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SPECIAL ISSUE:
POSTER ABSTRACTS
2015 ATHLETIC TRAINING EDUCATORS' CONFERENCE
February 27–March 1, Dallas, TX

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LETTER FROM COMMITTEE CHAIR

Dear Athletic Training Educators,

We are pleased to present this special issue of the *Athletic Training Education Journal*. The NATA Professional Development Committee is excited to again partner with the *Journal* to publish the abstracts presented at the 2015 NATA Athletic Training Educators' Conference (ATEC).

This conference is occurring during an exciting time in athletic training education as we continue to advance our position as health care professionals. In recent months we have seen robust discussion of our professional education, witnessed favorable lobbying to influence the Center for Medicare and Medicaid Services decision, and seen the Commission on Higher Education Accreditation recognize the Commission on Accreditation of Athletic Training Education. These events are evidence to the strides we are making as a profession and the need to continue to accept the challenge to make our professional education the very best it can be. It is in this spirit that we encourage athletic training educators who are engaging their students in innovative ways and pushing the practice of athletic training education forward to continue to submit for presentation.

The poster sessions presented at this ATEC include broad issues related to athletic training education. We continually aspire to improve and make the peer-review process transparent. Andy Winterstein, PhD, ATC, led the peer-review process along with 10 other reviewers. Each abstract underwent peer review to ensure we maintain 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 review process. I would like to acknowledge and thank Dr. Winterstein for his leadership as well as the following reviewers for their long hours and attention to detail during this review process:

Thomas Bowman, PhD, ATC
Sara Brown, MS, ATC
Dorice Hankemeier, PhD, ATC
Pete Koehneke, MS, ATC
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Stephanie Mazerolle, PhD, ATC
Meredith Petschauer, PhD, ATC
Paula Sammarone Turocy, EdD, ATC
Holly Schmies, PhD, ATC
Bonnie Van Lunen, PhD, ATC, FNATA

I would also like to take this opportunity to extend a special thank you to Sidney Fuller, Knowledge Initiatives Coordinator for the NATA, and other members of the Meetings Department, whose attention to detail and dedication have made coordinating this event an absolute pleasure. The members of the ATEC subcommittee, Brian Vesci, MA, ATC; Gail Samdperil, EdD, ATC; Kirk J. Armstrong, EdD, ATC, LAT; and Andy Winterstein, PhD, ATC, deserve the lion's share of credit for putting together this conference. They worked tirelessly planning; reviewing plenary, breakout session, peer-to-peer, and model practice proposals; and determining the overall content of the conference. Having the privilege of working with these colleagues and the former members of this committee is one I will always treasure. Lastly, I wish to thank Kimberly S. Peer, EdD, ATC, FNATA, along with the editorial office of the *Athletic Training Education Journal* for making this issue possible.

Stacy Walker, PhD, ATC
Professional Development Committee
Chair, Athletic Training Educators' Conference Subcommittee

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2015 ATEC: POSTER ABSTRACTS

Identification of Essential Skills for Entry Level Athletic Trainers in South Louisiana: A Delphi Study

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Context: Entry-level athletic trainers enter the workforce with the skills taught to them by athletic training programs (ATPs) using the Competencies developed by our accrediting body. **Objective:** These competencies are developed using data collected from athletic trainers in the field with no input from the consumers of athletic training services. **Design:** This study used a 3-round Delphi questionnaire. **Setting:** Secondary schools located South Louisiana. **Participants:** Six experts in the field of athletic training. **Data Collection and Analysis:** In round 1, participants were first asked to identify individual skills within predetermined skill categories created from the Competencies and existing research. In rounds 2 and 3, participants ranked and rated their responses from round 1. Using Delphi methodology with qualitative and quantitative analysis, a Duty-Task List (DTL) was created from the data, which identified the essential skills for entry-level athletic trainers. **Results:** Ranking of the skill categories produced four tiers, the top tier consisting of skill categories developed from the Competencies. The bottom tier consisted of two items, both from the Competencies: use of evidence-based medicine in practice and therapeutic interventions. Data further revealed communication, its many different forms, was the most important individual skill for entry-level athletic trainers. **Conclusions:** The Delphi methodology used in this study was once again shown to be as effective as DACUM in producing an industry-supported DTL. In doing so, the participants gave a clear conceptualization of the essential skills needed as an entry-level athletic trainer, while also identifying some skills missing from the Competencies. Consideration should be given to the consumers of athletic training services when the next version of the Competencies is created. The athletic trainers on the panel consistently ranked higher skill categories from the Competencies, while the administrators on the panel ranked the non-competency skill categories higher. Additionally, there is still some resistance to increased use evidence in practice, which may be further proof of the chasm between what is considered desirable by clinical setting athletic trainers and academic setting athletic trainers. **Key Words:** athletic training education, Delphi methodology, educational competencies, evidence based practice, communication skills, patient feedback

Clinical Novelty, Confidence, and Knowledge Characteristics of Students During Post-Professional Clinical Education

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Context: Accreditation standards for post-professional programs now require clinical education leading to advanced clinical practice (ACP) knowledge and skills. However, little is known about how post-professional clinical experiences (PPCE), which are frequently delivered through graduate assistantships, contribute to development of ACP skills. Three characteristics of a clinical encounter that may be important for gauging its contribution to learning are: 1) its novelty to the student, 2) the degree to which it facilitates the application or testing of post-professional knowledge and skill, and 3) the confidence level of the student engaging it. **Objective:** To determine the clinical novelty and knowledge characteristics of patient encounters, as well as student confidence levels during PPCE. **Design:** Retrospective database analysis. **Setting:** Self-reported online clinical tracking system. **Patients or Other Participants:** 35 PPAT students (male=17, female=18) participating in PPCE at secondary school (n=17), college (n=7), clinic (n=4), research (n=2), and professional (n=1) clinical settings between August 2011-July 2013. **Data Collection and Analysis**: Students were required to randomly record patient encounter data into the *AHST*™(Typhon Group, LA) online clinical tracking system during the 2011-2012 and 2012-2013 academic years. To determine the representativeness of data, case diagnosis and frequency patterns were compared to published epidemiologic data for similar populations and were found to be comparable. Descriptive data (frequencies, percentages) were reported for patient encounters, which included patient demographics, injury diagnosis, knowledge characteristics, applied professional behavior, and self-reported confidence levels. Aggregate Likert-item confidence scores (0-5) were compared using a Wilcoxon Signed-Rank test for a sub-sample (n=17) of students for whom first and second year data were available to estimate longitudinal changes in confidence. **Results:** 4,760 patient encounters involving 4,207 unique patients were recorded. 19% (n=904) of encounters were new or different to the student. 17.8% (n=849) of encounters required use of evidence-based practice skills. New knowledge was gained from 14.3% (n=683) of encounters, and 11% (n=523) required application of new classroom knowledge. During encounters, students were "very confident" (44.6%,n=2125), "confident"

(32%,n=1524), "somewhat confident" (19.8%,n=936), and "not confident" (3.2%,n=154). Conditions engendering "high confidence": lower extremity (44.5%,n=996), upper extremity (17.8%,n=398), head/neck/back (9.1%,n=203), concussion (9.0%,n=202), general medical (5.5%,n=124), and other (14.2%,n=317). Conditions engendering "no confidence": lower extremity (31.1%,n=60), head/neck/back (22.3%,n=43), upper extremity (17.1%,n=33), general medical (14.0%,n=27), concussion (1.0%,n=2), and other (14.5%,n=28) diagnoses. There were no significant differences (z=-.237, P=.813) in aggregate confidence levels between encounters in year one (4.26± 0.44) versus year two (4.22± 0.54). **Conclusions:** This is the first study of the clinical novelty, knowledge characteristics, and student confidence levels associated with clinical encounters in PPCE. Findings suggest limited novelty and knowledge application and testing opportunities, and high confidence engendered from clinical experiences. Greater strategic pedagogical attention might be required in PPCE in order to ensure ACP knowledge and skill attainment, which is now an accreditation requirement. Future work must establish reliable indicators of ACP knowledge and skill attainment by post-professional students. **Keywords:** advanced clinical practice, student confidence, clinical education

"Flipped" Classroom in an Orthopedic Assessment Course

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Context: Athletic training educators are often challenged with making the most of their classroom time to cover all the necessary content and skills necessary to transition students to entry-level clinically thinking athletic trainer. As athletic training educators, we are charged with educating our students to be able demonstrate proficiency with skills, techniques and be clinical reasoning health care practitioners. Educators are consistently considering pedagogical tools that can assist in this transition from student to clinically thinking professional. A "flipped" classroom approach, which involves removing the passive lectures, may assist students in becoming clinical thinking professionals through interactive engagement. **Objective:** To describe the methods and outcomes of a "flipped" classroom when delivering lower extremity orthopedic assessment content to first-year athletic training students.**Background:** A "flipped" classroom involves the instructor removing the passive receiving of material found commonly with lectures. Rather the students gather information largely outside of class, by reading, watching recorded lectures, or listening to podcasts. In a "flipped" classroom, within the formal classroom setting the students are solving problems with either their professor or peers, and applying what they learned in new contexts. **Description:** During the spring term, 2014, the Physical Exam of the Lower Extremity course was "flipped." Students viewed lectures and completed assignments prior to class. Formal class time involved collaborative group work on evaluating orthopedic conditions for the lower extremity. During class the students were grouped together and worked through evaluation simulations in a peer learning environment which involved active learning activities. Assessment from course evaluations and test scores saw improvement based on a "flipped" classroom versus a traditional lecture classroom. Faculty response was also positive regarding this pedagogical change. **Clinical Advantages:** Through "flipping" a classroom, more time is left for discussion, laboratory, or other active-learning strategies. Rather than a lecture, where students are often passively listening to information, in a "flipped" classroom students are guided by the instructor through interactive or other learning experiences. **Conclusions:** A "flipped" classroom may provide valuable faculty "face time" for the student where concepts and skills can be further refined in an active learning environment. **Key Words:** "Flipped" classroom, Instructional technology

Athletic Training Students Demonstrate Airway Management Skill Decay, but Retain Knowledge Over Six Months

