniques. Thrusting the full concept of EBP too early upon novice learners may lead to resistance and confusion, thus impairing their ability to add their EBP skill set. Providing the time necessary for students to develop their own clinical practice is critical to the athletic training students' understanding and ability to analyze clinical practice. Incorporating advanced pedagogies such as EBP with novice learners inhibits the scaffolding needed to progress. An understanding of learning theories with undergraduate students will successfully promote the adoption of EBP throughout the curriculum.

Objective: The purpose of this presentation is to present athletic training educators with a method of providing the pedagogical foundation for implementing EBP into the curricula. Specifically, we will provide successful strategies for working with novice athletic training students in order to create a sound foundation for future competence in EBP.

Background: EBP provides a research-based approach for sound clinical evaluation. The implementation of this practice across allied health professions reveals its effectiveness for both students and clinicians. Current literature presents the importance of using this tool in the didactic setting as well as the importance for sound research evidence to be introduced throughout athletic training curriculums. Allowing athletic training students to explore EBP through a variety of learning strategies including problem-based learning encourages a more student-centered approach. Most importantly, the importance of the clinicians' incorporation of EBP significantly increases the likelihood of its use in clinical practice. The experiences with clinical instructors play a critical role for athletic training students in shaping their knowledge of current practices.

Description: This presentation will outline strategies to enhance the athletic training curricula and specific activities targeted towards novice learners that will foster EBP. Clinical Advantage: Promoting clinical inquiry among athletic training students is the primary purpose for teaching EBP. However, clinicians and educators must be fully aware of the educational learning process needed to develop research-based learning.

Conclusion: Staggering the implementation of EBP across the curriculum promotes the appropriate scaffolding necessary to build the foundation for sound inquiry-based research. Along with clinical experiences supported by clinical instructors, undergraduate athletic training students need time to build their own knowledge base to fully appreciate EBP. A clear process by which athletic training educators can implement EBP in their curricula and tend to the cognitive learning theories that apply to novice learners is essential to success of the adoption of this practice.

Consistency is Key: How to Train Standardized Patients for Consistent Assessments

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Context: The use of standardized patients (SPs) has proven valuable to teach and evaluate the clinical skills of medical students over the past 30 years, and is now being utilized in athletic training education. Researchers have shown that the validity and fidelity of an SP experience depends on the SP being properly trained to portray the case (e.g., appropriate affect, physical findings, medical and social history).

Objective: To outline and describe the steps necessary for training a SP to portray an injury, illness, or condition in a consistent and standardized fashion.

Background: Standardized patients are individuals who are trained to consistently and accurately portray a specific injury, illness, or condition to multiple students. The SP recreates the history, personality, physical findings, and emotional state of a patient with a specific injury, illness, or condition. Standardized patients have been integrated into the education of various health care professionals, including physicians, nurses, physical therapists and pharmacists for teaching and evaluation.

Description: Overall, SP training includes a total of 4-10 hours of training with the SP trainer and clinician over several days. Each of the 2-3 training sessions lasting approximately 1-2 hours, help ensure consistent portrayal and evaluation of each student examiner. Training sessions for a SP includes: 1) An overview of the SP process; 2) Presentation of the case (e.g., personal, medical, social history; body language; physical findings; emotional and personality characteristics); 3) Role play of the case; and 4) Instruction on providing feedback to the student examiner. The use of a SP training template, including objectives of the case, instructions, opening statement, history of present illness/condition, physical exam findings, and student evaluation are provided to the SP for home review. A dry-run or role play of the case allows the SP to successfully demonstrate their ability to portray the case consistently. An additional tune-up occurs immediately before portrayal of the case to student examiners.

Clinical Advantages: The students practice their clinical skills with the SP in a realistic fashion, providing an authentic patient encounter similar to clinical practice. A SP encounter is patient-centered and enables students to develop a process-oriented approach to health care, instead of focusing on one specific clinical skill. Students interact with the SP in small groups or one-on-one, and receive immediate feedback regarding their performance. As a result, a consistent experience is provided for all students to practice knowledge and clinical skills in addition to interpersonal skills, clinical decision-making and critical thinking skills.

Conclusions: Standardized patients are an evidence-based teaching strategy that enhances didactic and clinical education. During the SP encounter, students are provided an opportunity to gather a history, perform an organized physical examination, develop rapport with the patient, and receive direct feedback. With proper training, the SP will provide students with a consistent experience, thus increasing the validity and depth of the learning experience. As a result of this consistent portrayal, teaching and assessing students can be executed with greater standardization and uniformity.

Driving Change in Athletic Training Practice: Implementing Evidence Based Practice Skills into Athletic Training Curriculum

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Context: Evidence based practice (EBP) is the framework that the health care community is embracing in order to improve quality of the 21st century healthcare environment. Athletic Trainers, as healthcare providers, have been with improving patient outcomes, demonstrating quality services as well as participating proactively in healthcare reform. Students entering the practice of Athletic Trainers in 2010 are expected to frame their practice more deliberately in terms of outcomes rather than process. It is therefore the responsibility of educators, through curriculum, to engage students towards adopting EBP into their practices.

Objective: The objective of this work is to successfully implement teaching strategies which facilitate the learning, adoption, and appreciation for EBP by students of Athletic Training. Students will be able to: 1.) Successfully implement EBP during their didactic and clinical experiences as a student; 2.) Successfully implement evidence based strategies into their own practice as they begin their careers.

Background: The presentation of this teaching strategy will contribute to the body of knowledge that currently exists pertaining to learning strategies related to Evidence Based Practice across all disciplines. Sharing of strategies accelerates the body of knowledge related to successful pedagogies, and reduces the duplication of strategies that are not successful. Also, we create cross fertilization among health professions which contributes to shared language and techniques. Athletic Trainers work and collaborate with a variety of other healthcare providers in order to achieve positive patient outcomes. This common language would decrease the learning curve between providers in the practice environment.

Description: Students enrolled in a Therapeutic Modalities in Athletic Training course were asked to complete a modified Critical Appraisal Topic (CAT) on three questions related to the intervention of therapeutic modalities. Students were given each of the clinical questions by the instructor and were asked to find three articles which documented clinical trials related to the clinical question. The students composed papers which included 1.) clinical question, 2.) bullet listing of the clinical findings, 3.) clinical bottom line, 4.) comparison table of the three articles, and 5.) implications for practice, education, and future research.

Clinical Advantages: The CAT project is an engaging and relevant form of evidence based research. Students learn how to find relevant literature as well as critically analyze the literature. The ability to decipher the research then needs to correlate with clinical practice and patient goals/outcomes to be used within athletic training practice. This project overarches into promoting student writing and critical thinking skills.

Conclusion(s): The results of this project showed that students struggled to find relevant research and critically analyze the research. The students struggled to relate the key clinical findings, clinical bottom line and implications for practice to the clinical question. Students also had difficulty writing in a technical/professional manner. Since this project was a start to the implementation of EBP into the curriculum, the faculty has been assessing ways to incorporate and build research and library skills earlier into the education program.

Post-Professional Athletic Training Educators' Importance, Attitudes, Knowledge, and Perceived Barriers of Evidence-Based Practice Concepts

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Context: Evidence-based practice (EBP) is defined as the integration of the best available research evidence, patient values, and clinician expertise used for making clinical decisions. Due to the recent integration of EBP within the Post-Professional competencies an assessment of importance, attitudes, knowledge, and perceived barriers is needed to provide information concerning further implementation.

Objective: Assess post-professional athletic training educators' importance, attitudes, knowledge, and perceived barriers of EBP.

Design and Setting: Web-based Inquisite survey.

Participants: Post-professional athletic training education program (PATEP) educators from fourteen programs (n=24; 52% response rate; 40.88±9.23 years old; 12 males and 12 females).

Data Collection and Analysis: Descriptive statistics were used to examine educators' importance, attitudes, knowledge, and perceived barriers of EBP using the Evidence-Based Concepts Assessment (EBCA). The EBCA was created using Inquisite 8.0 Corporate Survey Builder and administered via e-mail. The survey consisted of six sections: perceived importance of the steps of EBP (six Likert scale items), attitudes and beliefs (15 Likert scale items), knowledge (six multiple choice questions), accessibility (two multi-part questions), and barriers (16 Likert scale items), and 16 demographic questions. Additionally, a total knowledge score was calculated by adding the amount of correct responses among the 6 knowledge questions.

Results: All of the PATEP educators felt that developing a clinical question, critically appraising the literature, basing clinical decision making on best available evidence, and searching the literature for evidence to support clinical practice was either "very important" or "moderately important". PATEP educators (87.5%) "strongly agree" (N=21) and 12.5% "agree" (N=3) that the application of EBP is important to the credibility of the athletic training profession. A majority of educators (91.7%) also "strongly agree" (N=11) or "agree" (N=11) that literature and research findings are useful in their day-to-day practice. Additionally, 91.7% of PATEP educators "strongly agree" (N=10) or "agree" (N=12) that EBP is a process that helps them make decisions about patient care. Similarly, 95.8% (N=23) "strongly disagree" or "disagree" that using EBP was a "cook book" clinical practice. On the knowledge section, 16.7% (N=4) of the educators scored a perfect 6 out of 6, 87.5% (N=21) answered two or less incorrectly, and 12.5% (N=3) answered more than two incorrectly. PATEP Educators had the most difficulty answering the question regarding which on-line source had the highest quality content with 50% (N=12) responding with the correct answer of Cochrane databases while the others choose Medline. The top three barriers identified by PATEP educators were application of research findings to individual patients with unique characteristics, the ability to find research literature relating to their patient population, and time. Conversely, 91.67% (N=22) either "strongly disagreed" or "disagreed" that support from administration, ability to critically appraise the literature, understanding the EBP process, and understanding of statistical analysis were barriers to EBP implementation.

