

Welcome to Clinical Practice in Athletic Training: Letter from the Editor-in-Chief

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Key Phrases

Practice-based research, athletic training, sports medicine, evidence-based practice

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Full Citation

Powden CJ. Welcome to Clinical Practice in Athletic Training: Letter from the Editor-in-Chief. *Clin Pract Athl Train*. 2018;1(1):1-2.
<https://doi.org/10.31622/2018/0001.1>

Submitted: May 19, 2018 Accepted: May 23, 2018

EDITORIAL

Evidence-based practice is an essential component of health care in which emphasis is placed on gathering the best available evidence in order to make informed clinical decisions. As such, this places a heavy demand on the literature to be timely and clinically applicable. Producers of healthcare research are primarily associated with academic research centers conducting research with non-patients in controlled settings.¹ Much of this literature cannot be readily translated into clinical practice to inform decision-making and thus creates a chasm for healthcare providers between the best-available evidence and clinically feasible applications.² The profession of athletic training is not shielded from these burdens.

Currently, there is a need within the field of athletic training to produce and disseminate research findings that are “real-world” in their designs, applications, and conclusions. This type of research is often referred to as transitional, practice-based, or action research. Research of this variety takes place at the point-of-care in real patient populations to answer relevant

clinical questions. It is completed by clinicians working together to answer community-based healthcare questions and translating research findings into clinical practice.² Such practice-based research is patient and clinician focused in its needs, outcomes, and dissemination. Overall, there is a need within the athletic training community to develop high quality outlets for practice-based research.

Our goal at *Clinical Practice in Athletic Training: A Journal of Practice-Based, Outcomes, and Action Research (Clin AT)* is to provide a clinician-friendly journal that excels in the dissemination of peer reviewed, clinically relevant research through an online, open-access platform for the dissemination of practice-based research in the field of athletic training. The journal will allow for clinical outcomes and process research that evaluates the products of athletic training practice from a patient and clinician perspective. To accomplish these goals, *Clin AT* will provide an outlet for individuals involved in the enhancement of the many forms of athletic training clinical practice, including those that do not hold the athletic training credential.

Clin AT's senior and section editors include individuals from diverse athletic training background ranging from nationally recognized athletic training researchers to practicing athletic trainers in a varied selection of clinical settings. Due to the diversity of the editors and the unique goals of the journal, our manuscript types are equally unique. We offer eight manuscript types that include:

- Disablement model case studies and reports
- Validation case reports
- Point-of-care research
- Clinical outcomes research

- Quality improvement (PDSA cycle) reports
- Preceptor case studies
- Clinical expertise commentary
- Patient-centered care commentary

These manuscript types have been crafted to enhance the clinical applicability and application of findings within the clinical decision making process. Additionally, *Clin AT* has an international standard serial number (ISSN) from the Library of Congress and will be issuing a digital object identifier (DOI) for each published article. We feel that the diversity of our editorial board in combination with our unique manuscript types will allow for the cultivation of clinically applicable research.

We are formally inviting all athletic trainers and those involved in the athletic training profession (medical directors, physicians, physical therapists, mental health counselors, etc.) to engage with the journal as both a contributor, reader, and reviewer. We hope to provide the practicing athletic trainer the opportunity to highlight their clinical expertise in an accessible format. Finally, *Clin AT* invites comments about how we can meet the needs of our readers and the field of athletic training via e-mail.

REFERENCES

1. Savers EL, McLeod TC, Bay RC. Practice-based research networks, part I: clinical laboratories to generate and translate research findings into effective patient care. *J Ath Train*. 2012; 47(5): 549-556. <https://doi.org/10.4085/1062-6050-47.5.11>
2. Bowen SJ, Graham ID. From knowledge translation to engaged scholarship: promoting research relevance and utilization. *Arch Phys Med Rehabil*. 2013;94(1):S3-8. <https://doi.org/10.1016/j.apmr.2012.04.037>

Ankle Proprioception Training Program for Preventing Lateral Ankle Sprains in Adolescent Basketball Players: A Case Validation Study

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ABSTRACT

The purpose of this case validation study was to examine the effects of a previously established proprioception training program on the number of lateral ankle sprains in secondary school basketball players. The patient population consisted of 22 patients (5 females, 17 males, age = 16 ± 1 years old, height = 181.8 ± 8.9 cm, weight = 74.8 ± 12.8 kg) from a small rural high school in Illinois. The team completed the proprioceptive training program as part of a warm-up supervised by the athletic trainer and took approximately five minutes to complete. The program was completed every day for five weeks with one additional week of maintenance exercises. The main outcomes assessed were the number of lateral ankle sprains, anterior reach distance from the Y-Balance Test, and Foot and Ankle Ability Measure (FAAM) Sport Scale scores. Data collection occurred at baseline (prior to starting the program), week 6, week 12, and follow-up. There were a total of 9 lateral ankle sprains and 3 re-injury throughout the course of the previous season without using the proprioceptive training program. There were 6 lateral ankle sprains and only 1 re-injury during this competition season. Anterior reach distances on the Y-Balance test improved from follow-up to week 6; but decreased from week 6 to week 12 and follow-up. FAAM Sport scale scores remained consistent throughout the duration of the season. The proprioceptive training program was effective in reducing the number of lateral ankle sprains in the adolescent population and helped improve anterior reach distance while patients were completing the exercise program. Athletic trainers should incorporate more proprioceptive training programs with their patient population as primary prevention measures.