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Context: Knowledge and clinical skills associated with airway management (AM) is taught in all athletic training programs. Research suggests that a certain level of skill decay occurs with emergency skills, often because the occurrence of these emergencies in practice settings is low. Identifying the presence and potential timeline for possible skill decay allows educators to employ strategies to prevent this occurrence. **Objective:** To evaluate the retention of cognitive knowledge and clinical skills associated with AM, specifically oropharyngeal airway (OPA) and nasopharyngeal airway (NPA) usage in professional athletic training students. **Design:** Cross-sectional study. **Setting:** Two mid-west undergraduate athletic training program laboratories. **Participants:** Twenty-five athletic training students (males=8, females=17; age= 21.12+1.42; sophomores=10, juniors=6, seniors=9) enrolled in CAATE-accredited professional athletic training programs. **Interventions:** Participants were initially assessed (T1) on AM knowledge and clinical skill. The following week, participants attended an educational session for the purpose of reviewing previously learned AM knowledge and skills. Participants were

re-assessed (T2) on their AM knowledge and skills before being randomly assigned to the experimental or control group. The experimental group's knowledge and skills were re-evaluated at 1-month (T3), 3-months (T4), and 6-months (T5). The control group was re-evaluated at 6-months (T5). Knowledge was assessed using 12 multiple-choice questions related to: (1) indications, (2) contraindications, (3) OPA/NPA selection, and (4) application strategies. Clinical skills were assessed using a checklist established from the literature and evaluated for content validity by three experts. **Main Outcome Measure(s):** Descriptive statistics were computed for the dependent variables of AM knowledge and clinical skills scores. Groups served as the independent variable. Repeated measures analysis of variance (ANOVA) with between-subjects (group) and within-subjects (time) effects assessed pre-post changes in knowledge/clinical skills scores. Cronbach's alpha determined internal consistency for the knowledge assessment. Alpha level was set a priori at P<.05. **Results:** The knowledge assessment demonstrated internal consistency with an alpha coefficient of .345 (T1) and .526 (T5). Repeated-measures ANOVA revealed no significant differences between the groups on knowledge ($F_{2.00,46.00}$=.365, P=.696) and overall clinical skills ($F_{1.57,36.17}$=.093, P=.867). There was a significant main effect for time on knowledge ($F_{2.00,46.00}$=28.44, P<.001) where T1 (65.33+15.71) was significantly different than T2 (82.00+12.88) and T5 (79.33+13.63). A significant main effect for time on OPA clinical skills ($F_{1.50,34.60}$=65.02, P<.001) found T1 (56.00±17.41) was significantly different than T2 (88.88±12.83) and T5 (81.33±12.30) and T2 was significantly different than T5. A significant main effect for time on NPA clinical skills ($F_{1.62,37.31}$=106.46, P<.001) found T1 (44.00+20.90) was significantly different than T2 (89.33+9.34) and T5 (82.66+14.01) and T2 was significantly different than T5. **Conclusions:** Both groups retained AM cognitive knowledge over a 6-month period, while OPA and NPA skills decayed between the intervention and the 6-month follow-up. The lack of significant differences in the knowledge or skills between the groups suggests that the effects of subsequent testing and review may not affect retention of AM knowledge and skills. Further investigation is needed to determine how educational interventions affect AM knowledge and skills retention. **Key Words:** athletic training education, emergency management, skill retention, knowledge retention

Student Retention and Career Placement Rates Between Undergraduate and Professional Masters Athletic Training Programs

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Context: The debate over what the professional degree should be for athletic training has heightened in recent years. The strength of the evidence to support a move has surfaced as a concern for many stakeholders the decision will affect. Understanding the retention and career placement rates between undergraduate and professional master's athletic training programs (ATPs) may inform the debate. **Objective:** Compare the retention rates and career placement rates of students in undergraduate and professional master's ATPs. **Design:** Cross sectional. **Setting:** Online survey. **Subjects/ Participants:** Program directors (PDs) from undergraduate (N=177, 51.6%) and professional master's (N=15, 60.0%) ATPs participated. Undergraduate ATP directors reported accreditation for 10.7±4.0 years, had 36.3±23.0 students enrolled, and required 851.3±347.0 hours of clinical education prior to graduation while master's PDs responded accreditation for 4.5±3.9 years, had 28.1±18.4 students enrolled, and required 780.8±445.1 hours of clinical education. **Interventions:** PDs completed an online survey with established construct, content, and face validity. We used QuestionPro™ Survey Software to collect responses. **Main Outcome Measures:** We asked the PDs to provide a retention rate and career placement rate for the students in the ATP they led for the past 5 years. We also asked the PDs if they thought retention of students was a problem currently facing athletic training education. We calculated descriptive statistics and confidence intervals (CIs) and used independent t-tests to compare the responses between undergraduate and professional master's ATPs. Our alpha level was set *a priori* at <.05. **Results:** We found a statistically significant difference between the retention rates of the two program types (t_{25}=-2.86, *P*=0.008, d=0.55) with professional master's PDs reporting higher retention rates (88.70±9.02%, 95% CI = 83.71, 93.69) compared to undergraduate PDs (80.98±17.86, 95% CI = 78.30, 83.66). Similarly, professional master's PDs reported higher career placement percentages (88.50±10.68%, 95% CI = 82.33, 94.67) when compared to undergraduate PDs (71.32±18.47%, 95% CI = 68.54, 74.10), t_{20}=-5.40, *P*<0.001, d=1.14. Finally, the difference between the groups for whether retention is or is not a problem facing athletic training education was not significant, ($\chi^2(1)$=.720, *P*=.396, Φ=.061) as 51.4% (91 of 177) of undergraduate PDs and 40% (6 of 15) of professional

master's PDs thought retention of ATSs is a problem facing athletic training education. **Conclusions:** Professional master's education appears to facilitate higher retention rates and greater career placement rates in athletic training when compared to undergraduate degree completion. Professional socialization, program selectivity, and student commitment and motivation levels may help to explain the differences noted. Anticipatory socialization may be vitally important to professional master's students to improve understanding of the profession as a secondary admissions process is rare at the graduate level. Master's students may have an increased level of motivation and commitment due to the time taken for reflection, prior to applying, regarding entering the profession. Professional master's students had higher career placement rates potentially due to the fact that they were not planning on using the athletic training degree to prepare for another health care profession as is somewhat common with undergraduate students. **Key Words:** Persistence, attrition, job placement

Athletic Training Students' Perceptions of Electronic Textbooks and Computer Use in the Classroom

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Context: Academia has seen a surge in technology integration in the classroom over the past few years. Electronic textbooks (e-textbooks) only accounted for 2% of overall textbook sales in 2009, however, this number is expected to grow at a rate of 49% through 2013. Although there has been a rush in use of technology in academia, few studies have evaluated the use and perceptions of electronic textbooks. **Objective:** The purpose of this study was to identify if athletic training students are using electronic textbooks and understand their perceptions of those electronic texts. **Design:** Cross Sectional survey design. **Setting:** Self reported online survey validated by content experts and cognitive interviewing procedures. **Participants:** A total of 861 athletic training students (Males: 261, Females: 599; Age: 92% under the age of 25), representing all 10 NATA Districts, and enrolled in professional level athletic training programs complete the survey. Inclusion criteria included students over the age of 18 who were enrolled in a professional athletic training program accredited by the Commission on Accreditation of Athletic Training Education (CAATE). **Data Collection and Analysis**: A survey link was emailed to all professional athletic training Program Directors. The email asked to be forwarded to their students. The survey contained 37 items (6 demographic) related to perceptions of electronic textbooks. Data analysis used descriptive statistics. **Results:** Most students (62.9%) reported being allowed to use laptops or tablets in their athletic training classes while 30.9% said it "depended upon the course." When students were asked about their preference for e-textbooks or traditional textbooks, 69% preferred a traditional textbook while 22% stated they had never had the opportunity to work with an e-textbook. A majority of students (96.4%) felt comfortable with computers. A large number of students (43.1%) responded that they were not aware that e-textbooks existed for athletic training courses. The primary reason students preferred traditional over e-textbooks was ease of reading followed by ease of note taking. However, some students (8.9%) preferred e-textbooks for their lower cost and portability. **Conclusions:** Due to our findings we recommend athletic training educators utilize traditional textbooks as a primary method of learning while incorporating technology such as e-textbooks as secondary methods. **Key Words:** Electronic Textbooks, Technology, Traditional Textbooks

Preparation of the Professional Athletic Trainer: A Descriptive Study of Undergraduate and Graduate Degree Programs

Cavallario JM, Van Lunen BL

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Context: The examination of the appropriate professional degree for preparation as an athletic trainer is currently of interest to the profession. Descriptive information is needed concerning existing universal outcomes in order to understand the impact of a degree change. **Objective:** To obtain descriptive information as it relates to professional athletic training programs, to compare programs types, as well as to determine if any of these factors contribute to success on existing universal outcome measures. **Design:** Cross-sectional. **Setting:** Online Survey. **Patients or Other Participants:** 364 program directors were contacted; 178 (51.4%) responded (163 undergraduate and 15 post-baccalaureate). **Data Collection and Analysis:** The online survey consisted of 46 questions and was constructed around five themes: institutional demographics (13 questions), program admissions (6 questions), program outcomes (10 questions), program design (9 questions), and faculty and staff (7 questions), and one optional identifying question. Descriptive statistics for all programs were calculated, and baccalaureate and post-baccalaureate programs were compared by examining universal outcome measures through correlations, regression equations and Mann-Whitney *U* tests. **Results:** Descriptive statistics demonstrated that 33 programs could not support post-baccalaureate degrees and a significant loss of faculty and staff would occur if the degree requirement changed (553 graduate assistants and 642 potentially under-qualified instructors). Post-baccalaureate professional

programs had a significantly higher 2011-2012 first-time BOC pass rates (U=464.5, p=.001, 98.9% vs 83.5%), 3-year aggregate first time BOC pass rate (U=451.5, p=.001, 91.4% vs 76.6%), and employment rates for 2011-2012 graduates employed within the profession of athletic training (U=614.0, p=.010, 96.4% vs 81.4%). Linear multiple regressions models demonstrated that program type (post-baccalaureate) and institution type (Public) contributed to 5% of the variance of the 2011-2012 first-time BOC passing rate percentage (p=.004), program type (post-baccalaureate) and institution type (Public) contributed to 10% of the variance for the three year aggregate first-time BOC passing rate percentage (p=.000), and that program type (post-baccalaureate) and 2011-2012 overall BOC passing rate contributed to 20% of the variance of the 2011-2012 employment rate (p=.000). Correlations indicated that having a minimum number of required clinical hours was negatively related to having a maximum number of required hours, r=-.31 (p=.031). The number of athletic training classroom instructors with a terminal degree or a Master's degree was positively related to the anticipated incoming accepted class size for the 2013-2014 academic year, r=.445 (p=.000) and r=.190 (p=.011) respectively. **Conclusion:** Post-baccalaureate athletic training program students perform significantly better in key outcome measures; however, the demographic data collected supports the concerns that this transition will result in the loss of some programs, and additional strain on current staff due to potential staffing changes and loss of graduate assistant positions.