Conclusions: Overall, PATEP educators have positive attitudes towards evidence-based practice and believe that EBP is important. PATEP educators are generally knowledgeable in evidence-based practice concepts and have identified several barriers preventing implementation of EBP regarding finding literature related to their patient populations and time.

Post-Professional Athletic Training Students', Importance, Attitudes, Knowledge, and Perceived Barriers of Evidence-Based Practice Concepts

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Context: Evidence-based practice (EBP) is defined as the integration of the best available research evidence, patient values, and clinician expertise used for making clinical decisions. EBP is important for the advancement of athletic training. An assessment of importance, attitudes, knowledge, and perceived barriers is the first step towards implementation of EBP within athletic training.

Objective: Assess post-professional athletic training students' importance, attitudes, knowledge, and perceived barriers of evidence-based practice.

Design and Setting: Web-based Inquisite survey.

PARTICIPANTS: Seventy-one post-professional athletic training students from all 15 post-professional athletic training education programs (n=71; 38% response rate; 24.66±5.127 years old; 24 males and 47 females.

Data Collection and Analysis: Descriptive statistics were used to examine students' importance, attitudes, knowledge, and perceived barriers of EBP using the Evidence-Based Concepts Assessment (EBCA). The EBCA was created using Inquisite 8.0 Corporate Survey Builder and administered via e-mail. The survey consisted of six sections: perceived importance of the steps of EBP (six Likert scale items), attitudes and beliefs (15 Likert scale items), knowledge (six multiple choice questions), accessibility (two multi-part questions), and barriers (16 Likert scale items), and 16 demographic questions. Additionally, a total knowledge score was calculated by adding the amount of correct responses among the 6 knowledge questions. Independent variables included faculty rank, experience teaching EBP, and level of evidence of research conducted.

Results: Nearly all of the post-professional athletic training students (N=70) reported that critically appraising the literature and basing clinical decision on the current best evidence was "very important" or "moderately important." Most students "strongly agree" (N=55) or "agree" (N=14) that application of EBP is important to the credibility of the athletic training profession. Eleven students answered all six knowledge questions correctly and sixty-five missed two or less. Only six of the students answered two or more questions incorrectly. The top three barriers identified by students to implementing EBP were time 40.8% "strongly agree" (N=29) and 40.8% agree (N=29), application of research findings to individual patients with unique characteristics 4.2% "strongly agree" (N=3) and 46.5% "agree" (N=33), and availability of EBP mentors 4.2% "strongly agree" (N=3) and 45.1% "agree" (N=32). Eighty-seven percent of students did not perceive familiarity with internet databases or search engines to be a barrier to implementing EBP. Likewise, 60.6% "strongly disagree" (N=43) and 22.5% "disagree" (N=16) that ability to make independent clinical decisions is a barrier. Finally, fifty six students "strongly disagree" or "disagree" that understanding the EBP process or accessibility of information resource is a barrier.

Conclusions: Overall, post-professional athletic training students are positive towards evidence-based practice concepts and feel that they are important for athletic training. These students are also generally knowledgeable in EBP concepts. They have identified the top three barriers to implementation of EBP to be time, lack of literature for patients with unique characteristics, and lack of mentors in EBP.

Scholarship of Discovery

Are Teachers Being Fair When Assessing Students' Clinical Skills?

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Context: Scholarship of Discovery – Experimental.

Objective: To examine two different grading techniques in the assessment of students' clinical skill performances.

Design: The study took place over two one-day periods. Two assessment techniques were used: (a) real-time (ie live); and (b) reviewing a videotaped performance. Scores were analyzed with a two-way ANOVA (Classification x Score) with repeated measures on score. Bonferroni adjustment was applied to post-hoc means comparisons.

Setting: Students performed the clinical skill and were assessed (real-time) in a designated lab space. Videotape review occurred in an adjacent lab by a separate investigator.

Participants: Students classified as sophomores (n=10), juniors (n=10), and entry-level masters students (n=8) were asked to perform a novel clinical skill appropriate for academic level within a CAATE-approved curriculum. Two Program Directors (PDs), both Approved Clinical Instructors, performed the assessments.

Intervention: PDs assessed students' skills using a standardized rubric. Two assessment techniques were utilized, real-time and review of videotaped performance. PDs were randomly assigned and counterbalanced to each technique. Inter-rater reliability was checked and maintained throughout the study.

Main Outcome Measures: Direct comparisons were made between scores obtained using real-time and videotaped assessment techniques.

Results: Scores obtained on a subset of students using the same scoring technique established inter-rater reliability. Similar scoring was observed between PDs ($p=.99$), with an intraclass correlation coefficient of .996 ($p<.001$). ANOVA indicated a Classification x Score interaction ($p < .01$). Real-time scoring indicated graduates (90.6 ± 5.2) scored higher than both juniors (67.9 ± 4.7; $p<.05$) and sophomores (57.4 ± 4.7; $p<.001$). Scoring method made no difference between scores for juniors (real-time vs. videotaped, 67.9 ± 4.7 vs. 68.2 ± 4.6, $p>.05$) or graduates (90.6 ± 5.2 vs. 82.7 ± 5.1, $p>.05$). However, sophomores were scored higher during real-time compared to videotaped scoring (57.4 ± 4.7 vs. 49.1 ± 4.6, $p<.05$).

Conclusions: Real-time and videotaped scores were similar for juniors and graduates, although sophomores were systematically scored higher when assessed in real-time. Sophomores were inherently less skilled than the other classifications. During real-time assessment, instructors could unintentionally provide inaccurate high scores by failing to observe some of the student's numerous mistakes. Grading via videotape likely allowed for more accurate grading of those students with lower skill levels.

Athletic Training Educators' Perceptions and Preferences for Using Games and Puzzles as Pedagogical Tools

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Context: Games and puzzles have been used to reinforce cognitive information presented in class, to introduce new concepts, or to assess learning and retention. They are a fun and interactive means of educating students. However, the use of games and puzzles as pedagogical tools within athletic training education by educators is limited.

Objective: To examine athletic training educators (ATE) perceptions and preferences for utilizing games and puzzles as teaching tools to enhance student learning and retention.

Design: Descriptive survey using the TurningPoint (Turning Technologies, Youngstown, Ohio).

Setting: 2009 National Athletic Trainers' Association Educators' Conference (NATA-EC).

Participants: One hundred and nine ATEs (males = 39, females = 70) attending the break-out session "Using Games as a Teaching Tool to Enhance Athletic Training Student Learning and Retention."

Data Collection: As part of the break-out session, participants were asked 8 questions regarding their perceptions and preferences for utilizing games and puzzles as teaching tools within their classroom and 5 demographic questions. Questions were integrated into the Microsoft® PowerPoint® presentation and collected via the TurningPoint audience response system to simulate the use of interactive questioning during a presentation. Questions included: Do you use games/puzzles in your courses? Why do you use games/puzzles in your classroom? Do you feel using games/puzzles in your classes improves learning outcomes? Overall, due you believe games/puzzles enhance learning outcomes? Do you feel that games/puzzles increase students' confidence levels? What types of games/puzzles have you used? My students feel that games/puzzles enhance learning. Student Feedback regarding the use of games/puzzles has been?

Analysis: Generation of frequency and cross tabs tables.

Results: Among participants, 69% (n=75) reported utilizing games and puzzle in their courses. The three common usages of games and puzzles in the classroom were to review learned concepts (28.2%, n=73), motivate student learning (23.6%, n=61) and because they are viewed as fun and a distractive means to educate students (23.6%, n=61). Many participants (89.6%, n=94) agreed/strongly agreed that games and puzzles improved learning outcomes, however, only 2.9% (n=3) reported having data to support such a claim. The two most common types of activities used in the classroom were homemade (31.4% ,n=23) and computerized games (20.7%, n=41).

Conclusions: The results of the descriptive study suggest that ATE do use games and puzzle regularly in the classroom. It was no surprise that games and puzzles were most often used to a means of reviewing learned concepts as well as motivating students to learn. These results are consistent with what literature does exist on this topic in higher education. Given the range of available commercial games and puzzles, it was surprising to see that homemade games were the most commonly used activity in the classroom. The lack of data to support the use of games and puzzles in the athletic training education classroom is a concern. Therefore, given its popularity, research should continue to focus on the use of games and puzzles as pedagogical tools to enhance athletic training students' learning and retention.

Assessment of Athletic Training Students' Professional Efficacy, Exhaustion, and Cynicism Using Maslach Burnout Inventory (MBI) - General Survey

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Context: Burnout among health care professionals is commonplace. The climate of working closely with patients, long hours and erratic schedules adds to an individual's stress and burnout potential. Athletic training students (ATSs) have a very unique college experience where they find themselves juggling clinical and academic responsibilities often simultaneously. The possibility of entering a healthcare profession with clinical signs and symptoms of burnout may lead to an early departure from the profession. Identifying possible areas of concern is critical for early intervention and program modification to ensure a strong vibrant future of healthcare professionals.