Key Phrases

Injury risk reduction, clinician-rated outcomes, secondary school patient population

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Full Citation

Rivera MJ, Powden CJ, Games KE. Ankle proprioception training program for preventing lateral ankle sprains in adolescent basketball players: A case validation study. *Clin Pract Athl Train*. 2018;1(1):3-10.
<https://doi.org/10.31622/2018/0001.2>

Submitted: May 14, 2018 Accepted: May 23, 2018

ARTICLE CITATION AND SUMMARY

Schiffan GS, Ross LA, Hahne AJ. The effectiveness of proprioceptive training in preventing ankle sprains in sporting populations: A systematic review and meta-analysis. J Sci Med Sport. 2015;18:238-244

We selected a guiding systematic review¹ that examined the evidence regarding the use of ankle proprioceptive training programs and its influence on ankle sprain rates. The authors completed a comprehensive literature search of MEDLINE, CINAHL, SPORTDiscus, and PEDro through October 2013. Studies were evaluated using the following criteria: (1) study design was a moderate-to-high level randomized controlled trial (4/10 on the PEDro scale), (2) participants were physically active (regardless of previous ankle injury), (3) intervention group received proprioceptive training only compared to a control group (no proprioceptive training), and (4) the rate of ankle sprains was reported as a main outcome. The authors examined the number of participants, interventions, and injury rates. Seven of the initial 345 studies were included in the review totaling 3,726 patients. A comprehensive meta-analysis of all patients from the 7 included studies, regardless of history of injury, revealed a significant reduction in ankle sprain rates for the proprioceptive training group compared to the control group (relative risk = 0.65, 95% CI = 0.51-0.81). Proprioceptive training was statistically significant exclusively as a primary preventative measure (relative risk = 0.57, 95% CI = 0.34-0.97). The review concluded that proprioceptive training programs are effective at reducing the incidence rates of lateral ankle sprains, including those with a history of ankle sprains.

OBJECTIVE

The purpose of our validation case study was to examine whether the use of a previously established ankle proprioceptive training program would effectively reduce the number of lateral ankle sprains in secondary school (grades 9-12) patients, which student-athletes were competing in basketball.

Additionally, we investigated the use of the proprioceptive training program on dynamic balance (Y-Balance Test) and perceived function of the ankle (Foot and Ankle Ability Measure Sport).

PATIENT POPULATION

The clinical practice setting was a secondary school in rural Illinois. Both female and male basketball programs from one secondary school were utilized for the project. Twenty-two patients (5 females, 17 males, age = 16 ± 1 years old, height = 181.8 ± 8.9 cm, weight = 74.8 ± 12.8 kg) completed the proprioceptive training program throughout the basketball season. Patients were included regardless of ankle sprain history and were free of injury at the onset of the proprioceptive training program. There were 8 males and 3 females with a history of previous ankle sprains.

INTERVENTION

The proprioceptive training program (Table 1) was developed based on recommendations provided by a study in the guiding review.² Each participant completed the proprioceptive training program as a part of a structured, active, group warm-up supervised by the athletic trainer. The program was initiated at the beginning of the competitive season and consisted of 5-week long phases of increasing difficulty based on individual participant performance and concluded at the end of week four with a maintenance week (week 5). The first 4 phases (weeks 1 through 4) required patients to complete 5 training sessions per week for approximately 15 to 20 minutes

total per week. The final phase (week 5) consisted of maintenance exercises 3 times for approximately 10 minutes total per week. During each session, 3 to 4 tasks were completed. The patients did not complete the program on game days.

The program (Table 1) consisted of single leg stance on flat surface, dribbling a basketball on a single leg, double leg stance on a balance board, single leg stance on a balance board, and dribbling a basketball in a single leg stance on the balance board (Figure 1).² Each task was part of a progression and not every task was completed each day. Each exercise was performed for 30 seconds on each leg with a 30-second rest period between each exercise. Each task was completed with eyes open initially and progressed to eyes closed in the subsequent phases. The balance boards were constructed using a round, pre-cut 16-inch board. A piece of round plastic tubing approximately 5 inches wide was adhered to the middle of the board.

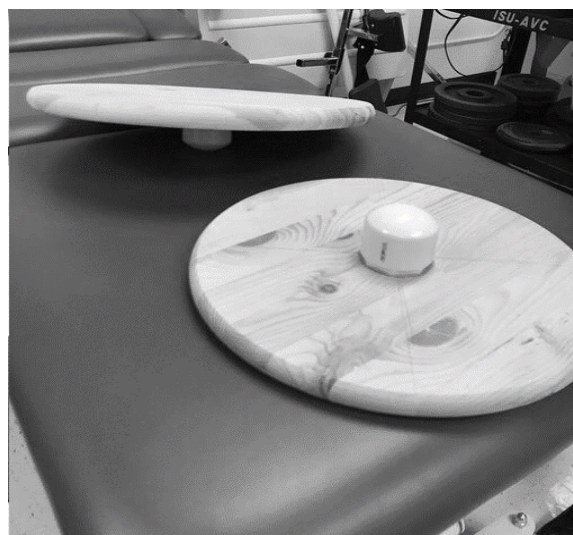


Figure 1. Balance boards created for the proprioceptive training program.

If a participant missed 5 consecutive days or was unable to perform the outcome assessments, the patient's data were not used in the analysis. Patients were excluded from the outcome assessment if they had an injury that prevented

them from bearing weight on a single leg to perform the anterior reach distance at the time of data collection.

Outcomes were assessed before starting the proprioceptive training program (baseline), at the conclusion of the training program (week 6), 6 weeks after conclusion (week 12), and at the end of the season (follow-up). Outcomes data were

collected before patients participated in practice. The 3 main outcomes that were assessed throughout the data collection period were number of lateral ankle sprains, anterior reach distances on the star excursion balance test, and the Foot and Ankle Ability Measure (FAAM) Sport Scale.

Table 1. Proprioceptive Training Program.