Use of Games in a General Medical Conditions Course

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Context: Although gamification in education has received a lot of attention, much of the literature focuses on use of video games. Many instructors lack the required time and/or technical expertise to create a computer game to match their course objectives. An alternative for educators is to create or modify non-digital games to address their learning objectives. These games are inexpensive, do not require much technical expertise, and can promote active participation that improves motivation, engagement, and achievement. **Objective:** To describe several in-class games and how they were used to engage students and cover content in a general medical conditions course. **Background:** Using games in the classroom is not new. Games such as Jeopardy have been used for years as a fun way to review course information. There is ample evidence that games can engage students and that engagement can lead to achievement. Novel experiences can also promote interest, attention, and motivation. Therefore, students may benefit from participating in a variety of novel classroom gaming experiences that create sustained interest while meeting course objectives. **Description:** Several different types of games were used in a general medical conditions course to either cover or review course content. Games were carefully chosen to provide students with a novel active learning experience. Students in this course had not played similar versions of these games in previous courses. Each game was either created or modified from a traditional game to meet specific learning objectives. For example, a mock Zombie Apocalypse day was used to introduce students to material related to infectious diseases. Trivial Pursuit and Trivia Bingo, using course specific questions, were used to review content and to test student recall of various medical conditions. **Advantages:** Games that meet your educational objectives can be an effective educational tool as well as easy to create and play. Modifying traditional games can allow students to jump into the game without spending much time learning the rules of play. **Conclusions:** Students were involved, interested and engaged when games were used in a general medical conditions course. Student feedback was positive. Based on anecdotal evidence, the Zombie Apocalypse game made the biggest impact. All of the games used in this course were effective as active in-class learning activities. **Key Words:** Gamification, Student Engagement, Learning

Emergency Medicine Collaborative: Interprofessional Practice in Emergency Care

Eberman LE, Jaeger JE, Landis M, Williams DJ, Livingston LB, Kahanov L

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Context: We conducted an emergency medicine collaborative training simulation to educate health care students regarding roles of medical providers transitioning from on-site/field care to transport and emergency room care. We also disseminated new evidence based best practices from published sources. **Objectives:** The event was planned by faculty from athletic training (AT), nursing, physician assistant (PA) studies, as well as the director and technicians from the Rural Health Innovative Collaborative Simulation Center. The goals were to: 1) learn the roles and responsibilities of other health care providers; 2) use a teamed approach to patient care; 3) use interprofessional communication skills to transfer patient care. **Design:** Observational interprofessional education program evaluation. **Setting:** Medium-sized, midwestern institution of higher education, with majors in AT, nursing, and PA studies. **Participants:** Post-professional AT (n=27), professional nursing (n=13), and professional PA (n=31) students participated in the event. **Data Collection and Analysis:** We provided detailed instructions for

logistics and organization for group creation, simulations, and transitions between activities. We used high-fidelity human patient simulators for our cervical-spine injured athlete, concussion management, and myocardial infarction; and live standardized patients for heat stroke and femoral fracture patients. A facilitator provided a brief description of each simulation, asked students to provide simulated clinical care and stimulated discourse on evidence-based techniques. After each group experienced the on-site/on-field activity, we reconvened to watch prepared videos of patient transport inside an ambulance. After each transport video, we transitioned to a live feed of our mock emergency room. One discipline led in patient care for each phase of treatment and transition After each mock emergency, we used active reflection to identify best practices and potential discipline disconnect. We used a Group Skills Evaluation and a Roles and Responsibilities of Health Care Providers Questionnaire to measure group dynamics and understanding of the expertise of other providers, respectively. **Results:** The Group Skills Evaluation tool indicated that all team members perceived they contributed to discussion (92.3%, n=12/13), to his/her role or discipline (92.3%, n=12/13), and spoke freely within the group (84.6%, n=11/13). The roles and responsibilities tool determined that in most examples, our respondents were knowledgeable about their limitations and the roles of others. Finally, we determined that the students overwhelmingly reported that they learned from (4.5±0.7), with (4.0±0.7), and about (4.1±0.4) each other and believed the activity was beneficial (4.1±0.6). **Conclusions:** The large scale high-fidelity simulation proved beneficial for educating students on interprofessional roles and behaviors. **Key Words:** simulation, interprofessional education, group skills.

Knowledge of Athletic Trainers Regarding Airway Adjuncts

Edler J, Eberman LE, Kahanov L, Roman C, Mata H

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Context: Research shows that knowledge gaps occur among various professions and practitioners, which may harm patients. Little research has been done in Athletic Training to determine if knowledge gaps exist. **Objective:** To determine the relationship between perceived and actual knowledge of airway adjunct use and determine the difference in perceived knowledge. **Design:** Cross-sectional study **Setting:** Web-based survey **Participants:** 2000 Certified Athletic Trainers received the survey via email, 152 responded. Our response rate was 7.1%. **Interventions:** The perceived knowledge questionnaire was modified from Flynn and Goldsmith 5-item subject knowledge assessment. Flynn and Goldsmith examined the assessment tool to ensure validity and reliability. The 5 original items were applied to airway adjunct use to assess pre and post test perceived knowledge. We performed a factor analysis, which revealed that, 68.7% of the variance was assumed within 3 factors defined as knowledge retrieval, comprehension, and knowledge utilization. **Main Outcome Measures:** We measured pre and post-test perceived knowledge using the perceived knowledge questionnaire. Actual knowledge was measured using an assessment consisting of 9 questions related to common airway adjunct uses. We asked each participant to rate their likelihood to pursue continuing education during the pre and post-test perceived knowledge questionnaire. We also asked participants how often life-saving skills were used in their job. We used dependent t-tests to determine the pre and post-test differences in perceived knowledge and likelihood to pursue continuing education. A correlation analysis was used to determine the relationship between perceived and actual knowledge. We used an analysis of variance to determine if differences in actual knowledge existed between genders, employment settings, and how frequently they used life saving skills. **Results:** We identified no significant change ($t150 = -0.91$, $p = 0.37$, 95% CI = -0.17 to 0.06) in likelihood to pursue continuing education from before (pre = 4.35 ± 1.30) and after testing (post = 4.40 ± 1.35). A poor relationship ($r = 0.36$, $p < 0.001$) was identified between perceived knowledge and actual knowledge. We found a significant difference ($F_{1,145} = 4.63$, $p = 0.03$, ES = 0.031) between the frequency of use of life saving skills and actual knowledge. **Conclusions:** We identified a knowledge gap amongst athletic trainers in the use of airway adjuncts. Although the likelihood to pursue continuing education score was high, the score did not significantly increase after completing the assessment, which is inconsistent with previous literature. Participants who use life saving skills more frequently scored higher on the actual knowledge assessment, suggesting that the more frequently athletic trainers utilize a skill, the more knowledge they demonstrate.

Validity and Reliability of a Professional Attributes Instrument for Use in the Clinical Education of Athletic Training Students

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Context: Evaluation is an essential component of any academic program. The results of evaluations provide individual students with feedback for self-reflection. In addition, data derived from various evaluations can be aggregated to detect the need for programmatic refinement. Unfortunately, evaluation tools are often utilized with no concern for their ability to produce valid and reliable results. Demonstrating sound psychometric properties of an instrument is especially critical when attempting to record professional attributes of a student, due to the seemingly subjective nature of these evaluations. **Objective:** To assess the construct validity and internal reliability of data produced by preceptors completing a clinical experience student evaluation. **Design:** Cross-sectional survey design. **Setting:** Electronically administered evaluation. **Participants:** Thirty-six preceptors reporting on forty-nine individual students. **Data Collection and Analysis:** Evaluations on senior-level athletic training students were collected at one month and three months into the students' clinical experiences. Preceptors rated students' performance in four categories including professional attributes. Under the attributes section of the evaluation, preceptors rated the student's characteristics for fourteen items. The Likert scale included five points: always, often, half-the-time, seldom, and never. An Exploratory Factor Analysis was used to assess the construct validity and determine the factors of the attributes scale. Internal consistency reliability was explored using Cronbach's alpha for each of the scales that presented. **Results:** The Exploratory Factor Analysis revealed a three factor solution which accounted for 62.6% of the variance observed. The first factor, Commitment, (explaining 43.8% of the variance) was composed of six items, including "Demonstrates dedication." The second factor, Receptivity, (explaining 9.6% of the variance) was composed of four items, including "Accepts criticism." The final factor, Efficacy, (explaining 9.2% of the variance) was also composed of four items, including "Efficiently completes tasks." The Commitment, Receptivity, and Efficacy subscales had Cronbach's alphas of 0.881, 0.734, and 0.718, respectively. **Conclusions:** The data demonstrated both construct validity and internal consistency reliability. Further, the results of the Exploratory Factor Analysis appear to produce three meaningful subscales for understanding preceptors' evaluations of athletic training students' attributes. Additional research should be conducted to determine if these attributes correlate to content knowledge and practical skills or are predictive of the successful completion of a professional program and transition into clinical practice. **Key Words:** Cronbach's alpha, Exploratory Factor Analysis, internal consistency, commitment, receptivity, efficacy

Athletic Training Students' Transfer of Learning During Their Clinical Education Experience: A Grounded Theory Study

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Context: Transfer of learning refers to how previous learning influences current and future learning and how past or current learning is applied or adapted to similar or novel situations. Students' must successfully transfer knowledge and skill learned in classroom and laboratory settings to clinical practice in order to ensure the learner matriculates to an independent practitioner. Essentially, students must integrate knowledge and skill from the didactic and laboratory portions of their curriculum, into clinical practice. Assessments of transfer of learning assist athletic training educators authenticate the development of athletic training students as learners in the clinical setting. **Objective:** Explore the phenomenon of transfer of learning among athletic training students during their clinical experiences. **Design:** Qualitative study, grounded theory methodology. **Setting:** Skype interviews. **Participants:** 25 participants included15 professional phase athletic training students (5 males, 10 females; 4 seniors, 7 juniors and 4 sophomores); 7 preceptors (3 males, 4 females, years of experiences 13.29±5.56) who were associated with one or more of these students and 3 clinical education coordinators (1 male and 2 females, years of experience 11.33±3.21). **Data Collection and Analysis:** Data were collected and analyzed from a purposeful sample via in-depth, semi-structured interviews. Trustworthiness was accomplished through peer-review, data source triangulation, member checking and peer debriefing. **Result(s):** Open and axial coding revealed the following themes organized around the antecedents and barriers to transfer of learning as well as progression to autonomous learning. Antecedents to transfer of learning encompassed 1) comprehension of foundational knowledge and 2) facilitation of appropriate learning strategies based on student level and need (preceptor/ATS responsible engagement). Barriers to transfer learning encompassed 1) content task incongruity, 2) cognitive dissonance and 3) the preceptor's role as a full-time Athletic Trainer at their respective institution. Progression toward

autonomous learning was the final theme. The factors that influence a students' transfer of learning from the classroom to the clinical setting must be understood so that educators can appropriately train clinical educators to help students integrate their proficiencies. Moreover, understanding the barriers or deterrents of clinical integration of knowledge is necessary so Athletic Training Program administrators can work to remove these for the improved instruction of students. **Conclusion(s):** This study was unique in the sense that the phenomenon of transfer of learning among athletic training students during their clinical experiences was explored through a multi-stakeholder perspective. The resulting themes indicate that the student's ability to effectively transfer their learning from the classroom to the clinical setting must be a key focus of clinical educators. Students, preceptors and clinical education coordinators share in the responsibility of creating meaningful learning.