Objective: The purpose of this study was to examine athletic training (AT) students' burnout as it relates to their professional efficacy (PE), exhaustion (EX), and cynicism (CY).

Design: Descriptive survey.

Setting: Paper surveys were delivered and collected from 9 program directors, who were given written instructions for their AT students.

Participants: There were 244 participants: 106 males, 138 females. The average age was 20.1 years. There were 8 (3.3%) freshman, 91 (37.3%) sophomores, 76 (31.1%) juniors, and 69 (28.3%) seniors. There institutions were 64.3% private, 35.7% public, 78.7% NCAA D-I/IA and 21.3% NCAA D-III.

Data Collection and Analysis: The Maslach Burnout Inventory or MBI general survey (Schaufeli et al., 1996) was used. This valid and reliable instrument had 16 statements of job-related feelings. The answers were then grouped into three subscales: PE, EX, and CY as instructed on the instrument. IRB approval was obtained. Means, standard deviations, frequencies, percentages, and levels of subscales (high, moderate, and low) were calculated on SPSS 16.0.

Results: Based on the results, the students reported high levels of burnout in EX (36.7 +/- 7.5), high levels in CY (43.4 +/- 9.2), and moderate levels in PE (23.5 +/- 10.5). There was no significant differences between males and females with PE ($t = 0.33$, $p>.05$), EX ($t = -0.48$, $p>.05$), and CY ($t = -0.43$, $p>.05$). There was also no significant differences between grade level and PE ($F= 0.14$, $p>.05$), EX ($F= 0.72$, $p>.05$), and CY ($F= 1.01$, $p>.05$). There were a significant Pearson correlations between PE subscale and EX ($r= 0.64$, $p<.001$), and between PE and CY ($r= 0.65$, $p<.001$).

Conclusions: Based on these results, most ATSs were experience moderate to high levels of burnout. Furthermore, their level in school and gender did not affect their level of burnout. AT students have a lot of positive and negative stressors related to the academic and clinical components of the ATEP compounded with additional personal and student life issues. Identifying areas of concern may help decrease burnout with these students and lead to a stronger more vibrant graduate.

Immediate Feedback and Learning in Athletic Training Education

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Context: Immediate feedback has been shown to improve student learning more efficiently than delayed feedback in low level general education classes by providing accurate information to the cognitive processing mechanisms. The Immediate Feedback Assessment Technique (IFAT) gives students immediate feedback on whether their answer was correct or not and allows them to continue to make decisions until they achieve the correct answer. No research exists examining the effects of immediate feedback on learning in higher level athletic training coursework.

Objective: The purpose of this study was to determine if scores on a follow-up examination improved more for participants that took the initial examination with the IFAT compared to participants

that took the initial examination with a word processer answer sheet.

Design: A 2 x 2 randomized, crossover trial experimental design.

Setting: Participants completed four data collection sessions in a standard higher education classroom.

Participants: A convenience sample of twenty-three students (six male, seventeen female; age = 20.41±.80 years) enrolled in an athletic training upper extremity assessment course volunteered to participate in the study during the 2007 and 2009 fall semesters. Interventions: The independent variables were the examination type (IFAT and word processer answer sheet) and session (initial examination and follow-up examination). All examinations were comprised of multiple choice questions. Participants scratched off an opaque coating to make an answer selection when using the IFAT. A star was revealed in a box if the answer was correct whereas an empty box was revealed if the answer was incorrect allowing the participants to continue making choices until they arrived at the correct answer. When using the word processor answer sheet, participants circled the letter of the answer they thought was correct, receiving no feedback on whether their answer was correct or incorrect. Participants were randomly assigned to an examination type for the initial examination and completed an unannounced follow-up examination with similar questions and answer options approximately one week after the initial examination. Four weeks later, participants completed an initial examination of the type they did not take initially and one week later completed an unannounced follow-up examination.

Main Outcome Measure(s): The dependent variables were the examination scores of the participants on the initial examinations and the follow-up examinations. The initial examination scores were compared to the participants' follow-up examination scores across examination type using a repeated measure ANOVA.

Results: The main effect for time was significant ($F(1,44) = 6.035$, $P = .018$) as the follow-up session scores (mean = 16.15±4.16) were significantly higher than the initial examination scores (mean = 15.07±4.14). The main effect for group ($F(1,44) = .115$, $P = .736$) and the interaction between examination type and session ($F(1,44) = .154$, $P = .696$) were not significant.

Conclusions: Using the IFAT did not significantly improve follow-up examination scores among the participants compared to using a word processer answer sheet.

Self-Efficacy Ratings on Selected Skills Sets for Athletic Training Students

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Context: Increased levels of Self-Efficacy (SE) have been linked to increased skill performance. No valid and reliable instrument has been developed within Athletic Training Education Programs (ATEPs) to obtain measurements of self-efficacy.

Objective: To test a new instrument, the Self-Efficacy in Athletic Training Students (SEATS) survey and to determine changes in Athletic Training Student SE over time.

Design: Test re-test reliability analysis and longitudinal analysis. Setting: Large NCAA Division I Mid-west public university.

Participants: Undergraduate students (Reliability testing, N = 72, 38 males and 34 females, age 18 to 22 years; Longitudinal analysis, N=35, 14 males and 21 females, age 18 to 22 years) in the pre-professional and professional phase of an accredited ATEP.

Interventions: For the reliability analysis students were asked to complete the survey during a class period twice within two weeks. For the longitudinal analysis students were asked to complete the instrument three times during the academic year (beginning, middle, and end). Students rated their level of SE on a 1 to 5 point Likert-type scale for seven skill components common to orthopedic evaluation (History, Inspection, Palpation, Functional Tests, Special Tests, Neurovascular, Assessment). The survey was reviewed for face and content validity by a panel of three Athletic Training educators with a combined experience in excess of 20 years in AT education. Reliability was established with a test-retest method and revealed a high level of reliability ($r = .954$).

Main Outcome Measures: Data was collected and entered into SPSS 17 for analysis. Mean and standard deviation ratings of SE were calculated for each student and skill component across the three repeated measures. Differences in means amongst the three repeated measures were analyzed for statistical significance utilizing an analysis of variance. Post-hoc contrast analysis was conducted to identify relationships where statistical significance occurred.

Results: Analysis indicated significant changes across the three measures ($F2,103 = 11.55$, $P = .000$) Post-hoc contrasts revealed significant changes from measure 1 to 3 ($P = .000$). Analysis indicated no significant differences ($P < .05$) for males on the seven skill components while females were significantly different on all of the skill components from measure 1 to 3. Males displayed significantly higher initial average ratings of SE when compared to females (3.61 ± .85 and 3.17 ± 1.02 respectively). Final average ratings of SE were not significantly different between males and females (4.08 ± .42 and 4.10 ± .50 respectively).

Conclusions: In general, males had higher initial levels of self-efficacy than females. Females had higher average increases in self-efficacy across time. While our findings suggest that while males have higher levels of self-efficacy, this difference was attenuated as females' overall levels of self-efficacy increased more over time, ultimately resulting in similar levels.

Gatekeeping Practices Among Athletic Training Education Programs

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Context: A commitment to risk management is clearly evident in accreditation standards for Athletic Training Education Programs (ATEPs), which devote a substantial amount of time to assurance of modality calibration, electrical safety, and numerous other compliance-related safety regulations. Surprisingly, we do not have standards to safeguard the public and to advance the profession, other than those that relate to certification and licensure. Failure to adequately assess the professional fitness of each student jeopardizes public safety and public perception of the athletic training profession. Gatekeeping procedures are essential to ensure that athletic training students possess professional fitness before acquiring professional credentials to practice.

Objective: To investigate current practices among ATEPs that pertain to assessment of professional fitness and gatekeeping policies for dismissal of a student for non-academic reasons.

Design: Cross-sectional, anonymous web-based survey.

Setting: Graduate Athletic Training Education Program

Participants: ATEP directors, both undergraduate and graduate programs. The survey was completed by 95 of the 366 ATEP directors (26% response rate). All NATA Districts were represented; District IV had the greatest representation (22%).

Data Collection and Analysis: A previously developed 27-item survey was modified, with the permission of its developers, and was reviewed for content validity by three experienced athletic training educators. ATEP director contact information was accessed from a publicly available website (www.caate.net). A second request for participation was sent two weeks after the initial request. Survey items addressed program demographics (2 items), professional fitness evaluation and gatekeeping practices (7 items), and history of problem student issues (18 items). Descriptive statistics (frequency counts and percentages) were calculated using SPSS 17.0.

Results: The most common admission procedures were face-to-face interview (62%) and personal biography (48%). Only 20% of ATEP directors reported a requirement for a criminal background check. An annual evaluation of conduct and professionalism was reported by 71% of respondents. Clinical instructors are involved in conduct evaluations in 72% of the programs. Only one ATEP (1%) utilizes a committee for such evaluations. Dismissal of a student for non-academic reasons within the past 5 years was reported by 38% of respondents, and 12% reported dismissal of a student for non-academic reasons within the past 12 months. There was one report of a student-initiated lawsuit relating to ethical violation within the past 5 academic years. Professional fitness issues are most often managed within the program (no outside adjudication). Repeat of academic coursework was the most common remedial approach for problem resolution. The most common "problem-student" was described as an 18-21 year-old white female.