Week	Surface	Eyes	Exercises
Week 1	Floor	Open Open Open Open	Single leg stance Single leg stance with leg swing Single leg squat (30°- 45°) Single leg stance while dribbling ball
Week 2	Floor	Closed Closed Closed	Single leg stance Single leg stance with leg swing raised Single leg squat (30°- 45°)
Week 3	Board	Open Open Open Open	Single leg stance Single leg stance with leg swing raised Single leg squat (30°- 45°) Double leg stance while rotating the board
Week 4	Board	Closed Open Open Open	Single leg stance Single leg stance with leg swing raised Single leg squat (30°- 45°) Single leg stance while rotating the board
Week 5-6	Board	Closed Open Open Open	Single leg stance Single leg squat (30°- 45°) Single leg stance while rotating the board Single leg stance while dribbling the ball

Table 2. Means (\pm Standard Deviations) for all Main Outcome Measures.

	Baseline	Week 6	Week 12	Follow-Up
Y-Balance Test (%)				
Anterior Dominant Limb	84.23 \pm 7.48	86.82 \pm 6.60 ^a	83.79 \pm 6.44 ^b	83.23 \pm 6.63 ^b
Non-Dominant Limb	84.58 \pm 7.82	87.89 \pm 8.43 ^a	84.09 \pm 7.64 ^b	83.05 \pm 6.19 ^b
FAAM Sport scale				
Score	31.32 \pm 1.76	30.55 \pm 3.99	31.09 \pm 3.07	31.36 \pm 2.26
Perceived Function (%)	96.91 \pm 5.38	99.14 \pm 3.23 ^a	99.32 \pm 2.34	99.09 \pm 2.94 ^b

^a=Significantly different from pre-intervention at $p < 0.05$, ^b=Significantly different from week 6 (termination of intervention) at $P > 0.05$.

Ankle sprains were evaluated by the athletic trainer and defined as an injury localized to the lateral ankle (indicated by positive anterior drawer test and inversion stress test), required at least 48 hours of activity modification, and documented in the electronic medical record system (EMR). The number of ankle sprains were compared to the number of ankle sprains in the same population in the previous season that also fit the definition of injury and treatment outlined above.

The anterior reach distance on the Y-Balance Test was utilized to assess any changes in dynamic postural control throughout the duration of the proprioceptive training program.^{3,4} The Y-Balance Test has been shown to have good reliability and validity in assessing dynamic postural control as an indicator of LE injury in the adolescent population.⁴ The same evaluator collected anterior reach distances using a standard tape measure secured to the floor. Patients were instructed to place their big toe at the 0 indicator on the tape measure and to reach the opposite foot as far as they could straight ahead while maintaining single leg balance.⁴ The distance was recorded at the most distal aspect of the reach foot. Each patient completed three practice trials followed by three testing trials. Reach distances were normalized to patient height and classified as dominant limb or non-dominant limb. A trial was void if they could not maintain the single leg stance, stance foot was lifted off the ground, or of the non-stance limb touched the ground.⁴

Perceived ankle function was measured using the FAAM Sport scale. The FAAM has been demonstrated to detect self-reported functional deficits in those with chronic ankle instability and a range of other musculoskeletal conditions in the foot and ankle.^{5,6} Patients were given an electronic version of the FAAM Sport scale and instructed to complete the form based on their current symptom score. Each item on the FAAM Sport scale is an 8-item measure scored on a 5-point Likert scale of 0-4.^{5,7} Zero indicating the

patient could not complete the task and “4” indicating the patient had no difficulty completing the task.^{5,7}

A 4x2 repeated measures ANOVA was used to assess differences in anterior reach scores over time (baseline, week 6, week 12, follow-up) and between limbs (dominant, non-dominant). A one-way ANOVA was used to examine FAAM Sport scale differences over time. Post hoc analysis was completed using Fishers LSD test. Significance was set a-priori at $P < 0.05$. All statistical analyses were completed using SPSS Version 24 (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.). The number of ankle sprains was extracted from an EMR and compared to data from the year prior to the implementation of the proprioceptive training program.

MAIN FINDINGS

Nine first time lateral ankle sprains were sustained in the competition year prior to the proprioceptive training program. During the proprioceptive training program year, 6 first time lateral ankle sprains were sustained. In the previous year, 3 patients sustained a second lateral ankle sprain to the same ankle in the same competition year. While using the proprioceptive training program, only 1 patient sustained a re-injury in the same competition year. There were no major changes in competition level, number of patients, training schedules, competition schedules, etc.

A significant time main effects was found for anterior reach distance ($P < 0.001$). Post hoc analysis indicated that anterior reach distances were significantly greater at six 6 weeks compared to baseline ($P < 0.001$), week 12 ($P = 0.003$), and follow-up ($P < 0.001$). No other significant differences were found between each time point ($P > 0.17$). There was no limb main effect for the anterior reach distances ($P = 0.58$). There was no time by limb interaction detected (P

=0.51). After patients ceased participation in the proprioception training program anterior reach distances decreased in both dominant and non-dominant limbs.

There was no time main effect for FAAM Sport scale scores throughout data collection ($P = 0.56$). There was no time main effect in the perceived level of function (0-100% scale) on the FAAM Sport scale ($P = 0.56$) (Table 2).