Case Study Instruction Improves Readiness for Interprofessional Learning Among "Pre-Professional" Students

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Context: In today's health care settings, providers are expected to approach health care in interprofessional teams. This allows each profession to provide care within their scope of practice, lending to their area of expertise, and allowing others to do the same. The interprofessional education (IPE) community has debated when to integrate the interprofessional paradigm into curricula, arguing about early or late integration based on the development of one's own professional identity and framework for clinical practice. We theorized that inclusion of IPE in the first year of pre-professional education (prior to entering the professional education phase) might provide an opportunity to prevent the development of potential barriers. Further, introducing IPE at the onset of education may shape a more collaborative discipline specific professional identity. **Objective:** To explore the readiness for interprofessional learning among pre-professional undergraduate students in an introduction to health professions course using case studies of patients with various comorbidities requiring the use of interprofessional health care teams. **Design:** Quasi-experimental, pre-test post-test design. **Setting:** Medium-sized, Midwestern university, with future majors in athletic training, occupational therapy, physical therapy, and physician assistant studies. **Participants:** One-hundred students were enrolled in the introduction to health professions class; 73 students completed the assessments at the onset of the class and at the end of the coursework. **Intervention:** To prepare students for the case study activities, students experienced interactive lectures to define the various health professions, their scopes of practice, and the educational expectations of each discipline. We also invited guest speakers for question and answer sessions regarding his/her respective profession. These activities achieved the delivery of the Roles/Responsibilities Competencies for Interprofessional Collaborative Practice: demonstrating knowledge of one's own role and the roles of other professions to appropriately assess and address the health care needs of the patients and populations served. To achieve the case study outcomes, students applied course content by selecting the appropriate health care professional for each patient complaint and explaining why this complaint was best addressed by the selected health care professional. **Main Outcome Measures:** We measured student outcomes using the Readiness for Interprofessional Learning Scale (RIPLS) at the start and end of the class. **Results:** We identified significantly higher total RIPLS scores at the conclusion of the class ($t72=1.89$, $p=0.031$). When observing the subscales, we identified significant improvements in the Teamwork and Collaboration ($t72=1.76$, $p=0.041$) and Roles and Responsibilities scores ($t72=1.67$, $p=0.049$). We did not identify any changes in the Negative ($t72=-0.55$, $p=0.29$) or Positive ($t72=1.35$, $p=0.08$) Professional Identity Scores. **Conclusions:** Our findings indicate that incorporating IPE, using principles of application, can have positive implications on teamwork development and the understanding of other disciplines. The professional identity of pre-professional students is unchanged by the integration of IPE at the onset of academic preparation. The fear of implementing IPE prior to professional socialization and the development of one's own professional identity is seemingly without merit. In this study, we demonstrated that IPE can improve students' readiness for interprofessional practice, without affecting one's professional identity. **Key Words:** interprofessional education, application

Undergraduate Athletic Training, Health Administration, and Nursing Students' Perspectives Before and After an Interprofessional Class Project

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Context: Interprofessional education (IPE) is encouraged in the education of health professionals with the hope that it will improve communication between future health care professionals and contribute to efficient health care delivery. In response, health professional education programs are developing IPE courses and projects. **Objective:** To determine if a multi-course interprofessional class project impacted students' knowledge and views on other health care professions,

as well as their attitudes towards IPE. **Design:** Cross-sectional survey design. **Setting:** Four university classrooms **Patients or Other Participants:** Eighty-one undergraduate students (men: 32; women: 49) from four introductory courses (two athletic training sections, 41 students; one health administration section, 19 students; and one nursing section, 21 students) participated in two surveys and an interprofessional class project. **Data Collection and Analysis:** Participants completed a modified electronic version of the Readiness for Interprofessional Learning Scale (RIPLS) Questionnaire during the second week of a 16-week academic semester. The faculty assigned students to an interprofessional group with representation from each discipline. Groups were instructed to produce an 8-minute presentation on an assigned health care profession. Presentations included a description of the profession; how and when the professional communicated with other health care professionals; and comments from an interview with a current professional. During the 14th week of the semester and after completing the project, students completed the same modified RIPLS questionnaire. Means and frequency were calculated. Quantitative data was analyzed with ANOVA followed by Tukey post-hoc testing when appropriate. A prior was set at 0.05. **Results:** Following the IP project, students from all disciplines reported an increased knowledge regarding nursing (% of Agree + Strongly Agree Pre:44%, Post:78%; $F_{1,157}=23.69$; $p>.001$), health administration (% of Agree + Strongly Agree Pre:34%, Post:74%; $F_{1,157}=29.94$; $p>.001$), athletic training (% of Agree + Strongly Agree Pre:54%, Post:84%; $F_{1,157}=41.09$; $p>.001$), other health care professions in general (% of Agree + Strongly Agree Pre:35%, Post:66%; $F_{1,157}=13.14$; $p>.001$), and how their discipline differed from other health care disciplines (% of Agree + Strongly Agree Pre:71%, Post:89%;$F_{1,157}=11:30$; $p>.001$). All students also increasing agreed that communication should be practiced with other health care disciplines (% of Agree + Strongly Agree Pre:65%, Post:84%; $F_{1,157}=6.39$; $p>.001$). Other perceptions related to IPE did not change no matter the health care discipline. **Conclusions:** Undergraduate athletic training, health administration, and nursing students who completed an interprofessional project reportedly increased their knowledge of health care disciplines and increased their appreciation for practicing communication between health care disciplines. Future studies should assess how increasing basic knowledge of health care professions may impact the integration of more advanced IPE concepts later in one's professional education. **Key Words:** Multidisciplinary, Pedagogy, Interprofessional Education

The Effectiveness of Online Video Modules in Improving Knowledge and Hands-On Clinical Skills: A Pilot Study

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Context: The use of technologies such as online video modules (OVMs) has become popular for distance learning and continuing education efforts. While evidence suggests that the utilization of OVMs increases learner knowledge, it is unclear if similar benefits exist for improving hands-on clinical skills such as ankle joint mobilization. **Objective:** To explore the effectiveness of OVMs in improving knowledge and hands-on clinical skills for Maitland Grade III talocrural joint mobilization. **Design:** Pre-test post-test pilot. **Setting:** Classroom and online. **Participants:** Five post-professional athletic training students (male=2, female=3, age=23.26±1.58 years) participated in this pilot study. **Intervention:** Participants were asked to complete the same written and practical examinations on Days 1 and 7. Following the pre-test examinations, participants were given access to two OVMs that reviewed (1) the theory of joint mobilization (duration=7 minutes) and (2) the proper application of joint mobilization (duration=11 minutes). Participants were blinded from their pre-test examination scores, and were asked to view the OVMs at least once between the two testing sessions, but were allowed to view the modules as many times as they wished. Both OVMs were developed by examining current evidence and reviewed by a content expert prior to testing. **Main Outcome Measures:** Knowledge level and hands-on clinical skills were operationalized by written and practical examination scores, respectively. The written examination consisted of 14 multiple-choice questions that assessed participants' knowledge of Maitland Grade III talocrural joint mobilizations including the benefits, indications and contradictions, and proper technique for treatment application. For the practical examination, participants were asked to perform a full treatment of Maitland Grade III talocrural joint mobilization on a patient. A 24-item grading rubric was used to evaluate participants' ability to perform the mobilization. The rubric assessed specific treatment components, including patient and clinician positioning, proper preparation of the joint (eg, examining range of joint play), and appropriate application of joint traction and mobilization techniques (eg, hand placement, proper amount of traction, proper rate of oscillation). We used the same rater and patient for both testing sessions. Score percentages and ranges were calculated for each testing session. Participants scoring over 90% on both written and practical examinations were classified as being competent in Maitland Grade III talocrural joint mobilization.

Results: For the pre-test, the average scores for the written and practical examinations were 71.5% (range=50%-92.9%) and 35.0% (range=20.8%-58.3%), respectively. Only one participant (20.0%) demonstrated competency on the written examination, and no participants demonstrated competency on the practical examination during the pre-test session. For the post-test, the average scores for the written and practical examinations were 95.7% (range=92.9%-100.0%) and 96.7% (range=91.7%-100.0%), respectively. All participants demonstrated competency on both the written and practical examinations during the post-test session. **Conclusions:** These preliminary data suggest that OVMs may be effective in improving knowledge and hands-on skills in applying ankle joint mobilization. More research is needed to further evaluate the effectiveness of OVMs in improving hands-on clinical skills and to explore factors related to learning and retention of skills. **Key Words:** technology, online learning, continuing education.

Do Pre-Admission and Athletic Training Program Standards Predict Student Academic Success and First Time Pass Rate on the Board of Certification Exam?

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Context: Administrators of athletic training programs (ATP) select students from a pool of applicants that meet minimum entrance qualifications. Administrators may question if completing the academic program or passing the Board of Certification (BOC) exam can be predicted from a pre-determined set of criteria. **Objective:** The purpose of this study is twofold: 1) To determine if high school academic performance will predict academic program success and/or success on the BOC exam, and 2) to determine if ATP academic performance will predict success on the BOC exam. **Design:** Retrospective longitudinal. **Setting:** One CAATE accredited ATP. **Subjects:** Records of ATP graduates over a ten year period 2001-2011. **Interventions:** High school academic performance (grade point average [GPA], standardized test scores, number of college preparatory courses taken, and quality points) and ATP academic performance (undergraduate GPA, athletic training major GPA, end of sophomore year GPA, and select course GPA) served as independent variables. Dependent variables were completion of the ATP without probationary status (ATP success), and first time pass rate on the BOC exam. **Main Outcome Measures:** Data were coded on a collection tool. Linear regression analyses were used to evaluate the relationships of high school academic performance and ATP academic performance against ATP success and BOC first-time pass rate. The alpha level was set at 0.05. **Results:** A total of 91 graduates were used for the study. Regression analysis revealed 68.1% of the variance in ATP success ($P < 0.000$) and 52.5% of the variance in BOC first-time pass rate ($P < 0.000$) could be accounted for within high school academic performance variables. ATP academic performance variables accounted for 18.8% of the variance in BOC first-time pass rate ($P < 0.000$). **Conclusions:** The current research highlights the relationship between high school and ATP academic variables and first-time success on the BOC exam. High school students with higher GPAs and standardized test quantitative scores had greater success in the athletic training program while standardized test quantitative scores were the best predictor of first-time success on the BOC examination. Academic performance in athletic training coursework was a significant predictor of performance on the BOC examination but only accounted for a small amount of variance in the measure. Administrators of athletic training programs may be able to use this data to develop admission policies to select program applicants with the greatest chance of first-time success on the BOC examination. Data may also be used to help identify students who need additional classroom or study resources in order to be successful in the athletic training program. **Key Words:** Academic Success, Student Achievement, Board of Certification Examination