Conclusions: Common professional fitness issues are addressed by a variety of gatekeeping methods. ATEPs must require students to demonstrate competencies beyond acquisition of clinical knowledge and skills. Educators must be prepared to dismiss a professionally unfit student from the program. ATEPs should be required to address professional fitness issues for accreditation.

Factors of Persistence Among Graduates of Athletic Training Education Programs

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Context: Retention has been studied previously in current athletic training (AT) students. It appears that programs retain students who are motivated and well integrated into the academic and clinical aspects of their education. Though some of the variables contributing to AT student persistence have been identified, no research to date has examined the factors leading to successful matriculation of recent graduates of athletic training education programs (ATEPs).

Objective: To determine the factors that lead to successful matriculation through an entry-level ATEP among students enrolled in an NATA accredited Master of Education in Athletic Training program.

Design: We used qualitative methods to gain rich description of the factors involved in student matriculation through graduation from ATEPs.

Setting: NATA accredited athletic training Master of Education program from a research intensive university.

Participants: Fourteen (12 female, 2 males) successful graduates of accredited undergraduate entry-level ATEPs that were enrolled in an NATA accredited Master of Education program volunteered to participate.

Data Collection and Analysis: We conducted semi-structured interviews and analyzed data through a grounded theory approach. Open, axial, and selective coding procedures were utilized. To ensure trustworthiness, data were analyzed by two independent coders. The researchers then negotiated over the coding categories until 100% agreement was reached. We also performed member checks.

Results: Four themes emerged from the data. Persistence decisions appear to be influenced by students' positive interactions with faculty, clinical instructors and peers. The environment of the ATEP also has an effect on persistence. Specifically, students appreciate the small class sizes and individual attention they receive from faculty and clinical instructors. The clinical and academic educational experiences students encountered also played into their decisions to persist. Participants felt that they learned a great deal in both the clinic and the classroom and this learning motivated them to persist. Finally, participants could see themselves practicing athletic training as a career, and this greatly influenced their eventual persistence.

Conclusions: The current study gives AT faculty and administrators insight into the reasons students persist to graduate from ATEPs. These results can potentially be used to help improve ATEPs struggling with attrition. Specifically, athletic training programs should strive to develop close-knit learning communities that stress positive interactions between students and instructors. Athletic training educators and clinical instructors must also work to present the athletic training field as one that is exciting and dynamic. Students who are eager to pursue a career as an athletic trainer will be the most likely to matriculate through their respective entry-level education programs.

Perceptions of Entry-Level Degree Requirements for Athletic Training Education

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Context: Since 1968, the number of athletic training (AT) programs has grown. There are 374 entry-level programs accredited by the Commission on Accreditation of Athletic Training Education (CAATE), 23 of which are entry-level master's (ELM) programs. Other health professions (ie, physical therapy, occupational therapy, and physician assistant) have changed their entry-level requirements to masters or higher.

Objective: The purpose of this study was to examine personnel's perceptions of the entry-level degree requirements for athletic training (AT) education.

Design: Descriptive survey.

Setting: Electronic surveys were emailed and collected from all program directors (PD), head athletic trainers (HAT), department chairs (DC), and academic deans/highest administrator (DN) over the entry-level athletic training program.

Participants: There were 418 participants: 270 males, 148 females; and 45 had CAATE masters program. The average age was 46.6 years, 159 (38%) were PD, 117 (28%) were HAT, 93 (22.2%) were DC, and 65 (15.5%) were DN. Subjects were employed by: 264 (63.2%) private and 154 (36.8%) public institutions.

Data Collection and Analysis: 28-question survey was developed. Inter-rater reliability, content and construct validity of the survey instrument were established. Participants were asked perceptual questions pertaining to entry-level AT degree requirements. IRB approval was obtained. Frequencies and percentages were calculated on SPSS 16.0.

Results: Subjects felt that the ELM AT programs would give the AT profession more respect and understanding in medical community (232 or 55.5% agreed), in the athletic community (167 or 39% agreed), and in the non-medical community such as parents or insurance companies (211 or 50.5% agreed). 220 (52.6%) felt that the ELM AT program would give more depth of content in evidence-based medicine. 284 (67.9%) felt that the AT courses and content should be at the undergraduate level. 317 (75.8%) felt that AT curriculums are as comprehensive and challenging as other entry-level healthcare programs. 259 (61.9%) felt that the minimum EL AT degree requirements should be at the bachelor's level.

Conclusions: Based on these results, most of the personnel believe that the entry-level master's AT program would make the profession more respected and understood by the medial, non-medical, and athletic populations. However, they feel that the minimum entry-level degree requirements should remain at the bachelor's degree. Most of these institutions may hesitate to change to EL master's because of traditions or limitations within school. Others may simply not know enough about these programs.

Infusing Information Literacy in the Curriculum to Foster the Development of Evidence-based Practitioners

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Context: Information Literacy Standards for Higher Education were developed by the Association of College and Research Libraries (ACRL) and are endorsed by the American Association for Education (AAE) and the Council on Independent Colleges (CIC). The five Standards encompass 22 performance indicators that are seen as key building blocks for developing personal frameworks for learning how to learn, facilitating reasoning and critical thinking skills, and becoming informed consumers of information. Teaching information literacy places the emphasis not on specific information resources but rather the skills needed to locate, access, investigate and evaluate the information. Information literacy curriculums are seen as student-centered and promote student engagement in research and inquiry consistent with Boyer's Model of Scholarship. The ACRL recommends integrating Information Literacy skills across the curriculum, and throughout the student's entire academic career. Multiple and varied assignments and assessment methods should be utilized at different times within the overall curriculum in order to stimulate, cultivate and develop lower and higher ordered thinking processes.

Objective: The purpose of the study was to evaluate students' information literacy skills pre, mid and post infusion of information literacy skills into the curriculum.

Design: The study utilized a mixed method design utilizing survey and focus groups to collect data.

Setting: CAATE approved undergraduate entry-level program.

Participants: First through fourth year athletic training students (n=49) enrolled in first semester coursework. The study continued into the second semester in which 26 ATS continued their participation.

Interventions: Information literacy specific assignments were included in all athletic training core courses each semester of the data collection period.

Main Outcome Measures: Data was collected on six factors utilizing the Research Readiness Self-Assessment (RRSA) on-line survey: 1) Perceived research skills, 2) research and library experience, 3) browsing the internet, 4) understanding plagiarism, 5) evaluating information, and 6) obtaining information. A t-test was utilized for the pre-mid test analysis and a repeated measure ANOVA for the pre-mid-post test analysis. Focus groups were completed utilizing first (n=5) and fourth (n=5) year students. Focus group questions evaluated resources used, search strategies, evaluating information and responsible use of information.

Results: Pre-mid test showed significant ($p<.05$) gains in information literacy skills in three areas, obtaining information, research and library experiences and perceived research skills. For the pre-mid-post test significance ($p<.05$) was seen in evaluating information and research and library experience. Analysis of focus group responses revealed improvement in all information literacy skills.

Conclusion: Students who participate in Information Literacy Infused curriculums gain information literacy skills. Researchers agree that increasing competency in information literacy is the foundation for evidence-based practice and provides health care professionals with the skills to be literate consumers of information. The information literate person is able to recognize the need for additional information and are able locate, retrieve, evaluate and apply information. Therefore, information literacy skills are prerequisite to an evidence-based approach to clinical practice and a confident approach to lifelong learning. In order for athletic training graduates to engage in evidence-based practice, educators must prepare students with information literacy knowledge and skills.

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

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Context: Research on implementing evidence-based practice (EBP) into didactic and clinical education has largely come from the nursing and medical fields and is limited in the athletic training profession. Research in athletic training has not focused

on how to best alleviate the gap of knowledge that exists in terms of EBP implementation into athletic training education, but instead has focused largely on the steps of the EBP process. Understanding the implementation strategies and experiences of Approved Clinical Instructors (ACIs) who utilize EBP in their clinical instruction will help to further promote the use of EBP in clinical practice.

Objective: To investigate the experiences and strategies of ACIs who are successfully utilizing EBP concepts while mentoring and teaching professional athletic training students.

Design: Emergent design interviews with phenomenological and modified grounded theory perspectives were used for this inquiry. Approved clinical instructors with at least one year of experience were interviewed for this analysis.

Setting: Phone interviews were conducted with all participants.

Participants: Sixteen ACIs (11 males, 5 females; average years as an athletic trainer = 10 ± 4.66; average years as an ACI = 6.81± 3.94) were interviewed to determine their experience with using EBP components within the clinical setting.

Data Collection and Analysis: Interview data were analyzed and coded for common themes and sub-themes regarding implementation strategies by the researcher. Established themes were triangulated through peer review and member checking to verify the data.

Results: ACIs promote three main methods of implementing EBP concepts with their students: 1) promoting self-discovery, 2) promoting sharing of information, and 3) promoting critical thinking. The analysis also revealed that challenges in implementation center largely on the first three steps of the evidence-based practice process. The steps of defining a clinical question, searching the literature, and appraising the literature were identified as the parts of the EBP process the ACIs helped students with the most. Finally, ACIs indicated that they believed modeling the behavior of making clinical decisions based on evidence was the best avenue to encourage students to continue the use of EBP principles.