DISCUSSION

No statistical tests were used to compare the rates of ankle sprains due to the small patient population; rather, the number of ankle sprains were reported. Our findings are consistent with other literature investigating the use of proprioceptive training programs to prevent lateral ankle sprains.^{1,2,8-10} Specifically, from investigations within the guiding review, both the number of initial injury and re-injury rates decreased for patient populations utilizing the proprioceptive training programs.¹ However, perhaps a greater achievement in the reduction of ankle sprains is time saved treating these injuries. Athletic trainers spend an increased amount of time treating patients with time-loss injuries compared to non-time-loss injuries.¹¹ Athletic trainers primarily use therapeutic exercise and neuromuscular reeducation as treatments for patients with ankle sprains.¹¹ This current study suggests that athletic trainers can reduce the amount of ankle sprains they are treating and further reduce the amount of time spent treating ankle sprains by using a primary prevention program targeting proprioception.

The results from the current study suggest that proprioceptive training programs can improve dynamic balance as we identified increases in anterior reach distances from baseline to week 6. Further evidence of the improvements are indicated by the decreases in anterior reach distances at week 12 and follow-up once compliance rates dropped. This reduction in scores

highlights the need to assure compliance with proprioceptive training programs to ensure optimal outcomes. A similar investigation looking at balance improvements with the use of neuromuscular training also found comparable improvements in the SEBT.¹² Similar to the current investigation the authors found improvements in the reach distances after a 6 week program targeted at neuromuscular control.¹² However, the previous study utilized a program that also incorporated strength and plyometric exercise with longer training sessions.¹² Furthermore, other investigations examining dynamic balance found an 8-week balance and strength program to increase the anterior reach distances in collegiate female soccer players.¹³ The program focused primarily on strength and conditioning for more elite athletes compared to the current investigation. However, the findings of improved dynamic balance with a targeted program are similar. Overall, the use of the proprioceptive training program can help patients improve dynamic balance and thus could reduce the risk of suffering an ankle sprain.

There was no time main effect for FAAM Sport scale scores suggesting that the proprioceptive training program did not change perceived foot and ankle function. There was also no time main effect for perceived level of function ranked from 0-100% function. Other investigations implementing rehabilitative protocols or proprioceptive training programs have found improvements in FAAM scores.^{14,15} However, these previous investigations used participants that had chronic ankle instability whereas the current investigation used healthy subjects from baseline. The patients in this study were athletes functioning at a high level with no disability to start. Previous research has shown that participants that are healthy have higher FAAM scores and therefore could have had a ceiling effect on FAAM scores in the current project.⁵ Future investigations should focus on the use of a proprioceptive training program and severity of ankle sprains that

patients sustain. Additionally, future studies should investigate the influences of a prophylactic proprioception training program and the amount of time patients take to return to baseline outcome scores.

In order to be more proactive in injury reduction, athletic trainers should attempt to incorporate more preventative measures in their clinical practice. By becoming more proactive, athletic trainers can reduce the amount of time spent treating initial injury and re-injuries for ankle sprains.¹¹ Neuromuscular reeducation is the second most common intervention used when treating ankle sprains in the secondary school setting.¹¹ Treating from a reactionary standpoint after a patient is injured may cost athletic trainers more time and limits their focus on other aspects of their duties. By becoming more proactive in using neuromuscular training as a prevention method, athletic trainers can reverse this cycle. Furthermore, by decreasing the amount of injuries sustained athletic trainers can help combat inflating healthcare costs and long-term consequences of injury such as chronic ankle instability and osteoarthritis.

The implementation of a prevention program can be a difficult task to accomplish, especially in settings where no previous effort in injury prevention has been made. There are a variety of variables that should be considered and accounted for to successfully implement a prevention program. First, the time required for patients, coaches, and practitioners to complete the prevention program is considered a limitation of injury prevention.¹⁶ In an investigation looking at a comprehensive prevention program in youth football, investigators found coaches were 87% less likely to not implement a prevention program if they felt the time required was too long.¹⁶ However, through this case validation the investigators implemented a program with a realistic length to track changes in positive outcomes. The overall time required was less than 5 minutes per player, per day, totaling only 25-

30 minutes for the entire week. Additionally, the proprioceptive training program was implemented as a component of a team warm up before practice each day to ensure daily compliance for each player. As previously established, compliance rates with injury prevention measures can greatly improve the outcomes seen for participants.¹⁷ Additionally, it has been shown that supervised programs (either by athletic trainer or coaches) are likely to have higher adherence rates than unsupervised programs.^{17,18} Athletic trainers need to evaluate their clinical practice, the common injuries they treat, and the time required to implement a prevention program for such injuries to leverage compliance from coaches, patients, and stakeholders.

Data collection, management, and analysis was simple and effective for this clinical practice site. The EMR in the project, which was already in place at the clinical practice site, was utilized to store and protect data. The use of electronic fillable PDFs made data collection for the FAAM Sport score easy. Data collection periods were quick and efficient with 1 athletic training student facilitating the FAAM Sport scale administration and 1 athletic trainer measuring the anterior reach distances. Data were downloaded from the EMR and exported onto a Microsoft Excel 2016 (Microsoft Corp, Richmond WA) sheet for analysis. Athletic trainers should explore the data management capabilities of their record systems in place; additionally, athletic trainers should investigate which clinician and patient reported outcomes would be most appropriate to track based on their patient population, needs, time, and prevention methods being implemented. Resources such as money, equipment, and training are required for the implementation of prevention practices. However, for this project, the only associated costs were those required for the building of the balance boards, which was minimal. The budget for a program used in this project was small and the time required to

complete the exercises was minimal. Athletic trainers should leverage resources and positive relationships with coaches to explore options for prevention program implementation.

CLINICAL BOTTOM LINE

The findings from this case validation study concur with the guiding systematic review and meta-analysis that the use of proprioceptive training programs are effective in the reduction of lateral ankle sprains. Additionally, the use of the proprioceptive training program also improved dynamic stability and postural control of patients as the anterior reach distances of the Y-Balance Test increased. Athletic trainers should begin to examine their own clinical practice to determine the feasibility of implementing a proprioceptive training program with their patient population to reduce the incidence of ankle sprains.