Comparison of Preceptor Evaluations to Students' Reflective Evaluations

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Context: Encouraging metacognitive processing has been demonstrated to improve student learning in professional programs. One such process, reflection, is a learned behavior which can be developed over time. The ability to reflect depends on learner traits (skills and experience in reflective thinking, breadth of knowledge in content area, motivation), environmental conditions (physical and interpersonal), and the reflective task characteristics (questions asked to provoke reflection, format for reporting, feedback following reflection). Some researchers believe that the greatest opportunity to foster reflection is through a supportive interpersonal environment. The athletic training student's clinical rotations provide a mentoring environment which enhances the opportunities for quality reflection, due to the experiential learning that takes place and a more favorable student-to-instructor ratio. **Objective:** To assess the reflective abilities of students when rating their professional attributes as they compare to preceptor ratings. **Design:** Cross-sectional survey design. **Setting:** Electronically administered evaluation. **Participants:** Forty-nine senior-level athletic training students and their preceptors. **Data Collection and Analysis:**

Students completed self-evaluations at one month and three months into their clinical experiences. They rated their performance in four categories, one of which was professional attributes. Within these sections, they rated their characteristics for fourteen items using a five-point Likert scale (always, often, half-the-time, seldom, never). The students' preceptors completed the same evaluation at the same time points. Prior data analysis revealed three scales on the attributes portion of the evaluation: Commitment (dedication to profession), Receptivity (willingness to work with others and incorporate feedback), and Efficacy (knowledge/ability). Means and standard deviations were calculated for the three scales. Intra-class correlation coefficients (ICC) were run to compare inter-rater reliability of the students' responses with those of their preceptors. **Results:** The ICCs for the Commitment, Receptivity, and Efficacy subscales were 0.573, 0.545, and 0.233, respectively. When experienced preceptors (certified more than two years) were excluded from the analysis, the ICC improved to 0.625 and 0.516 for the Commitment and Efficacy subscales, respectively. When the one month evaluations were excluded from the analysis, the ICC for the Receptivity subscale improved to 0.693. **Conclusions:** The overall ICCs for the Commitment and Receptivity subscales were fair, indicating thoughtful reflection on the part of the students. The scale that posed the most concern was Efficacy. This may be attributed to the differential in breadth of knowledge between students and preceptors with regards to Athletic Training skill. Interestingly, when students' evaluations were compared to those of novice preceptors, the ICCs improved on two of the three subscales. This could again be attributed to the breadth of knowledge between the two groups; there is generally a small knowledge gap between a first-year graduate assistant and a senior-level athletic training student. Interestingly, the improvement on the Receptivity subscale on the final evaluation contributes to the notion that a quality interpersonal environment can foster improved reflection. It is important for students to reflect on their attributes and interact with preceptors as role models to improve foundation behaviors. Future research is warranted to determine if specific strategies to improve reflection are effective. **Key Words:** intra-class coefficient, inter-rater reliability

Multi-Stakeholder Perspective on the Transition to a Graduate Level Athletic Training Educational Model

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Context: Discussions regarding the most appropriate professional degree to award to an athletic trainer have ebbed and flowed over the last two decades without much action. The most recent debate centers on the move away from the traditional baccalaureate-level professional program to a master's level professional program. **Objective:** Gain an impression from multiple stakeholders within athletic training education on the impact a change to graduate level education could have on the profession and the educational and professional development of the athletic trainer. **Design:** On-line interviews utilizing the QuestionPro™ website. **Setting:** Athletic training programs. **Patients or Other Participants:** A total of 50 participants volunteered. We had 18 athletic training students (males=6, females=12), fifteen preceptors (males=8, females=7 unspecified=1), and seventeen athletic training faculty complete the study (program director=6, clinical coordinator= 3, faculty member=5). 6 of the students were in entry-level master's programs (3 first year students, 3 second year students). Three of the preceptors and 6 of the faculty were currently supervising students in a PM program. Thirty-one of the participants (62%) were in support/favor of the transition, while 14 were opposed (28%), and five were neutral/undecided (10%) on the transition. **Data Collection and Analysis:** All participants completed a structured on-line questionnaire, which matched their role within the ATP regarding the positives and negatives associated with transitioning to professional education at the graduate level. Data were analyzed following a general inductive process. Member checks, multiple analyst triangulation, and peer review established credibility within our study's findings. Recruitment ceased upon gaining data saturation. **Results:** The first higher-order theme revealed 4 reasons to support a transition: 1) better alignment of athletic training within the healthcare arena, 2) the ability to offer advanced coursework, 3) improved student and professional retention, and 4) enhanced student maturity. Student maturity did not emerge as critical for our athletic training student participants and preceptors were less concerned about advanced coursework as benefits to a model change; otherwise the themes manifested from all 3 groups. Among the 4 themes revealed for supporting the move, professional reputation and respect along with improved student and professional retention were discussed at length by our participants. The second higher-order theme was defined by 3 factors: 1) difficulty providing autonomous practice, 2) financial concerns

from requiring additional education, and 3) a lack of evidence to support the transition. Participants felt that the recommendations made within the white paper were speculative without substantiation, and rich data to support the educational reform was sparse. Increased educational costs paired with no evidence that salaries would improve was of greatest concern, second to the limited evidence to support the transition. **Conclusions:** Athletic training students, faculty, and preceptors demonstrate moderate support for the idea for a transition to the graduate level model. Factors supporting the move were comparable to those detailed in the white paper, and those concerns and reasons against a move have been among the professional discussions by those in the profession. Continued evidence is necessary to help formulate the decision for educational practice in athletic training. **Key Words:** educational reform, retention, commitment

Athletic Training Student Perceptions of Their Professional Development

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Context: Alternative methods that gather input from students regarding their field experiences and professional development can be valuable sources of information. **Objective:** The purpose of this study was to examine student perceptions of their field experience and professional growth. **Design:** Qualitative case study. **Setting:** Undergraduate athletic training program in a small private university in the Midwest. **Patients or Other Participants:** Twenty-five athletic training students that completed a field experience as part of the athletic training program. Participants were recruited for three years of the program and included sophomore, junior and senior students. **Data Collection and Analysis:** Students completed a reflection at the end of every semester that examined three areas: 1) most anxiety provoking/stressful situation, 2) suggestion for/advice to future students, and 3) growth and professional development. The first two were explored through written reflection and the third was explored through a creative approach. Creative approaches included drawing, painting, photos, collage or scrap book page that depict how the students viewed themselves at the time and in ten years. Data was analyzed by qualitatively coding for themes using deductive content analysis. Peer debriefing and member checking ensured trustworthiness. **Results:** Stressful situations usually revolved around a life or limb threatening emergency situation. Some students reported negative feelings because they were unprepared or did not have the proper equipment. Other students reported positive feelings because they were able to use skills they have not applied before and the outcome was positive. Advice to students revolved around the following three themes: 1) take initiative and practice skills whenever possible, 2) other students and preceptors are there to help/don't be afraid to ask for help, and 3) review class material frequently so you are prepared for any situation. The creative reflection on professional growth varied greatly. Many of the students currently viewed themselves as overwhelmed and busy. Several athletic training students are also athletes and a few showed the conflict between athletics and athletic training. Interestingly, these students almost always viewed themselves as an athletic trainer in ten years and not an athlete. Another subset of athletic training students thought they would be working with a specific professional team in ten years. Sophomore students reported wanting to be an athletic trainer for a professional sports team more often than senior students. Senior students were more likely to reflect on their personal lives as well as their professional life. **Conclusions:** Reflections are one way to gauge the clinical field experiences for athletic training students. Information from this study has helped to prepare students for entering the field experience for the first time. The reflections also allowed for a dialogue about professional development with the students and what is important for their future.

Preparing Future Faculty for Teaching in Athletic Training Programs

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Context: Athletic training educational reform redefined education programs during the 2000's; it also redefined a career path– the athletic training educator (ATE). A terminal degree; whether a PhD or EdD helped solidify the ATEs' role in academia, assuming the rights and responsibilities necessary for tenure/promotion, to affect policy, and for advancement. However, the degree itself does not necessarily guarantee a complete understanding of pedagogy, an integral component in assuring effective knowledge and skill delivery. **Objective:** To 1) discuss the traditional route(s) to preparing faculty for positions in higher education (HE); 2) examine how athletic training faculty are being prepared for their role in HE; and 3) recommend strategies to help better prepare future ATEs in HE and athletic training. **Background:** Traditionally, graduate students prepare to become faculty members in HE through the apprenticeship model. HE is the only educational setting where classroom instructors are not required to possess any formal training in pedagogy or assessment. Thus, graduate students are not always fully prepared for their future roles as educators in HE. **Description:** After examining the related literature, six themes emerge related to developing future ATEs. These include: (1) developing student-educator communication,

(2) modeling professionalism, (3) facilitating critical thinking, (4) developing professional mentors, (5) reflecting on teaching practice, and (6) promoting teaching opportunities and best practices in classroom. In response to calls for better preparation of future faculty members in HE in general, some graduate programs have adopted faculty preparation programs in an effort to make their graduates more marketable and better prepared for roles in academia. These programs focus on pedagogy and classroom teaching, engaging in university and professional service, and acquiring skills beyond research, traditionally the focus of many graduate programs. More recently, ATEs must now also be prepared to meet the need for understanding and engaging in interprofessional education initiatives to allow students to learn how to collaborate effectively and learn what areas of their own scope of practice might overlap with other professions. **Clinical Advantage(s):** The Commission on Accreditation of Athletic Training Education (CAATE) does not set standards regarding training or experience in pedagogy. Rather, ATEs must be "qualified through professional preparation and experienced in their respective academic areas as determined by the institution," But what is "qualified"? Is it being qualified as an athletic trainer or an educator? Previous literature has called for more athletic trainers with doctoral degrees to become the "next generation" of leaders, researchers, and qualified educators in the field of athletic training. Investigation of the recommendations to help prepare future ATEs should be the cornerstone in the development of any educators. **Conclusion(s):** As a professional organization we eliminated the internship route to certification due to lack of rigor and effective learning. Why should we ask anything less of those educating future clinicians? More emphasis needs to be placed on pedagogy and on being effective educators, role models, and leaders to the next generation of athletic trainers during graduate education programs. **Key Words:** higher education, faculty preparation, pedagogy

Similarities and Differences in Full-Time Faculty Preceptors and Graduate Associate Preceptors within Doyle's Task Systems

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Context: Pedagogy is an integral component in assuring effective delivery of knowledge; however, a gap remains for many preceptors on how to actually deliver the knowledge effectively. Directly observing preceptors in the clinical setting would be useful for clinical education coordinators as well as preceptors to identify how areas of content are being delivered. **Objective:** The purpose of this study was to analyze teaching behaviors of full-time faculty preceptors and graduate associate preceptors during practice preparation and fieldwork experience during clinical practicum experiences. **Design:** Qualitative methodology was the mode of inquiry. **Setting:** The setting was an entry level Bachelor's CAATE accredited athletic training education program at small private school in the Northeast. **Patients or Other Participants:** Current college staff members (faculty and graduate students) with varied years of work experience (N = 6) were purposively selected. Athletic training students (ATS) (n = 18) were purposively selected dependent on current preceptor and team assignment. Athletic training student class standing varied according to team assignment allocated by the Clinical Education Coordinator. **Data Collection and Analysis:** Qualitative methodology was used during data collection through semi-structured interviews, focus group interviews, and field observations. Interview transcripts and observational field notes were inductively coded using constant comparative methods. Combinations of open and axial coding were utilized to assist in further classification of categories and relationships between categories. The researcher coded field observations within Doyle's Task Systems (1979): managerial, instructional, and social. The managerial task system included tasks that were necessary to create an environment where learning and instruction took place. The instructional task system included the presentation and practice of subject matter. The social task system involved ways the ATS sought social interactions. Trustworthiness was established through the use of member checks, peer debriefing, and prolonged engagement. **Results:** Distinct similarities and differences between full-time faculty and graduate associate preceptors during the instructional, managerial, and social task were noted. The frequency of instruction was consistent across settings; however, the type of instruction, management styles, and social interactions differed between full-time faculty and graduate associate preceptors. **Conclusions:** Knowledge of task systems may provide a

focused evaluation on the programmatic components of the content and development of athletic training education programs. The results should be considered when evaluating preceptors.