Conclusions: Athletic training education program directors should encourage and recommend specific techniques for EBP implementation within the clinical setting. Since role modeling is an effective strategy to encourage clinical skills, training of ACIs should include methods in which to address the steps of the EBP process while still promoting critical thinking. Educating all of the academic program's clinical and didactic staff in the utilization of EBP could increase the students' use of the related processes.

An Investigation Into Athletic Training Students Perceptions of Frustration During the Clinical Experience

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Context: As athletic training students (ATSs) matriculate through their respective programs, they are assigned clinical experiences. Previous research has documented that over half of an entry level athletic trainers professional development has come from the clinical experience. The demands placed upon students during this time are substantial and the learning that takes place is often complex so it is appropriate for them to experience an emotional response such as frustration. To date, limited research in athletic training exists which examines ATSs emotional response during the clinical experience. A better understanding of students' frustrations during their clinical experiences can help clinical instructors be more proactive at creating an environment that enhances learning during this challenging time for students.

Objective: To investigate ATSs perceptions of frustration during the clinical experience. Design: A mixed-method survey design.

Setting: Students enrolled in a course that contained a clinical experience from the 19 accredited programs within Pennsylvania.

Participants: A convenience sample was used for this study. Fourteen of the 19 accredited programs in Pennsylvania agreed to participate; 318 out of a possible 438 students (72%) completed surveys.

Data Collection and Analysis: After institutional review board was obtained data was collected using the Athletic Training Student Survey (ATSS). The ATSS was developed by the lead investigator using categories from a previously published qualitative study. The instrument consists of 24 likert scale items pertaining to five constructs of frustration (Demand, Interaction, Respect, Skill, and Supervision) and two open ended questions. A factor analysis was performed to ensure items centered on the concept of frustration and revealed the 5 factors. Cronbach's alpha for each of the five factors was found to be > .72. An expert panel was used to ensure validity of the instrument. Data was analyzed by obtaining frequency distributions for each of the five constructs of frustration. Qualitative analysis was performed using a grounded theory approach for the open ended questions.

Results: Approximately half of all students surveyed reported being "very frustrated" or "extremely frustrated" during the clinical experience by events/behaviors from the following constructs: Respect: 63.44 %, Skill: 51.04%, and Supervision: 46.14%. Qualitative support for each of these areas centered on clinical instructors ability to ensure other individuals (i.e. coaches, administrators, athletes) understand and respect the role of an ATS and do not view them as a student with limited knowledge and skills. Additionally, support for the construct of skill and supervision centered on clinical instructor's ability to provide appropriate supervision through scaffolding to enable students to utilize their skills while also providing guidance and communication throughout.

Conclusions: Athletic training students appear to be frustrated during the clinical experience. Though we cannot eliminate frustrations it is important to understand them so that we can create environments that will foster growth and development. Future research should examine perceptions of frustration as it relates to other variables such as students' level of experience and/or gender.

Developing Approved Clinical Instructors: How On Campus/ Off Campus Location and Years of Experience Influence Self-Perceived Strengths and Weaknesses of Clinical Instructor Behaviors

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Context: Initial Approved Clinical Instructor (ACI) Training is a standardized curriculum of five hours. ACIs must be re-trained every three years, yet there are no guidelines indicating what

topics should be included. Evaluating ACI clinical instruction strengths and weaknesses based on demographic trends, may help athletic training education program administrators identify training topics.

Objective: To identify ACI perceived strengths and weaknesses regarding important interpersonal and professional clinical instructor behaviors related to ACI location, on or off campus, and years of professional experience.

Design: Cross-sectional, descriptive survey.

Setting: Commission on Accreditation of Athletic Training Education programs (ATEPs) in one state from National Athletic Trainers' Association District 4.

Participants: Approved Clinical Instructors from nine ATEPs in one state. Forty-four ACIs completed the survey, for a response return rate of 38%.

Data Collection and Analysis: Respondents completed a previously validated survey, Clinical Instructor Behavior Instrument II. The survey consisted of 43 items, including 15 interpersonal and 15 professional ACI behaviors, and demographic information. Respondents rated their perceived strength or weakness regarding the 30 behaviors using a Likert-scale (1 = very weak; 5 = very strong). We completed a profile analysis using multivariate analysis of variance and repeated measures (RM) to assess differences between ACI location (LOC) and years of professional experience (YrsExp) to determine trends of ACI interpersonal and professional behaviors.

Results: No multivariate tests (Hotelling's T) were significant ($p \geq .05$) for LOC or YrsExp. Significant univariate tests for LOC include: Assessing Students Frequently ($p = .032$) and Demonstrating Appropriate Knowledge ($p = .041$); and for YrsExp include: Interest in Patient Care ($p = .032$) and Answers Questions Clearly ($p = .020$). For interpersonal behaviors, profile plots from RM analysis indicated that off-campus ACIs perceived greater strength in demonstrating Interest in Patient Care, Enthusiasm for Teaching, and Encouraging Students to Ask Questions than on-campus ACIs. Those ACIs with 10-15 YrsExp had stronger self-perceptions on interpersonal behaviors of: Demonstrating Support and Encouragement to Students, Interest in Students, Teaching Enthusiasm, and Availability than ACIs with less or more YrsExp. For professional behaviors, off-campus ACIs perceived greater strength for Assessing Students Frequently than on-campus ACIs. Individuals with 16-20 YrsExp pattern of focus included: Relating Theory to Practice, Stimulating Problem Solving, and Providing Suggestions for Improvement. Those ACIs with >20 YrsExp showed higher overall strength ratings on professional behaviors compared to less experienced ACIs, especially those with 1-5 YrsExp.

Conclusions: Off-campus ACIs indicate their strengths are demonstrating enthusiasm for their ACI role. Due to the pace of athletics, ACIs on-campus may need training pertaining to efficient clinical instructor methods that focus on teaching when time is limited. ACIs with 16-20 YrsExp show focus on providing an enriching learning environment. ACIs with fewer YrsExp demonstrate a need for development in the professional ACI role related to teaching, evaluation methods, and feedback. Frequent contact and training of young professionals may help to raise self-perceived weaknesses on professional ACI behaviors.

Investigation of Athletic Training Educators' Teaching Styles Regarding the Recognition and Treatment of Exertional Heat Stroke

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Context: Recent studies demonstrate that Athletic Trainers (ATs) despite knowing how to accurately recognize and properly treat exertional heat stroke (EHS) via rectal thermometry (Tre) and cold-water immersion (CWI), they fail to implement this knowledge into clinical practice.

Objective: Gain an understanding of educational techniques utilized by Athletic Training Education Programs (ATEPs) to prepare students to recognize and treat EHS.

Design: Basic, interpretive qualitative design using in-person focus groups with follow-up phone interviews.

Setting: 2009 National Athletic Trainers' Association Symposium in San Antonio, TX, June 2009 with AT educators from the Commission on Accreditation of Athletic Training Education (CAATE) accredited ATEPs. Three follow-up phone interviews were conducted to confirm emergent themes.

Participants: A total of 13 participants (n=11 males, 2 females) took part in this study. Of the 13 participants, 6 held PhD's, 5 EdD's, 1 D.A., and 1 Masters' degree. Average years certified was 22 ± 9. They represented 10 states and 4 NATA districts. 12 were program directors (PD) and one Clinical Coordinator. Average years as an educator was 16 ± 8 years.

Data Collection and Analysis: Data was analyzed using an inductive content analysis. Two coders were used to avoid researcher bias. A peer review and data source triangulation was also conducted to establish trustworthiness.

Results: Four themes emerged from the analysis explaining the lack of evidence based practice (EBP) and EHS: Mode of Education, Educational Competencies, Lack of Skill Set, and Privacy/Public Opinion. Mode of Education identifies that there is a lack of hands on education regarding the skill set to perform rectal thermometry and CWI. Educational Competencies identifies the current lack of explicit statements regarding Tre and CWI instruction. Lack of Skill Set addresses that educators do not have the skill set or comfort with the skill set to educate students in ATEPs properly nationwide. Privacy/Public Opinion, is comprised of external input from varying groups; parents, legal considerations, and social bias.

Conclusions: Educators have a direct influence on their students and how their students will act as practicing clinicians. For this reason, educators must be prepared to give proper instruction in all areas of education, and teaching style needs to accurately reflect the content being presented (i.e. psychomotor skills require hands on practice, not observational time). When dealing with the issue of EHS, knowledge of what to do is insufficient without the necessary skills to execute proper care. EHS is a life-threatening emergency, and the current practice base, if based on sound research, suggests that both Tre and CWI need to be implemented. Therefore educators must not only teach the skill, but also model the skill so that students can gain comfort with the skill, and then use the skill clinically.

Comparison of Student and Approved Clinical Instructor Results on a Retrospective Clinical Behavior Survey

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Context: Most clinical site evaluations are completed using an end of the year evaluation or summary by the student, Approved Clinical Instructor (ACI), and/or clinical coordinator. However, the usefulness of these evaluations is questionable at best. Retrospective surveys provide an overview of a clinical education site and can serve as guideline for identifying strengths and weaknesses that might influence student placement.

Objective: The purpose of this study was to compare the results of students and ACIs on an end of the semester clinical experience survey.

Design: Cross-sectional survey.