REFERENCES

1. Schifftan GS, Ross LA, Hahne AJ. The effectiveness of proprioceptive training in preventing ankle sprains in sporting populations: A systematic review and meta-analysis. *J Sci Med Sport*. 2015;18(3):238-244.
<https://doi.org/10.1016/j.jsams.2014.04.005>
2. McGuine TA, Keene JS. The effect of a balance training program on the risk of ankle sprains in high school athletes. *Am J Sports Med*. 2006;34(7):1103-1111.
<https://doi.org/10.1177/0363546505284191>
3. Gribble PA, Hertel J, Plisky P. Using the Star Excursion Balance Test to assess dynamic postural-control deficits and outcomes in lower extremity injury: A literature and systematic review. *J Athl Train*. 2012;47(3):339-357.
<https://doi.org/10.4085/1062-6050-47.3.08>
4. Plisky PJ, Rauh MJ, Kaminski TW, Underwood FB. Star Excursion Balance Test as a predictor of lower extremity injury in high school basketball players. *J Orthop Sports Phys Ther*. 2006;36(12):911-919.
<https://doi.org/10.2519/jospt.2006.2244>
5. Carcia CR, Martin RL, Drouin JM. Validity of the Foot and Ankle Ability Measure in athletes with chronic ankle instability. *J Athl Train*. 2008;43(2):179-183.
<https://doi.org/10.4085/1062-6050-43.2.179>
6. Martin RL, Irrgang JJ, Burdett RG, Conti SF, Van Swearingen JM. Evidence of validity for the Foot and Ankle Ability Measure (FAAM). *Foot Ankle Int*. 2005;26(11):968-983.
<https://doi.org/10.4085/10.1177/107110070502601113>
7. Cosby NL, Hertel J. Clinical assessment of ankle injury outcomes: Case scenario using the foot and ankle ability measure. *J Sport Rehabil*. 2011;20(1):89-99.
<https://doi.org/10.1123/jsr.20.1.89>
8. Emery CA, Rose MS, McAllister JR, Meeuwisse WH. A prevention strategy to reduce the incidence of injury in high school basketball: A cluster randomized controlled trial. *Clin J Sport Med*. 2007;17(1):17-24.
<https://doi.org/10.1097/JSM.0b013e31802e9c05>
9. Mohammadi F. Comparison of 3 preventive methods to reduce the recurrence of ankle inversion sprains in male soccer players. *Am J Sports Med*. 2007;35(6):922-926.
<https://doi.org/10.1177/0363546507299259>
10. Verhagen E, van der Beek A, Twisk J, Bouter L, Bahr R, van Mechelen W. The effect of a proprioceptive balance board training program for the prevention of ankle sprains: A prospective controlled trial. *Am J Sports Med*. 2004;32(6):1385-1393.
<https://doi.org/10.1177/0363546503262177>
11. Simon JE, Wikstrom EA, Grooms DR, Docherty CL, Dompier TP, Kerr ZY. Athletic training service characteristics for patients with ankle sprains sustained during high school athletics. *J Athl Train*. Forthcoming 2018.
<https://doi.org/10.4085/1062-6050-449-16>
12. McLeod TC, Armstrong T, Miller M, Sauers JL. Balance improvements in female high school basketball players after a 6-week neuromuscular-training program. *J Sport*

- Rehabil.* 2009;18(4):465-481.
<https://doi.org/10.1123/jsr.18.4.465>
13. Ness BM, Comstock BA, Schweinle WE. Changes in dynamic balance and hip strength after an eight-week conditioning program in NCAA division 1 female soccer (football) athletes. *Int J Sports Phys Ther.* 2016;11(7):1054-1064.
 14. Wright CJ, Linens SW, Cain MS. A randomized controlled trial comparing rehabilitation efficacy in chronic ankle instability. *J Sport Rehabil.* 2017;26(4):238-249. <https://doi.org/10.1123/jsr.2015-0189>
 15. Schaefer JL, Sandrey MA. Effects of a 4-week dynamic-balance-training program supplemented with Graston instrument-assisted soft-tissue mobilization for chronic ankle instability. *J Sport Rehabil.* 2012;21(4):313-326.
<https://doi.org/10.1123/jsr.21.4.313>
 16. Soligard T, Nilstad A, Steffen K, et al. Compliance with a comprehensive warm-up programme to prevent injuries in youth football. *Br J Sports Med.* 2010;44(11):787-793.
<https://doi.org/10.1136/bjism.2009.070672>
 17. van Reijen M, Vriend I, van Mechelen W, Finch CF, Verhagen EA. Compliance with sport injury prevention interventions in randomised controlled trials: A systematic review. *Sports Med.* 2016;46(8):1125-1139.
<https://doi.org/10.1007/s40279-016-0470-8>
 18. Steffen K, Meeuwisse WH, Romiti M, et al. Evaluation of how different implementation strategies of an injury prevention programme (FIFA 11+) impact team adherence and injury risk in Canadian female youth football players: A cluster-randomised trial. *Br J Sports Med.* 2013;47(8):480-487.
<https://doi.org/10.1136/bjsports-2012-091887>

Creating a LGBTQ+ Inclusive Culture in the Athletic Training Facility

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Key Phrases

Emotional Wellness and Mental Health, Pre-Participation Exams and Screening, Cultural Competency, Health Care Disparities

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Full Citation

Rogers SM, Crossway AK, Aronson PA. Creating a LGBTQ+ inclusive culture in the athletic training facility. *Clin Pract Athl Train*. 2018;1(1):11-14.
<https://doi.org/10.31622/2018/0001.3>