A Teaching Simulation is Effective in Improving Athletic Training Students' Football Helmet Facemask Removal Skills and Confidence

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Context: Educators are challenged to provide meaningful and effective learning opportunities that will not only develop knowledge and clinical skills, but confidence. While athletic trainers are expected to be proficient in managing emergency medical situations, these patient encounters rarely occur in clinical education. Therefore, students may not be engaging in emergency situations through clinical education, leaving a potential gap in their clinical skills and confidence. **Objective:** To investigate the effects of a football helmet facemask removal teaching simulation on the clinical skills and confidence of athletic training students. **Design:** Cross-sectional study. **Setting:** Two athletic training program laboratories. **Participants:** Forty-four athletic training students (16 male, 28 female, age=20.9+1.12 years) enrolled in the professional phase of a program. **Interventions:** Participants were individually pretested on facemask removal skills (e.g., primary survey, assessing vital signs) and completed a confidence assessment survey. One week later, participants were randomly assigned to a partner and together engaged in a teaching simulation where they evaluated, treated, and managed an unconscious football player who required facemask removal. Verbal feedback on performance was provided during and immediately following the simulation by an instructor who was present. To evaluate the effectiveness of the teaching simulation, one week later, participants were individually posttested on facemask removal skills and then completed the same confidence assessment survey. Performance on the pretest and posttest was evaluated with a checklist that included the following: primary survey, facemask removal, vital signs assessment, and secondary survey. The checklist was created using the literature and validated for content using feedback from three experts in the field. The confidence assessment survey included 21 Likert-scale items assessing the participants' confidence (1=not at all confident, 4=very confident) in the recognition of, knowledge of, and skills needed for facemask removal. **Main Outcome Measure:** The dependent variables were the performance on the posttest as measured by the checklist and confidence as measured by the confidence assessment survey. A paired samples t-test determined the effects of the teaching simulation on facemask removal. Wilcoxson Signed-Rank Test was used to determine a change in confidence from pretest to posttest. **Results:** A paired samples t test revealed a significant increase in performance on the posttest, including: primary survey ($t43 = 4.13$, $P < .001$), facemask removal ($t43 = 4.00$, $P < .001$), vital signs assessment ($t43 = 5.57$, $P < .001$), and secondary survey ($t43 = 8.85$, $P < .001$). Wilcoxon Signed-Rank Test revealed that participants were more confident in their recognition of ($Z = 4.96$, $n = 44$, $P < .001$), knowledge of ($Z = 5.03$, $n = 44$, $P < .001$), and skills ($Z = 4.78$, $n = 43$, $P < .001$) needed for facemask removal. **Conclusions:** A single teaching simulation improved athletic training students' facemask removal skills and confidence. Simulation experiences should be deliberately integrated into athletic training programs to enhance student clinical skills and confidence. **Key Words:** athletic training education, emergency management skills, clinical skills

Using Puzzles in Anatomy and Physiology to Improve Student Achievement

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Context: Anatomy and Physiology (A&P) courses in which students study the body's structure and function are historically required in undergraduate AT curriculums. Traditionally, A&P courses are taught using teacher-centered approaches grounded in cognitive learning theories that advocate direct instruction. This has created students who are unable to apply knowledge and solve problems. To improve student success in A&P, student-centered instructional strategies should be utilized. **Objective:** To inform AT educators about the benefits of incorporating puzzles to improve student achievement in A&P. **Background:** A solid background in A&P is essential for entry-level athletic trainers to provide efficient and effective health care. As such, students receive instruction in A&P as part of their professional preparation. Behavioral and information-processing theories associated with traditional A&P instructional strategies passively transmit isolated facts and concepts to students. As a result, students fail to appreciate the application of what they are learning. While learning anatomical terms and concepts is essential, traditional instructional techniques often leave out the opportunity for actively engaging students. Instructional methods that facilitate learners constructing their own knowledge through experienced-based activities such as puzzles improve student achievement. Puzzles have been utilized successfully in a variety of educational settings for many years and provide exceptional educational experiences for AT students learning A&P. **Description:** Each puzzle piece represents a discrete anatomic element (e.g. organ, bone, ligament, etc.)

depicting the body at different organism levels. Working in groups, students construct and deconstruct labeled and unlabeled anatomical puzzles Students can also create new puzzles using a variety of arts and crafts materials. Puzzles of the same size can be stacked to reveal layers. Finally, students can reflect on their learning experience by writing a narrative summary and quizzing each other on the structure and function of each puzzle piece. **Clinical Advantages:** Incorporating puzzles in A&P creates a fun student-centered learning environment that actively engages students. The use of puzzles increases student motivation by gaining students' attention, engages students through production work, and increases perceptions of control. Utilizing puzzles also assists students visualize problems and solutions, provides cooperative experiences, improves problem solving skills, and helps students appreciate spatial relationships and relationships between anatomical structure and function. Finally, puzzles can be used in multiple contexts such as introducing new topics or concepts, reinforcing information, and assessing learning and retention. **Conclusions:** Although the use of puzzles in A&P for AT students is limited, puzzles have been successfully utilized in a variety of other educational settings for many years. Integrating puzzles enhances the learning environment by providing students an opportunity to construct their own knowledge through participation in relevant and realistic experienced-based activities that foster student creativity, encourages the use of multiple modes of representation, and cultivates ownership and a voice in the learning process. Incorporating puzzles also nurtures social interactions, provides experience in and appreciation for multiple perspectives through collaboration, self-awareness of the knowledge construction process, and facilitates an appreciation and understanding of both anatomical spatial relationships and the relationship between anatomical structure and function. **Key Words:** knowledge construction, spatial relationships.

Collegiate Athletic Trainers' Perceived and Actual Knowledge of Therapeutic Ultrasound Concepts

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Context: Therapeutic ultrasound is a widely used therapeutic modality; however, little is known about the knowledge level of athletic trainers. As the athletic training profession increases emphasis on evidence-based practice, it will be important for athletic trainers to understand therapeutic ultrasound concepts and for preceptors to teach students evidence-based therapeutic ultrasound. **Objective:** The purpose of the study was to examine athletic trainers' perceived and actual knowledge of therapeutic ultrasound concepts. **Design:** Cross sectional questionnaire. **Setting:** Participants completed a web-based questionnaire. **Patients or Other Participants:** Responses from 111 (11.3%) randomly selected athletic trainers (age=35.55 ± 8.86 years) employed in collegiate settings were analyzed. **Data Collection and Analysis:** Participants completed the online questionnaire during the fall of 2013. The questionnaire consisted of: Likert scale questions (range 1-4) regarding perceived knowledge of the educational competencies related to therapeutic ultrasound; actual knowledge questions regarding theory/textbook validated knowledge that consisted of multiple choice, true or false, and clinical decision making questions; frequency of use questions; and demographic questions. Descriptive statistics (e.g. means, standard deviations, frequencies) were calculated using SPSS v21. **Results:** Athletic trainers in collegiate settings reported fairly high confidence in their knowledge of the application related therapeutic ultrasound competencies; 60% or more respondents reported "strongly agree" they were confident with 4 of the 5 competencies. Athletic trainers reported confidence, but less confidence in their knowledge of the theory/book knowledge related therapeutic ultrasound competencies; while most reported at least "agree", 45% or less reported "strongly agree" that they were confident with the 3 competencies. The actual knowledge mean score was 15.52 ± 2.86 out of 22 possible points (70.55% ± 12.99%). The thirteen questions that were answered correctly by less than 75% of the participants related to insufficient parameters, safety concerns, and theory/book knowledge. **Conclusions:** Athletic trainers were confident in their knowledge of therapeutic ultrasound concepts but were more confident with application questions than theory/book knowledge questions. Though confidence in their knowledge of therapeutic ultrasound concepts was high, scores on the actual knowledge questions were relatively poor. The use of inadequate intensities and inadequate treatment durations as outlined by Draper in 1998 were still seen. While a self-assessment tool may be helpful for some, this study suggests that more research is needed regarding whether athletic trainers have an accurate understanding of their need for continuing education in this area. **Key Words:** therapeutic ultrasound, perceived knowledge, actual knowledge

Establishing Specificity of Concussion Special Tests

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Context: Commonly applied concussion special tests have little to no data regarding their value in correctly identifying sport-related traumatic brain injury (SRTBI). Sensitivity, the true-positive rate of a diagnostic examination technique, is difficult to determine for concussion special tests. This would require identifying patients with true-positive and false-negative findings and would require subjects to be definitively diagnosed with a concussion prior to testing. However, specificity, or the true-negative rate, can be calculated by identifying false-positive and true-negative findings in healthy subjects. The acronym "SpPIN" reminds practitioners that tests with high specificity values resulting in positive test findings are excellent for ruling in a condition. Therefore, if the specificity of concussion special tests can be determined, clinicians and educators will be better positioned to select and teach the most accurate procedures for making a diagnosis of SRTBI. **Objective:** The objective of this study is to determine the specificity of eight commonly used special tests for concussion. **Design:** The experimental design of the study utilized a single session measurement of healthy subjects' performance on eight standard concussion tests. **Setting:** The study was conducted in a University research laboratory. **Subjects / Participants:** Subjects in this study included 117 healthy, college-aged, student volunteers (37 male, 80 female). Subjects were required to have no history of head trauma in the last month and no diagnosis of concussion in the last year. Also, subjects were disqualified if they reported more than two positive findings on the Graded Symptom Checklist for concussion. **Interventions:** Subjects completed eight special tests for concussion (3-Word Recall, Months of the Year Backwards, Serial Sevens, Romberg's Test, Tandem Walking, Finger-to-Nose, Proprioceptive Finger-to-Nose and Delayed 3-Word Recall) administered by the same examiner. Each test was scored as either (false) positive or (true) negative by the examiner. **Main Outcome Measures:** The main outcome measure of this study was determining the specificity of the special tests. **Results:** Specificity values were determined as follows: 3-Word Recall 1.00, Months of the Year Backwards 0.52, Serial Sevens 0.07, Romberg's Test 0.10, Tandem Walking 0.29, Finger-to-Nose 0.97, Proprioceptive Finger-to-Nose 0.98 and Delayed 3-Word Recall 0.55. **Conclusions:** The findings of this study indicate that only the 3-Word Recall, Finger-to-Nose and Proprioceptive Finger-to-Nose tests have specificity values that support their use in clinical practice. This means that a positive finding with these special tests is likely to correctly rule-in a SRTBI. The Months of the Year Backwards and Delayed 3-Word Recall tests could have some minimal value in correctly diagnosing patients with concussion if paired with other tests with higher specificity values. The Serial Seven Test, Romberg's Test and the Tandem Walking Test appear to have no value to the clinician when attempting to correctly rule-in SRTBI. **Key Words:** Concussion Special Tests, Specificity, Diagnostic Accuracy