Setting: A collegiate football clinical education site from a CAATE accredited athletic training education program (ATEP) at a large Southeastern institution.

Participants: Athletic training students (n=9) who were admitted into the professional phase of the ATEP (5 females, 4 males; 4 sophomores, 5 juniors; 20.85+1.4 years) and their ACIs n= 2; (2 males; 9.6 years+2.6 years of clinical experience).

Data Collection and Analysis: The 9 students and 2 ACIs at the clinical education site completed a survey that documented how often they completed activities related to their clinical experience for an entire semester. The survey was composed of 42 activities that athletic training students could complete during their clinical experience. Instrument reliability was good (ICC=0.84). The students and the ACIs were asked to assess how often the student completed the task. The scale ranged from not performing the task during the semester to performing the task every day. Students and ACIs completed the survey at the end of the semester. The composite score of the student surveys were compared to those of the ACIs using the Mann-Whitney U test. A priori alpha was set at P=0.05.

Results: Students and ACI agreed on all but 2 questions. The first dealt how often students spoke to their ACI about clinical skills. The result of the test for this question were significant z = -2.0, p<.05.The student mean rank was 12.46 while the ACI mean rank was 6.94. The second question asked how often the students clean the athletic training facility. The result of the test for this question were significant z = -1.8, p<.05. The student mean was 10.54 while the ACI mean rank was 5.24.

Conclusions: The results show that students and ACIs agree on what clinical behaviors are occurring at a clinical site. Understanding what clinical behaviors are occurring at each clinical site is crucial for placing students at their clinical experience and for program evaluation. Students that are assigned to clinical sites where their didactic course work can be immediately transferred to clinical practice are likely to have a more rewarding experience.

Evidence-Based Practice: Undergraduate Program Directors' Knowledge and Perceived Importance Level Using the Evidence-Based Concept Assessment

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Context: The prevalence of evidence- based practice (EBP) in athletic training educational preparation remains largely unknown. In order to assess the future of EBP in athletic training it is necessary to determine the current status of professional educators' knowledge and perceived importance of the concepts.

Objective: To describe the perceived importance of evidence-based practice concepts and knowledge level among undergraduate athletic training education program directors (PDs). Additionally, to determine associations between total knowledge of EBP and the demographic characteristics of years as a certified athletic trainer and terminal degree.

Design and Setting: Cross-Sectional, anonymous web-based survey (Inquisite) conducted March-April, 2010.

Participants: Undergraduate athletic training education program directors from CAATE accredited programs (n=209; 132/209 = 63.2% response rate; 41.8+8.8 years old; 68 males, 64 females) were selected from a criterion sample.

Data Collection and Analysis: Participants were solicited via phone and e-mail to complete the online Evidence Based Concept Assessment and demographic questionnaire. The instrument was created using Inquisite 8.0 Corporate Survey Builder and administered electronically via e-mail. The survey consisted of six sections: perceived importance of the steps of EBP (six Likert scale items), attitudes and beliefs (15 Likert scale items), knowledge (six multiple choice questions), accessibility (two multi-part questions), and barriers (16 Likert scale items), and 16 demographic questions. Additionally, a total knowledge score was calculated by adding the amount of correct responses among the 6 knowledge questions. Independent samples t-tests were used to determine the difference in total knowledge score of those program directors with a terminal degree and those with greater years of experience as a certified athletic trainer.

Results: The perceived importance of the steps of EBP was highest among "developing a clinical question" (65.2% responded "Very Important") and "basing clinical decision making on current best evidence" (62.1% responded "Very Important"). Perceived importance was lowest among "allowing your personal experience to influence a clinical decision" (46.2% Moderately Important). The possession of a terminal degree did not significantly affect total knowledge scores among undergraduate PDs (t=.658, p=.400). Similarly, years of experience as an athletic trainer did not significantly affect total knowledge scores among undergraduate PDs (t=.653, p=.583). The total knowledge score mean percentage was 69.6 ± .19 for all participants.

Conclusions: Undergraduate athletic training program directors hold the steps of EBP to be moderately-very important. Although the perceived importance of EBP was moderate-high, the average knowledge score suggests that program directors have a low knowledge of the steps of EBP. EBP is not affected by possession of a terminal degree among undergraduate program directors, nor is knowledge affected by years of professional experience as a certified athletic trainer. Continued education for program directors and athletic training educators is necessary to improve the overall knowledge of EBP concepts.

Characteristics and Perceptions of Feedback in Athletic Training Clinical Education

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Context: Literature suggests that feedback from clinical instructors is important for athletic training student development of clinical skills. However, little information is known about the quality, frequency, and perceptions of feedback in the athletic training clinical education setting.

Objective: The purpose of this study was to gain an understanding of the characteristics and perceptions of feedback provided to athletic training students by Approved Clinical Instructors (ACIs).

Design: This exploratory, multi-case qualitative study drew from case study and grounded theory approaches to research.

Setting: Data was collected in an intercollegiate athletic training room and a community rehabilitation clinic that were clinical rotation sites for one CAATE-Accredited entry-level masters athletic training program.

Participants: Two ACIs and two athletic training students were purposefully sampled to represent different experience levels and clinical rotation settings. Participants included a first-year ACI (female, intercollegiate), eighth-year ACI (female, clinic), and two second-year students (one female, intercollegiate and one male, clinic).

Data Collection and Analysis: Participants were observed, videotaped, and interviewed regarding the feedback they give and receive during clinical education experiences. Interviews and feedback statements from the videotapes were transcribed verbatim. Data was analyzed using the constant comparative process of coding, in addition to coding categories used in the literature. Peer debriefing, participant quotations, and triangulation of methods, sources, and sites were used to increase trustworthiness of the data.

Results: Results demonstrated that minimal feedback was provided in the athletic training clinical education setting, but feedback was aligned with what is considered good quality in the literature, including specific, immediate, and focused on changeable behaviors. ACIs expressed their opinions of good quality feedback during the interviews, in addition to sharing that they adjust feedback according to the needs of different students and their own personal preferences. Students also described good quality feedback, said that feedback is important to their clinical education, and thought the general interactions with their ACI influence how they respond to feedback. All ACIs and students described that good feedback is usually applicable and immediate, and that good feedback depends on the environment and the clinical skill being performed. One student focused more on the delivery of the feedback, while the other focused on the information provided. The less experienced ACI focused more on the delivery of feedback and the accuracy of the information she was providing, while the more experienced ACI emphasized how she adjusted feedback to individual students.

Conclusions: Results of this study suggest that although feedback in this particular athletic training setting was sparse, it was of good quality. This study also implies that there are several factors that influence how feedback is given and received in this setting, including general ACI-student interactions, student needs, and ACI preferences. These particular ACIs and students each approached how they give and receive feedback differently. Future research should consider investigating these issues in further depth with more participants in several athletic training programs and settings.

Investigating Athletic Training Students' Educational Experiences Regarding Exertional Heat Stroke

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Context: Exertional heat stroke (EHS) continues to be a leading cause of death among athletes. Athletic trainers (ATs) are often the first to respond to emergency situations in athletics and should be utilizing the most up to date evidence based medicine (EBM). Athletic training students (ATS), the future of the profession, should also be learning the most up to date EBM.

Objective: Investigate what ATS are learning regarding EHS, both in the classroom and clinical settings, that may one day influence their practices as a certified AT.

Design: In-person focus groups.

Setting: National Athletic Trainers' Association Annual meeting in San Antonio, Texas, 2009.

Participants: 13 ATSs (males, n = 8, females, n = 8) from 5 different NATA districts, entering the final academic year of schooling in a CAATE certified Athletic Training Education Program. A purposeful sampling strategy was utilized to identify participants.

Data Collection and Analysis: Interviews were transcribed verbatim and analyzed using open coding techniques. Data analysis required independent coding by 3 ATs for specific themes and thoughts from the transcribed data. Peer debriefing and multiple-analyst triangulation were used to ensure trustworthiness of the data.

Results: Two higher order themes emerged from the data analysis: Lack of Experience and Educators' Influence. Lack of Experience summarizes the ATS lack of exposure, both in the classroom and in the clinical setting regarding the skills associated with EHS. Although classroom learning and clinical education opportunities offer different styles for student learning, it was apparent, that the participant's lack of understanding of EHS was a direct result of a lack of time spent with the topic, regardless of the learning environment. The higher order theme of Educators' Influence highlights the role the educator, both classroom and clinical, plays in influencing and shaping an ATSs retention of materials, competence, and future practice beliefs regarding EHS. The lack of information ranged from the signs and symptoms of EHS, the belief that oral and tympanic temperature assessments are safe, effective methods to estimate core body temperature, and their lack of knowledge of policies and tools available to them at their clinical site.

Conclusions: We recognize many AT educator's feel ill-prepared to provide formal training to their student's due to their lack of training and expertise. Regardless, we urge them to seek out the necessary resources to move towards implementing more hands-on instruction and practice time with these skills, which have been proven to be life saving with EHS. Educational seminars should occur at the national, regional and state levels for athletic training professionals and students. These seminars need to

be hands on and practical by nature. By educating classroom instructors, practicing ATs and ATSs we can reduce the number of unnecessary deaths associated with improper diagnosis or delayed treatment

Are Student Evaluation of Instruction Scores Related to the Amount of Faculty Formal Educational Coursework?