Submitted: May 15, 2018 **Accepted:** May 25, 2018

COMMENTARY

Lesbian, gay, bisexual, transgender, and queer individuals often fall under the umbrella acronym LGBTQ+ and are represented as a community. However, each individual letter represents a distinct population with its own identity, challenges, and unique obstacles with regards to equity.¹ In recent years, there has been significant advancements in civil rights legislation and overall social acceptance of the LGBTQ+ community. Hallmark legislative victories including the right to marriage² and to openly serve in the Armed Forces³ have resulted in long overdue legal protections for the LGBTQ+ community. Despite these advances, LGBTQ+ individuals still disproportionately suffer from health disparities arising from stigmatization, oppression, and discrimination.^{4,5} One significant societal barrier still adversely affecting the healthcare of LGBTQ+ individuals is the lack of healthcare providers that are both knowledgeable and capable of delivering culturally competent and inclusive patient care.⁵ Creating an inclusive environment welcoming LGBTQ+ individuals in the clinical setting is vital to healthcare of those within

the community. This paper serves to address inclusion of LGBTQ+ patients through patient-centered care in the athletic training facility. Current literature suggests that one of the most predominant health disparities among the LGBTQ+ community is dissatisfaction and avoidance of healthcare as a whole, which directly leads to suboptimal patient outcomes.^{5,6} Recent trends in healthcare promote practitioners utilizing a patient-centered approach focusing on the identity of a patient, and how it relates to overall Health Related Quality of Life (HRQOL).⁷ Adherence to this approach better serves and respects the identity of patient populations.^{7,8} The theoretical framework of contemporary disablement models, such as the Nagi Model, challenges clinicians to simultaneously address multiple aspects of health and wellbeing for overall improved patient outcomes.⁹ In order for healthcare practitioners to provide quality patient care, and achieve appropriate patient outcomes for individuals of many diverse backgrounds, cultures, and identities, it is imperative to use a patient-centered approach.

The Importance of Identity and Patient-Centered Care

Utilizing a patient-centered approach requires the clinician to consider the patient's identity and how it contributes to the overall disability and societal implication of the injury or pathology.^{7,8} The identity of LGBTQ+ patients, as with all patients, is multidimensional and includes the interests, goals, dreams, and desires derived from the intricacies of patients' past experiences. Utilization of a disablement model in conjunction with an understanding of a patient identity helps the practitioner create targeted interventions to best address the etiology of the injury or illness being treated. This practice in healthcare is what is known as patient-centered care. Patient-centered care is an approach to healthcare that focuses on the unique qualities of each individual patient.^{7,8}

This approach to healthcare is driven by active patient participation and less by clinician-dominated dialogues.^{7,8} The patient-centered approach creates a clinician-patient relationship that is rooted in trust, empathy, understanding, and collaboration with respect to the patient's identity.^{7,8} In practice, a patient-centered approach to healthcare has been found to increase efficiency of care, improve patient outcomes, increase HRQOL, reduce patient discomfort, and more adequately address patient concerns regarding healthcare.^{8,10}

Healthcare Disparities of LGBTQ+ Individuals

Specific to the LGBTQ+ community, patient-centered care can mean the difference between an individual feeling comfortable enough to seek care and avoiding healthcare all together. A recent study published in the, *Journal of Homosexuality*, found that 37% of LGBTQ+ young adults do not disclose their identity to healthcare providers due to concerns over potential discrimination, internalized stigmas, fear of rejection, or a belief that health and LGBTQ+ identity are not related.⁶ Apprehension towards seeking healthcare either in part by not feeling comfortable disclosing personal information, or in full by complete avoidance of seeking healthcare can be detrimental to the HRQOL of LGBTQ+ individuals.

Apprehension of LGBTQ+ individuals in seeking healthcare can be especially problematic for athletic trainers (ATs) particularly those practicing in traditional sports-focused settings at the professional, collegiate, or secondary school levels. While organizations such as the National Collegiate Athletic Association (NCAA) have made a concerted effort to create a more inclusive environment in sports, ideologies supporting homonegativity are still prevalent in all competitive levels of sport subculture in western society.¹¹ Athletic trainers, especially in the aforementioned settings, are often the point of care for a disproportionately large number of patients. Given the close proximity with athletics, an ideology of homonegativity can either intentionally or unintentionally permeate into the clinic climate.

Consciously or unconsciously supporting and reinforcing a homonegative ideology in an

athletic training facility can substantiate lingering societal stigmas of LGBTQ+ individuals.⁹ Such an environment can prevent LGBTQ+ patients from seeking care from an AT, or disclosing pertinent information to the AT. Through being an active champion and advocate in identifying and addressing blatant bias and discrimination in athletic training facilities, ATs can focus on more patient-centered and equitable practice.

Creating an Inclusive Facility Environment

In order for a shift towards more equitable patient care to occur ATs must first take inventory of their own clinical practice, implicit biases, and communication styles in addition to the clinical setting in which they practice. One of the most difficult and perhaps tedious aspects of affecting change is awareness of not only systemic faults, but also personal weaknesses and areas of improvement. On an individual level, ATs must recognize their own verbal and non-verbal reactions when interacting with patients of diverse backgrounds. Inappropriate or incorrect language, body positioning, facial expression, or mannerisms, whether intentional or unintentional can cause the practitioner to appear as closed off or unwelcoming.^{12,13} These verbal and non-verbal cues, when intentionally exhibited towards underserved populations such as the LGBTQ+ community, are an example of demeaning micro aggressions.^{12,13} Adjustments to personal practice should be reinforced through the creation of facility or institution-wide policies that ensure discriminatory language, micro aggressions, and inappropriate behavior are addressed.¹²

In addition to an analysis of personal practice and athletic training facility policies, specific attention should be given to maintaining an inclusive clinic environment. In order to create a welcoming inclusive environment for LGBTQ+ individuals an athletic training facility can present visible representation supporting equality such as safe space ally stickers and posts of non-discrimination policies, and provide access to gender neutral restrooms as well as brochures or information addressing health concerns specific to the LGBTQ+ population.^{12,13} This development of an inclusive facility culture is especially pertinent for ATs, given the close relationship and proximity between practitioner and patient in the multiple

different settings ATs practice. As such, it is important to create an inclusive facility culture before the first LGBTQ+ patient seeks care.