Effects of an Interprofessional Living Learning Community with Athletic Training, Dietetics, Exercise Science, and Nursing Students

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Context: Many athletic trainers will work with other healthcare professionals. A living learning community (LLC) may help prepare students for future interprofessional practice and improve their first year experience. **Objective:** The purpose of this study was to examine student perceptions of their participation in a living learning community during their freshman year. **Design:** Qualitative case study. **Setting:** Undergraduate college of nursing and health sciences in a small private university in the Midwest. **Patients or Other Participants:** Twenty-one athletic training, dietetics, exercise and nursing students participated in a living learning community. They lived in the same dorm, took three classes together and participated in monthly sessions that were educational, service or social. **Data Collection and Analysis:** Students completed a survey at the end of their freshman year. The survey examined their perceptions of their satisfaction with the LLC, university experiences, learning experiences, residential experiences, teamwork, career and self-understanding. Survey results were analyzed using frequency counts for Likert questions. Open ended questions were analyzed by qualitatively coding for themes using deductive content analysis. Peer debriefing and member checking ensured trustworthiness. **Results:** Sixteen of the 21 students completed all of the activities associated with the LLC. Fourteen of the 16 completed the survey (87.5%); overall perceptions were positive for each category. 100% of the students were satisfied with the LLC and would recommend joining the LLC to a friend or perspective students. In regards to interprofessional collaboration, 100% felt that the LLC increased their ability to interact students in other healthcare professionals, 93.9% (13/14) felt the LLC helped increase their understanding of other healthcare professionals, and 85.7% (12/14) thought the LLC helped increase their knowledge of issues and problems facing other healthcare providers. Themes that emerged from the open ended questions about benefits of the LLC include getting to know students in their majors right away, professors that cared,

earlier exposure to professional issues and unique experiences that other freshman did not have (through educational sessions). Information regarding persistence and retention are not yet available, but will be examined. **Conclusions:** Living learning communities may be a way to increase interprofessional collaboration and improve the first year experience. The students in this study had positive experiences and there may be long term benefits when they are practicing professional.

The Orientation and Transition to Practice of Newly Credentialed Athletic Trainers

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Context: Debate has ensued whether newly credentialed athletic trainers (ATs) are ready to independently provide patient care. Exploring orientation and experiences when transitioning will provide insight for employers to better assist newly credentialed ATs during their transition to practice. **Objective:** To determine how ATs are oriented to their role as independent practitioners and explore ATs' experiences towards transition to practice. **Design:** Cross sectional design. **Setting:** Online survey. **Patients or Other Participants:** 332 of 1835 newly credentialed ATs (18%) certified and employed between January and September of 2013 completed the survey (129 males, 203 females, 23.58 ± 2.54 years old). **Data Collection and Analysis:** The survey consisted of demographics (e.g., employment setting, job title) and five sections: 1) orientation tactics (OT), 2) usefulness of orientation tactics (UOT), 3) comfort level during transition (CL), 4) feelings of mentorship and support (MS), and 5) feelings of organizational transition (FOT). For OT, participants identified various orientation tactics included in their orientation (e.g., policies and procedures review). For UOT, participants identified how useful each orientation tactic was on a Likert scale (1=not useful, 4=very useful). For CL, MS, and FOT, participants identified their feelings of nervousness, support, and understanding organizational values using a Likert scale (1=strongly disagree, 4=strongly agree). Descriptive statistics were calculated on each survey item. Mann-Whitney U (U) and Kruskall Wallis (KW) tests were used to determine differences between demographic characteristics and responses regarding orientation and feelings of CL, MS, and FOT. A Bonferroni correction was used to account for multiple comparisons. A panel of experts established content validity of the survey. **Results:** The most common orientation tactics were meeting with supervisors (n=276, 82.9%), staff members (e.g., coaches) (n=266, 79.9%), and learning responsibilities (n=254, 76.2%). The least common orientation tactics were simulation of emergency action plan (n=66, 19.8%) and preceptor development (n=71, 21.3%). The most useful orientation tactics were simulating the emergency action plan (3.45/4.0) and meeting with staff members (3.44/4.0). More orientation tactics were used in the collegiate setting than high school (KW=-34.8, p=0.045), clinic/hospital (KW=-61.1, p=0.044), and other (e.g., youth sports) settings (KW=-91.1, p<0.001). Participants who felt orientation prepared them for their roles had more tactics used during orientation (U=17212, p<0.01). Most participants agreed or strongly agreed they felt nervous (n=264, 79.2%) and the transition was stressful (n=227, 68.1%), but felt prepared for their job (n=262, 78.7%). There were no differences in CL between settings (KW=2.698, p=0.610), job title (KW=4.88, p=0.087), or type of professional program (U=6488, p=0.279). Participants who were assigned a mentor reported higher perceptions of MS (U=6250, p<0.001). Most participants felt supervisors adequately explained administrative procedures during orientation (n=169, 54.3%), and felt they were adequately oriented to organizational values (n=252, 75.7%). **Conclusion(s):** Many tactics are used to orient newly credentialed ATs to their roles but orientations vary based on practice setting. Newly credentialed ATs feel nervous when entering their new role, but having an assigned mentor and detailed orientation can help alleviate stress during the transition to practice. **Key Words:** Socialization, orientation

The Effects of an Electronic Audience Response System on Athletic Training Student Knowledge and Interactivity

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Context: Electronic audience response systems (ARS) are an education technology teaching tool currently being used with widespread success within higher education. However, literature of its application in athletic training education remains sparse. **Objective:** The aim of this study was to examine if utilization of an ARS in an athletic training course modality for certain athletic training courses in terms of improved student knowledge learning outcomes and individual student's interactivity. **Design:** Quantitative study with pre and post-intervention evaluation. **Setting:** The setting for this study was an intercollegiate athletic training classroom within a CAATE accredited AT Program. **Subjects/Participants:** Sixty-nine undergraduate students enrolled in one of two sections of a basic athletic training course. The control group started with 35 members (male = 14, female = 21, age 19.11± 1.58 years, GPA = 3.14 ± 0.67, ACT = 24.38± 3.87). The experimental group was made up of 34 participants (19 females, 15 males; age (M=19.53, SD = 2.39), GPA (M= 3.22, SD = 0.58); ACT (M=24.26, SD = 3.65). **Intervention:** We developed and utilized the Knowledge

and Interactivity Survey (KIS) to assess athletic training clinical skills knowledge and degree of individual interactivity. We asked participants to complete the KIS prior to unit one and again approximately 4 weeks later at the conclusion of unit one. The control group completed unit one via a traditional lecture and discussion class format. With the experimental group, the ARS was utilized in addition to the traditional lecture/discussion format. **Main Outcome Measures:** Pre and Post intervention results on the KIS in terms of knowledge level and degree of individual interactivity. **Results:** A mixed measures ANOVA was conducted to look for differences in knowledge acquisition based upon group membership (ARS usage vs. non- ARS) and the effect of instruction. An interaction was discovered for the effect of instruction and use of the ARS (F1, 59= 5.89, P = .018, η2p = .091), indicating that the acquisition of knowledge in the ARS group was greater than for the non-ARS group (7.97 ± 1.49 and 7.24± 1.75 respectively). A mixed measure ANOVA was conducted to look for differences in classroom interactivity based upon group membership (ARS usage vs. non-ARS) and the effect of instruction. There was a main effect for interactivity (F 1, 59 = 5.40, P = .024, η2p = .084), indicating that interactive participation in the class increased interactivity among students on average from 7.16± 1.23 on the pretest to an average of 7.56±1.08 on the posttest; however, there was no interaction between interactivity and group membership, indicating that both the ARS students and non-ARS students increased interactivity at the same rate. **Conclusions:** The use of ARS technology provides students an active learning classroom environment with immediate feedback through a learner-centered approach. By providing ARS, students can increase knowledge learning outcome gains and participate in an interactive lecture experience. **Key Words:** Teaching pedagogy, Audience response system, Active learning

The Effect of a Post-Professional Athletic Training Program Curriculum on Healthcare Outcomes Knowledge, Confidence, and Perceived Barriers

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Context: Evaluation of patient-report outcomes (PROs) in athletic training practice is recommended. Although, few athletic trainers routinely use PROs which may be due to low knowledge and confidence in using outcomes scales and/or perceived barriers to their use. However, patient-centered care is a core post-professional athletic training programs (PPATP) competency. Graduating from a PPATP should improve student knowledge and confidence in routinely measuring healthcare outcomes. **Objective:** To evaluate PPATP students' healthcare outcomes knowledge, confidence, and perceived barriers prior to and across a PPATP curriculum. **Design:** Repeated measures survey. **Setting:** Self-reported online survey. **Participants:** Nineteen PPATP students (9 first-year [class2015] and 10 second-year [class2014] students; age=23.5±1.4yrs; 6 males, 13 females) participated. **Data Collection and Analysis:** Participants completed the survey at matriculation and at the completion of the first year of a two-year PPATP. Class2015 students completed the survey a third time prior to graduation. The PPATP curriculum required students to complete 4 courses (Evidence-Based Practice, Introduction to Clinical Outcomes Research, Healthcare Outcomes, Patient-Oriented Assessment) during year 1 and 2 courses (Informatics, Sports Injury Epidemiology) during year 2 that included healthcare outcomes concepts. The survey consisted of 20 multiple-choice healthcare outcomes knowledge questions and 20 4-point Likert-scale items assessing participants' confidence in answering each multiple-choice question. Additionally, the survey included 15 4-point Likert-scale items (range: 1=strongly agree-4=strongly disagree) assessing participants' perceptions of common patient-related (6-items) or clinician-related (9-items) barriers. Knowledge scores were calculated by awarding 1 point for a correct response (maximum=20). Composite knowledge scores were tabulated and normalized to percentages. Composite confidence and barriers Likert-scale scores were attained by calculating the sum and then averaging the score back to the Likert scale (total divided by 4). Significant differences (P<.05) were calculated (SPSS 22.0) using Mann-Whitney U tests and Wilcoxon Signed-Rank tests. **Results:** There were no group differences regarding pre-matriculation knowledge (class2015=43.9%; class2014=48.0%: P=.447), confidence (class2015=2.2/4.0±.55; class2014=2.2/4.0±.52: P=.824), patient-related barriers (class2015=2.8/4.0±.29; class2014=2.8/4.0±.29: P=.905), or clinician-related barriers (class2015=2.8/4.0±.34; class2014=2.6/4.0±.29: P=.400). Knowledge scores were higher following the completion