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Context: Athletic training faculty are generally hired for their clinical expertise, not for their formal educational preparation for academia. It is not known whether formal training in educational concepts is related to outcomes such as student evaluation of instruction scores.

Objective: The purpose of this study was to investigate if there are correlations among student evaluation of instruction outcomes and the amount of formal educational coursework an instructor has completed.

Design: Quantitative questionnaire research using ATEP faculty and the students in one of their courses.

Setting: The study included faculty who teach in large and small ATEPs. Faculty from public and private, large and small universities were represented.

Participants: Data were generated using all eligible faculty from 10 of the 13 universities in Florida that offer athletic training as an undergraduate degree. The study included 19 of 20 (95%) eligible certified athletic trainers.

Data Collection and Analysis: The amount of faculty formal educational coursework was measured using a self-administered faculty questionnaire. The faculty respondents had their students complete the commonly used Student Evaluation of Educational Quality (SEEQ) questionnaire. Pearson product moment correlations were used to determine if a relationship exists between demographic data on faculty formal educational coursework and the total score/subscale scores of the SEEQ. Independent samples t-tests were used to determine whether there are differences in SEEQ scores between faculty who completed 10 or less educational courses and faculty who completed more than 10 educational courses.

Results: Faculty reported completing a mean of 9.25 (SD=7.39) courses related to education. The number of educational courses taken ranged from 0 to 25 courses. The study demonstrated that there is a correlation of large effect size ($r(11) = .654$, $p = .015$) between the amount of formal educational coursework and the SEEQ subscale value of "Assignments/Readings". Though statistically non-significant, 7 of the remaining 8 subscales, as well as the SEEQ total score, were also positive and had medium and large effect sizes. The "Assignments/Readings" ($p = .006$, $t = -3.290$, Cohen's $d = -1.9$) and "Learning/Academic Value" ($p=.012$, $t = -2.945$, Cohen's $d = -1.7$) subscale scores on the SEEQ were significantly higher when instructors had completed more than 10 educational courses.

Conclusions: There is clear evidence of lack of uniformity among ATEP faculty in the area of formal exposure to pedagogy and curriculum. The presence of nine positive correlation values (one significant) of medium/large effect size, along with two significant t-tests provides some evidence that there is a positive relationship between educational coursework and teaching effectiveness as measured by student evaluation of instruction scores. Further research is needed using a larger sample population. Corroboration of these findings could demonstrate a need to include formal educational coursework among the criteria for faculty preparation.

Assessing Reliability and Validity: The Athletic Training Professional Values Inventory

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Context: Evidence-based practice is an "integration of the best research evidence with clinical expertise and patient values to make clinical decisions". How can the athletic trainer appreciate the unique patient values when the healthcare provider does not know his/her own professional values? No known instrument exists to identify and rank important professional values in athletic training. In fact, noted cognitive psychologist, James Rest, stated that "research wise", little empirical testing has been done relative to ranking values.

Objective: The study's objective was to develop a valid and reliable professional values athletic training inventory. The inventory paralleled Rath's values clarification methodology and Rest's moral motivation.

Design and Setting: Values clarification methodology requires the subject to choose freely from alternatives after thoughtful consideration of the alternatives. The inventory contained 14 values. It prompted participants to identify unfamiliar values and five important values, and rank the top three important values.

Participants: District 4 members (N=95) participated in this study. Data Collection: While seated in a large meeting hall, participants completed the survey and passed it to the investigator when finished.

Results and Analysis: Item validity was established based upon the expert source of the items. Items (values) were extracted from the NATA Code of Ethics and the BOC Standards of Practice, along with recognized healthcare principles and values found in the literature. Only 2 participants elected to add a new category- "diversity" and "professional ethics", respectively. These additions were not assessed to weaken the exhaustiveness of the existing list. Measurement (process) reliability was established based upon the lack of any confusion or ambiguity in completing the pre- and post-test by the pilot group. Participants completed both instruments accurately. All participants (n=95) were able to complete the instrument completely and accurately. Measure (content) reliability was established by test-retest which demonstrated the stability of professional values with at least a 6-month time interval between tests. According to Stiller, professional core values are enduring traits that are reasonably stable. Nine subjects participated in test-retest in Step 1 and Step 2. Eight subjects participated in test-retest in Step 3. In step one, 13 professional values revealed identical frequencies and 2 professional values (aesthetics and responsible citizenship) were different by 1. In step two, 8 professional values had matching frequencies, 3 professional values (responsible citizenship, respect, integrity) were unlike by a frequency of 1, 3 professional values (excellence, accountability, caring) were different by a frequency of 2, and 1 professional value (fairness) was different by a frequency of 3. In step three, based on frequency, the subject

pool was able to accurately choose 8 professional values as the "top three" important values, six values (truth/honesty, loyalty, excellence, fairness, accountability, integrity) where accurate within 1, and 1 (respect) was accurate within 2.

Conclusion: Based on item validity, the reliability of the content, and the reliability of the process, we concluded that this professional values inventory is the best available instrument to assess the professional values of athletic trainers.

Comparison of Computer-Testing With Traditional Practical Examination Testing of Clinical Skill Proficiency

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Context: The use of computerized-testing as an assessment tool provides many advantages, including integration of multimedia, simultaneous assessment of multiple students, and the option of immediate feedback for examiners and students. Athletic training education necessitates the assessment of psychomotor skills, however large class sizes, limited numbers of examiners and a desire to simulate the testing format of the Board of Certification® exam all encourage of the use of computerized-testing. Currently, limited data exists in the literature regarding the value of computerized-testing in the assessment of psychomotor skills.

Objective: To examine differences in practical exam scores compared to online assessment scores for two psychomotor tasks.

Design: Quasi-experimental, within-groups design.

Setting: The traditional practical exam was administered in a controlled laboratory setting while the computerized assessment was administered in a location of the student's choosing.

Participants: Participants (n = 62) were provisionally admitted students enrolled in an introductory athletic training course in a CAATE accredited undergraduate athletic training program. Subjects completed traditional practical assessment for ankle taping (TPAT) (n = 56) and wound care (TPWC) (n = 61) and computer-testing for ankle taping (OAA; n = 40) and wound care (OWC; n = 51).

Intervention: Students were administered two assessments (traditional practical and computer-testing) for two tasks (wound care and lateral ankle taping). Athletic training faculty scored the traditional practical exams using a standardized rubric. Following the traditional practical exams, students were given the opportunity to complete the computerized-assessments for the same tasks using a password-protected learning management system.

Main Outcome Measure: Correlations between traditional practical and computer-testing scores were assessed, as well as differences between means, changes in rank order, and differentiation in pass/ fail scores.

Results: Pearson's Correlation Coefficient revealed no significant correlation between students' scores on the TPWC and OWC (r=.112, p=.439). A significant correlation was seen between TPAT and OAA (r=.406, p=.010). Statistical analysis revealed no significant difference between mean scores on the TPWC and OWC (p=.154), while a significant difference did appear between mean scores on the ankle assessments, TPAT and OAA (p=.015). A Wilcoxon Signed Ranks analysis was used to analyze the rank order of scores for one psychomotor task tested in two conditions. The results show a significant difference in students' scores rank order during both TPWC and OWC (p=.049) while no significance existed between students' rank order for ankle assessments (TPAT and OAA) (p=.082). Finally, setting criteria of a 70% as a "passing score", a Wilcoxon Signed Ranks analysis revealed a significant difference between wound care assessments (TPWC and OWC) (p=.02), but no difference between ankle assessments TPAT and OAA) (p=.083).

Conclusions: Computer-testing and traditional practical exam testing for the two clinical skills showed varied findings in terms of correlation between scores, differences in mean scores and variation in both rank order and pass / fail results. These findings indicate that the value of computer-testing for psychomotor skill proficiency assessment varies according to the task assessed.

The Reliability of an Instrument to Measure the Utilization of Patient-Rated Measures of Outcome in Athletic Training: An Initial Report

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Context: Successful evidence-based practice requires a body of evidence related to the clinical outcomes of patient care. Patient-rated outcomes are important measures for driving treatment decisions and determining effective interventions. However, athletic trainers (ATs) rarely collect them. Understanding the reasons for the lack of use of patient-rated outcomes in athletic training may assist in constructing strategies that facilitate routine collection of these important outcomes.

Objective: To validate a survey for measuring the utilization of patient-rated outcome measures and to present preliminary findings regarding benefits and barriers to the use of patient-rated measures in athletic training.

Design and Setting: Web-based survey.

Participants: 295 randomly sampled ATs working in the college/ university, two-year institution, secondary school, clinic, hospital, or industrial/occupational setting were used. Non-practicing ATs were excluded.

Data Collection and Analysis: A validated survey from Jette et al. (2009) regarding the use, benefits, and barriers of outcome measures in physical therapy was adopted and slightly modified, with permission, to incorporate terminology specific to athletic training. The survey consisted of 86 questions split into two question sets. ATs who indicated they used patient-rated outcome measures (AT-PR) completed 65 Likert-style (5pts:1=strongly agree, 5=strongly disagree) questions about the benefits, barriers, and policy requirements of these instruments. ATs who indicated no use of patient-rated outcome measures (AT-NON) completed 21 questions about the barriers of use. An initial invitation to complete this survey was emailed to potential subjects, with reminders sent at 1- and 7-weeks post-initial invitation. Data are reported as mean±standard deviation and percentage endorsed (%) for AT-PR and AT-NON, respectively.