Creating and maintaining an equitable and culturally competent practice in athletic training is a difficult endeavor for any practitioner. In order to facilitate this development of a model practice, there are many training programs such as Safe Space and Ally training that provide sensitivity training to become cognizant of LGBTQ+ concerns, while simultaneously learning how to identify and address internal bias.^{5,12,13} These types of instructional trainings are an excellent way to bridge individual practitioner development, while at the same time addressing clinic or institutional areas of cultural weakness.^{12,13}

In addition to the aforementioned changes, another impactful adjustment that can be made to improve a facility's culture is the creation and utilization of inclusive documentation forms. While documentation forms, such as a pre-participation exam, are important for an athletic training facility to gather legal names and biological sex, it is equally important that the patient have the opportunity to self-report demographic information such as preferred name, gender, and gender identity. The most effective way to gather this information from the patient without being insensitive is by simply asking open-ended questions.¹³ This technique allows the patient to respond in whatever manner is appropriate, while also conveying that the practitioner respects the identity of the patient. Furthermore, utilizing an open-ended questioning technique allows the practitioner to collect pertinent demographic information, such as relationship status and appropriate pronouns, which are important when considering the HRQOL of LGBTQ+ patients and can be utilized in future patient interactions.^{7,12,13}

An inclusive approach to patient interaction and documentation sets an important precedence that any patient, regardless of his-her-zir identity, is welcomed and will be treated with the upmost respect and fairness. Special attention, however, must be placed on avoiding ambivalent or neutral attitudes towards practicing in an equitable manner in order to maintain an inclusive athletic training facility environment. While not being an

active participant in creating an equitable practice might seem innocuous, inaction in addressing areas of weakness related to equity can be just as harmful to LGBTQ+ individuals as outright discrimination.

Conclusion

Major societal advancements in recent years have provided recognition and legal protections for LGBTQ+ individuals. These advancements, coupled with more exposure and access to competitive sports, have created a prominent need for ATs in all settings to ensure their practice is welcoming, inclusive, and culturally competent. Through the process of intentional reflection and analysis of athletic training facility culture, coupled with tangible changes, ATs can create an environment in which all patients, regardless of their identity, can feel comfortable seeking care.

REFERENCES

1. Lev AI, Sennott SL. Clinical work with LGBTQ parents and prospective parents. In: AE Goldber, KR Allen, eds. *LGBT-Parent Families: Innovations in Research and Implications for Practice*. New York, NY: Springer; 2013:241-60.
2. Masci D. Supreme Court's DOMA decision driving same-sex marriage efforts in states. *Fact Tank: New in the Numbers: Pew Research Center*, 2013. <http://www.pewresearch.org/fact-tank/2013/10/21/supreme-courts-doma-decision-driving-same-sex-marriage-efforts-in-states/>. Accessed: May 1, 2018.
3. Frank N. The president's pleasant surprise: How LGBT advocates ended Don't Ask, Don't Tell. *J Homosex*. 2013;60(2-3):159- 213. <https://doi.org/10.1080/00918369.2013.744666>
4. Institute of Medicine. *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding*. Washington, DC: National Academies Press, 2011.
5. McKay B. Lesbian, gay, bisexual, and transgender health issues, disparities, and information resources. *Med Ref Serv Q*.

- 2011;30(4):393-401.
<https://doi.org/10.1080/02763869.2011.608971>
6. Rossman K, Salamanca P, Macapagal K. A qualitative study examining young adults' experiences of disclosure and nondisclosure of LGBTQ identity to health care providers. *J Homosex.* 2017;64(10):1390-410.
<https://doi.org/10.1080/00918369.2017.1321379>
 7. Weiner SJ, Schwartz A, Sharma G, et al. Patient-centered decision making and health care outcomes: an observational study. *Ann Intern Med.* 2013;158(8):573- 79.
<https://doi.org/10.7326/0003-4819-158-8-201304160-00001>
 8. Epstein RM, Street RL. The values and value of patient-centered care: *Ann Fam Med.* 2011;9(2)100-103.
<https://doi.org/10.1370/afm.1239>
 9. Snyder AR, Parsons JT, Valovich McLeod TC, Curtis Bay R, Michener LA, Sauers EL. Using disablement models and clinical outcomes assessment to enable evidence based athletic training practice, Part I: Disablement models. *J Athl Train.* 2008;43(4):428-36.
<https://doi.org/10.4085/1062-6050-43.4.428>
 10. Oates J, Weston WW, Jordan J. The impact of patient-centered care on outcomes. *Fam Pract.* 2000;49(9):796- 804.
 11. Anderson E, Magrath R, Bullingham R. *Out in Sport: The Experiences of Openly Gay and Lesbian Athletes in Competitive Sport*: New York, NY: Routledge; 2016.
 12. McClain Z, Hawkins LA, Yehia BR. Creating welcoming spaces for lesbian, gay, bisexual, and transgender (LGBT) patients: An evaluation of the health care environment. *J Homosex.* 2016;63(3):387-93.
<https://doi.org/10.1080/00918369.2016.1124694>
 13. McNair RP, Hegarty K. Guidelines for the primary care of lesbian, gay, and bisexual people: a systematic review. *Ann Fam Med.* 2010;8(6):533-41.
<https://doi.org/10.1370/afm.1173>