of year 1 (class2015=71.1%, P=.007; class2014=77.0%, P=.008) and commencement (class2014=73.5%, P=.005) than pre-matriculation; however no differences were found between the end of year one and commencement for class2014 (P=.290). Confidence scores were also higher following the completion of year 1 (class2015=3.4/4.0±0.39, P=.008; class2014=3.5/4.0±0.43, P<.001) and commencement (class2014=3.4/4.0±0.42, P=.005) than pre-matriculation, yet no differences were found between the end of year one and commencement for class2014 (P=.506). There were no differences regarding patient-related barriers for either group (P=.250 class2015; P=.114 class2014) across all time points, nor for class2015 regarding clinician-related barriers (P=.058). However class2014 perceived there to be fewer clinician-related barriers following the completion of year 1 (class2014=3.2/4.0±0.41,P=.005) and commencement (class2014=3.1/4.0±0.44, P=.012) than pre-matriculation. **Conclusions:** Our results suggest that PPATP students' healthcare outcomes knowledge and confidence improves following participation in a curriculum that includes courses aimed at healthcare outcomes concepts. Further, following degree completion fewer clinician-related barriers to outcomes assessment were noted, suggesting that greater healthcare outcomes knowledge and confidence may reduce some of the commonly perceived challenges of outcomes assessment. **Key Words:** patient-rated outcome measures, education

Post-Professional Athletic Training Students' Attitudes and Beliefs of Evidence-Based Practice Over Time

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Context: Recently, there have been mandates within post-professional athletic training programs (PPATP) to incorporate evidence-based practice (EBP) and healthcare outcomes into didactic and clinical education. Specifically, PPATPs are now required to include six core competencies that include EBP, quality improvement, healthcare informatics, and patient-centered care. Therefore, it is necessary for current PPATP students to learn this information and translate classroom knowledge into their clinical practice behaviors. However, in order to ensure effective knowledge translation into practice, it is important to assess students' attitudes and beliefs regarding EBP. **Objective:** To evaluate PPATP students' attitudes and beliefs of EBP prior to and following the first year of a two-year PPATP curriculum. **Design:** Repeated measures survey design. **Setting:** Self-reported online survey. **Participants:** Thirty-seven post-professional athletic training students (age=23.11±1.70yrs; 14 males, 23 females). **Data Collection and Analysis:** All participants completed the survey at matriculation and at the completion of the first year of a two-year PPATP. In between, students completed the following courses: Introduction to Clinical Outcomes, Evidence-Based Practice, Healthcare Outcomes, and Patient-Oriented Assessment. Numerous EBP concepts were also integrated throughout the clinical education program. The online survey consisted of 15 4-point Likert-scale items assessing participants' perceptions of various characteristics of EBP. These items were further divided into two subcategories: negative perceptions (6 items), benefits to practice (5 items). The remaining 4 items did not fall into either subcategory and were analyzed separately. Composite scores for each subcategory were summed and then averaged back to the Likert scale (total divided by 4). Descriptive statistics (mean±SD, frequencies) were calculated and significant differences (P<.05) were calculated using Wilcoxon Signed-Rank tests. **Results:** Prior to matriculation, 54% of students agreed-to-strongly agreed they need to increase the use of evidence in their practice. More than half of the students (51.3%) were interested in learning or improving the skills necessary to incorporate EBP into practice. Interestingly, 45.9% of students disagreed-to-strongly disagreed that strong evidence was lacking to support the patient population(s) with whom he/she works. Pre-matriculation composite scores for negative perceptions and benefits to practice were 2.58/4.0±.53 (disagree) and 2.49/4.0±.1.1 (disagree), respectively. Following the completion of the first year of the PPATP, there were no significant differences regarding negative perceptions (2.52/4.0±.65, P=.289) or benefits to practice (2.43/4.0±1.1, P=.502). However, 48.6% of students now disagreed-to-strongly disagreed that they needed to increase the use of evidence in their practice. Additionally, more students (59.4%) disagreed-to-strongly disagreed that strong evidence was lacking to support the population(s) with whom he/she works. **Conclusions:** Students entered the PPATP with some belief that EBP is important and needed in their clinical practice and were interested in improving both knowledge and use of EBP. The majority had positive attitudes towards EBP; however they did not express seeing a benefit to clinical practice. Following exposure to specific courses related to EBP, students still demonstrated positive attitudes but continued to disregard a benefit to clinical practice, which may be the result of EBP not being modeled in their clinical education experiences. **Key Words:** Post-professional, competency, EBP

Utilizing a Small Group Standardized Patient Encounter to Prepare Students for Psychosocial Intervention and Referral: A Pilot Study

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Context: Overall athletic training students lack confidence in their clinical skills. In particular students receive little to no real life experiences providing social support, counseling, intervention, and referral to patients during clinical education. **Objective:** The purpose of this study was to evaluate athletic training students' confidence and comfort level in psychosocial intervention and referral (PIR) following a small group standardized patient (SP) encounter. **Design:** Cross sectional study. **Setting:** One Midwestern university. **Patients or Other Participants:** All athletic training students (N=20, 5 male, 15 female, aged 21.85±.49) who had completed the Psychology of Injury course during the fall semester and were enrolled in a Current Concepts of Athletic Training course during the subsequent semester participated in this study. **Interventions:** Participants engaged in a small group SP encounter to teach PIR. The participants were randomly assigned into groups of 3-4. Each group interacted with a SP needing PIR for cocaine abuse and was provided with immediate feedback on their performance by a faculty member and preceptor. Following the encounter, participants completed a survey on the experience. **Data Collection and Analysis:** The survey consisted of 10 Likert scale items (1 = strongly disagree, 5 = strongly agree). Eight items evaluated the participants' experience with the SP encounter (e.g., realistic, feedback provided was appropriate), confidence, and their ability to provide future PIR. Two items explored how they felt before and after the encounter on their ability to provide PIR. Content validity was established by a panel of experts. Descriptive statistics were calculated on each survey item. A paired samples t-test measured the participants' perceptions of comfort before and then after the small group SP encounter regarding their ability to provide PIR. **Results:** Prior to the small group SP encounter, 14 (70%) participants reported they felt very anxious or anxious about their ability to provide PIR. Following the encounter, only 3 (16%) of the participants felt anxious, while 7 (38%) reported feeling neutral and 9 (47%) reported feeling comfortable about their ability to provide PIR. Following, most (74%, n=14) felt comfortable about their ability to provide PIR. Due to the encounter, most (79%, n=15) felt more confident about future PIR. Participants felt significantly more comfortable with their ability to provide PIR following the small group SP encounter ($t = -4.846$, $P < .001$). Most participants (90%, n=18) felt the encounter was realistic and they received adequate feedback from the instructor and preceptor on their performance. **Conclusions:** The small group SP encounter improved participants' confidence and comfort, and reduced anxiety about their ability to provide PIR. A small group SP encounter provides an efficient clinical education experience to better prepare athletic training students for clinical practice. Future research should explore if students engaging in a number of small group SP encounters (2-4) prepares students to treat patients with a variety of psychological needs such as depression, addiction and anxiety. **Key Words:** comfort, psychosocial intervention and referral, counseling.

Post-Professional Athletic Training Students' Accessibility of Available Evidence and Perceived Barriers Towards Evidence-Based Practice Over Time

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Context: Two primary concerns with the emphasis on evidence-based practice (EBP) and the use of clinical outcomes are accessibility to available evidence and barriers to implementation. However, if athletic trainers are specifically taught how to integrate concepts related to EBP and clinical outcomes into their clinical practice, as in a post-professional athletic training program (PPATP), perhaps these perceived barriers would be reduced. **Objective:** To evaluate PPATP students' accessibility to available evidence and perceived barriers toward EBP prior to and following the first year of a two-year PPATP curriculum. **Design:** Repeated measures survey design. **Setting:** Self-reported online survey. **Participants:** Thirty-seven PPATP students (age=23.11±1.70yrs; 14 males, 23 females). **Data Collection and Analysis:** Participants completed the survey at matriculation and at the completion of the first year of a two-year PPATP. Students completed the following courses within their first year of the PPATP: Introduction to Clinical Outcomes, Evidence-Based Practice, Healthcare Outcomes, and Patient-Oriented Assessment. Numerous EBP concepts were also integrated throughout the clinical education program. The survey asked participants to identify if they had access to, and how often they accessed 10 commonly used mechanisms for seeking evidence. The survey also consisted of 16 4-point Likert-scale items assessing participants' perceptions of potential barriers toward EBP. These items were further divided into two subcategories: personal skills and attributes (8 items), support and accessibility of resources (6 items). The remaining 2 items did not fall into either subcategory and were therefore analyzed separately. Composite scores for each subcategory were summed and then averaged back to the Likert scale (total divided by 4). Descriptive statistics (mean±SD, frequencies) were calculated and significant differences ($P<.05$) were calculated using Wilcoxon Signed-Rank tests. **Results:** Prior to matriculation, students reported the most direct access to textbooks (100%), websites (97.3%) and NATA position statements (94.6%), while

having the least direct access to clinical prediction rules ([CPR], 2.7%), the Cochrane Database (24.3%) and NATA ThinkTanks (48.6%). Students were also most unfamiliar with CPRs (64.9%), the Cochrane Database (43.2%) and NATA ThinkTanks (35.1%). Following the completion of the first PPATP year, students' direct access to all resources increased to 97.3-100%, with the exception of NATA ThinkTanks (73%) and CPRs (89.2%). Students perceived personal skills and attributes barriers significantly increased following the completion of the first year (2.92/4.0±.54 [agree] vs. 2.63/4.0±.70 [disagree-to-agree], P=.007); however no differences in support and accessibility of resources barriers were found (2.76/4.0±.48 [disagree-to-agree] vs. 2.78/4.0±.85 [disagree-to-agree], P=.747). **Conclusions:** Prior to PPATP matriculation, students were most unfamiliar with available resources that contain literature of the highest level of evidence. Additionally, there was no consensus whether they agreed or disagreed with several potential barriers towards EBP implementation. While the first year of the PPATP was able to increase knowledge on how to access available evidence, perceived personal barriers toward EBP implementation into practice increased. While students may be receiving information in the classroom, it is possible EBP behaviors are not being modeled throughout clinical education experiences, which may prohibit students from identifying strategies to overcome perceived barriers. **Key Words:** available evidence, implementation, EBP