Results: 83 ATs (AT-PR=30.1%, AT-NON=69.8%) completed the survey (response rate=28%). An exploratory factor analysis using principal component extraction and varimax rotation identified a 3-factor structure solution consisting of 1) benefits, 2) problems,

and 3) language/culture, accounting for 62.8% of the total variance. Internal consistency was high for each factor (Cronbach's alpha=.89, .90, and .71, respectively). The most frequently endorsed benefits of use reported by AT-PR were enhancing communication with patients (1.9±0.8) and physicians (2.1±0.7), and the impression of patients that clinicians provide thorough examinations (2.1±0.8). The most frequently endorsed problems of use reported by AT-PR were that patient-rated measures are time consuming for clinicians to score and interpret (2.8±0.8), and confusing (2.8±0.8), time consuming (2.8±0.8), and difficult for patients to complete (2.8±0.6). The most frequently endorsed problems of use reported by AT-NON were that these instruments are time consuming for clinicians to score and interpret (18.1%), time consuming for patients to complete (25.3%), and require training the clinician does not have (21.7%).

Conclusions: Our results support the validity of this survey for measuring the utilization of patient-rated outcome measures in athletic training practice. Initial results suggest that while there are benefits to the use of patient-rated outcomes, there are also barriers (eg, training, completion time) to their use, and these barriers are similar between AT-PR and AT-NON. Future research should explore strategies to decrease barriers and increase use of patient-rated outcome measure in athletic training practice.

Peer Assisted Learning for Athletic Training Students

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Context: Peer Assisted Learning (PAL) has been widely used to augment formal classroom and laboratory instruction. Limited research has been conducted within Athletic Training education to determine the effect of PAL on peer-tutors and peer-tutees. Our hypothesis was that PAL would increase student skill performance and that a focused review session would further increase skill performance for both the per-tutors and peer-tutees.

Objective: To explore the effect of an intentional PAL program on peer-tutors and peer-tutees for performance on specific psychomotor skills.

Design: Randomized, pretest-posttest experimental design.

Setting: Large Mid-west public university.

Participants: Undergraduate students (n = 90 peer-tutors, age 18 to 22 years; and n = 104 peer-tutees, age 18 to 22 years) enrolled in the professional phase of an accredited Athletic Training Education Program.

Interventions: Focused review sessions conducted by an Approved Clinical Instructor for the peer-tutors assigned to the two focused review session groups.

Main Outcome Measures: We assessed pretest and posttest performance for the peer-tutors and post-peer interaction for the peer-tutees on the same orthopedic assessment psychomotor skill sets. Peer-tutors were randomly assigned to one of four groups; PAL only (PAL), PAL and the focused review session (PAL+), focused review session only (REV), and a control group (CON). Peer-tutees were randomly assigned to interact with the peer-tutors from the PAL and PAL+ or no interaction as a control group. Data was collected and entered into SPSS 17 for analysis.

Results: The pretest-posttest skill scores were found to be significantly different for the peer-tutors ($F_{3,102} = 4.703$; $P < .05$). Post-hoc means comparison revealed significant differences between the peer-tutor groups PAL versus CON, PAL+ versus CON, and REV versus CON. Analysis of the peer-tutee scores revealed no significant differences but could possibly suggest a trend (PAL; .906 ± .087, PAL+; .918 ± .077, and Control; .881 ± .061).

Conclusions: This data suggests that peer interaction can increase student skill performance scores for the peer-tutors. A visual review of the means indicates a trend of increased skill level for the peer-tutees that received the focused review session with peer-tutors. Interestingly, we found no significant different between peer-tutor and peer-tutee groups with REV. It would appear that PAL and interaction has more of an effect on the student learning than a review session.

Effectiveness of a Single-Day Evidence-Based Concepts Pilot Workshop for Athletic Training Educators

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Context: Recognizing the effectiveness of a single day evidence-based practice (EBP) concepts workshop among athletic training educators (ATE) is essential before formulation of new seminars and teaching modules for implementation of EBP into athletic training education can occur.

Objective: To assess ATEs' current EBP knowledge, comfort, and importance levels before and after a five-hour single day workshop held at the 2009 Educators' Conference.

Design: Quasi-experimental survey design.

Setting: Self-reported online survey via personal computer.

Participants: 10 educators (43.5% response rate) from a convenience sample (age=42.10 ± 10.03, years of athletic training teaching experience=13.25 ± 9.36).

Interventions: The Evidence-Based Concepts for Clinical Practice Education workshop was a five-hour pilot session held at the 2009 Educators' Conference. The workshop focused on educating ATEs about strategies to incorporate EBP concepts within didactic curricula and included three independent presentations (eg, EBP fundamentals, implementing systematic reviews, and utilizing clinical prediction rules) with the primary presentation providing direct material related to the survey instrument. The other two presentations offered additional EBP implementation information. Participants were solicited via e-mail to complete the online Evidence-Based Concepts for Clinical Practice Assessment instrument and demographic questionnaire before and after the workshop. The instrument was created using Inquisite 8.0 Corporate Survey Builder. The instrument consisted of the following: 20 multiple-choice EBP knowledge questions, 22 Likert scale (range 1-4) questions assessing comfort (11) and importance (11), and 34 demographic questions. Reliability for the instrument was moderate to excellent (percent agreement: 3 questions = 50%, 6 questions = 66.7%, 7 questions = 83.3%, 4 questions = 100%).

Main Outcome Measures: The dependent variables were the scores produced by survey responses. Knowledge scores were

tabulated by awarding 1 point for the correct answer (max = 20). The comfort and importance Likert section scores were achieved by totaling all values and then calculating the average value back to the Likert scale composite score (total divided by four). A higher score indicated the participants had a higher comfort level with EBP concepts and indicated the concepts were important for curricula implementation. Significant differences ($p<.05$) and correlations were calculated (SPSS 16.0) using paired T-tests and Wilcoxson signed-rank tests.

Results: Pre-workshop EBP knowledge was 66.0% ± 13.29, while post-workshop EBP knowledge increased to 69.5% ± 9.26 ($p=0.257$). Pre-workshop comfort was 2.46/4.0 ("uncomfortable"), while post-workshops comfort increased to 2.59/4.0 ("comfortable") ($p=0.069$). Pre-workshop and post-workshop EBP importance remained the same as educators believed evidence-based concepts were "important" (3.42/4.0) for curricular implementation ($p=0.953$).

Conclusions: Athletic training educators' current knowledge of EBP concepts can be improved through various modes of learning (e.g., teaching modules, workshops, short courses). ATEs are uncomfortable with evidence-based concepts, yet believe it is important for curricular implementation. The future development of workshops and teaching models should focus on the varying levels of EBP concepts. Distinguishing modes for curricula implementation might also be an effective way to increase knowledge, comfort, and importance levels.

Scholarship of Integration

The Role of Qualitative Research in Evidence-Based Practice: Guidelines for Use by Athletic Trainers

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Context: Qualitative research has largely been ignored in the discussion pertaining to evidence based practice (EBP) in athletic training. Responses to some clinical questions may be more appropriately addressed through qualitative evidence. Moreover, qualitative data may be necessary to contextualize the provision of health care by examining a patient's values, beliefs, preferences, and life circumstances before creating a decision to implement a treatment intervention even if the evidence is warranted.

Objective: To present otherwise isolated information pertaining to qualitative research and EBP and explain: 1) the decision rules and steps for evaluating qualitative evidence, and 2) the role of qualitative research in contextualizing treatment decisions.

Background: Other health care disciplines have discussed the use of qualitative research in EBP. The information presented here bridges a gap in athletic training literature and explains the role of qualitative research in the culture of evidence based practice.

Data Source(s): We performed an advanced search for related literature in CINAHL and MEDLINE. Key words used were qualitative evidence, qualitative research and evidence based practice, and qualitative research and evidence based medicine. We also crosschecked well respected qualitative research texts.

Data Synthesis: Inclusion criteria for a qualitative study designed to answer a clinical question should demonstrate the following: a) published in a peer review journal, b) involved in-depth interviews or observations, c) provided an interpretation of data and has gone beyond simple description, d) used principle of data saturation to guide the total number of participants, and d) adhered to qualitative research ethics. The level of evidence is dependent on the extent to which verification strategies are used to address credibility, dependability, confirmability, and transferability. Level 1 evidence exists when all 4 criteria are met; level 2, when 3 are met, level 3, when 2 are met, and level 4 when only 1 is met. Level 5 evidence indicates problems with any of the quality criteria being addressed. Qualitative research methods also allow for exploration of a patient's values, perceptions, beliefs, and life circumstances to determine if a treatment intervention should be implemented. Various models and tools such as LEARN, ETHNIC, and BELIEF offer a framework for interacting and interviewing patients and families to determine the extent to which evidence should be used in a given context. Integrative

Conclusion(s): Qualitative evidence should be systematically evaluated to determine whether it should be included as a form of evidence and identify its level and subsequent recommendation grade. Qualitative research methods also allow for contextualizing the use of evidence. Ultimately, qualitative research has a place in EBP and should be integrated into the discussions within athletic training. As the profession continues to embrace EBP, Athletic training educators are encouraged to discuss the principles of qualitative research with students to prepare them for utilizing various forms of evidence to address clinical questions.