The Effect of Dynamic Balance Performance on Lower Extremity Injury in Division III Football Players

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ABSTRACT

Identifying and implementing evidence based prevention programs present a significant challenge for athletic trainers. Despite encouraging results in research, individual interventions are often specific to a setting or population and dependent on identifying accurate injury risk factors. This practice-based research is an attempt to apply current evidence in prevention to a population of division three football athletes. The clinical staff reviewed national and site-specific injury data and identified lower extremity (LE) injury as the area of focus. Evidence was searched to identify modifiable risk factors and valid measurement tools that could be addressed in our setting. Dynamic balance has been well documented as a risk factor for LE injury and the Y balance test (YBT) has been shown to be an accurate measure of balance and increased risk of injury. The purpose of our investigation was to determine if our population exhibited similar injury rates in those with balance deficits as documented in other settings. We chose the football program within our setting due to the high number of athletes and consistent injuries that occur throughout the season. All returning football athletes were measured for dynamic balance using the YBT during the annual screening process. Injury record keeping through electronic medical record (EMR) system was consistent with current procedures and non-contact LE injuries were analyzed to remove non-modifiable risk factors. Comparisons were made between YBT results and incidence of injury in 46% of our athletes. Statistical analysis revealed no relationship between YBT measurements and LE injury. Our results are contradictory to those reported in recent studies from differing populations. Implementation difficulties and population differences are theorized reasons for our inability to achieve similar results. Clinically, our results underscore the need for clinicians to measure interventions within their own settings to determine usefulness and make the best decision for their patients.

Key Phrases

Injury Risk Reduction, Injury Surveillance, Prevention

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Full Citation

Columbe BJ, Powden CJ. The effect of dynamic balance performance on lower extremity injury in division III football players. *Clin Pract Athl Train*. 2018;1(1):15-20.

<https://doi.org/10.31622/2018/0001.4>

Submitted: May 3, 2018 Accepted: May 25, 2018

INTRODUCTION

Athletic trainers are tasked with implementing policies and procedures designed to prevent or mitigate emergent, acute, or chronic injuries and medical conditions¹. Prevention of injuries before they occur (primary prevention), providing early identification and care (secondary prevention) to limit the extent of an injury, and comprehensive rehabilitation (tertiary prevention) after an injury are all areas in which athletic trainers work to prevent the disabling effects of injury. Interventions to prevent injury have historically focused on the individual and specific risk factors to which patients are exposed.² To maximize primary and secondary prevention interventions it is important that athletic trainers focus their efforts on evidence-based initiatives aimed at specific populations of patients.²

Football is a collision sport that has the highest injury rates of all NCAA intercollegiate athletic programs.³ Injuries to the lower extremity (LE) make up 54% of all injuries. Furthermore, the knee (12%), ankle (11.8%), and thigh musculature (10.7%) are the top 3 body parts injured in practice activities.³ One specific institution, a private, liberal arts, NCAA Division III University, has experienced similar injury rates for these types of LE injuries. Examination of electronic medical records (EMR) from the previous academic year revealed 57% of LE injuries at the specific institution were the result of non-contact mechanisms. In an effort to improve healthcare services provided to our athletic population, the clinical athletic training staff searched recent evidence to identify modifiable risk factors for LE injury. Our evidence-based approach also included identifying a LE injury prevention program that had been evaluated for feasibility.

Postural control and dynamic balance are two modifiable risk factors that have been related to LE injury.^{4,5} Recent evidence indicates that

impaired balance increases an athlete's risk of injury.⁶⁻¹⁰ Furthermore, prophylactic balance training programs have demonstrated the ability to decrease injury risk.^{5,11,12} Together these findings highlight the importance of identifying balance deficits during the prevention process. Single leg balance tests, like the Star Excursion Balance Test (SEBT) and the newer Y-Balance Test (YBT), are frequently used tools in lab-based and practical research studies that use single leg reach distance to evaluate dynamic balance and postural control.^{4-7,13-15} Evidence for using the YBT as an injury prediction tool has been encouraging with multiple studies identifying anterior reach asymmetries of over 4cm and composite scores of under 89.9% as strong predictors of injury.^{7,8,11,15}

As our clinical staff reviewed current evidence on the YBT, concerns of replicating results found in previous studies within our own patient population became evident. It was important for us to establish measures at which our athletes experience increased injury before implementing interventions to prevent those injuries. We determined that our first step in improving quality of care in the area of injury prevention started with the collection and analysis of data within a specified population to determine what, if any, interventions may be appropriate. Although the YBT has performed well as a predictive measure of injury in NCAA Division I football, basketball, and soccer athletes, its utility to identify at-risk individuals is unclear within the football population at the specific NCAA Division III institution. The purpose of this practice-based research project was to determine the relationship between the YBT and LE injury in football athletes at the institution. Our hypothesis was that those experiencing non-contact LE injuries would demonstrate significantly greater asymmetries and lower composite scores than the uninjured population.

PATIENTS

One hundred thirty-nine football student-athletes from the same NCAA Division III institution participated in this screening and monitoring program. Prior to the start of the 2016 football season, all athletes completed an annual medical screening process of which YBT measurements were included. Athletes were given brief information on the purpose of balance assessment

as a means to identify risk of LE injury before completing measurements. Athletes with a LE injury at the time of YBT evaluation were excluded from this study. Athletes who were included in this study were then monitored throughout the competitive season for LE injuries.

INTERVENTION

The FMS Y Balance Test (Perform Better, West Warwick, RI) was used to measure balance in athletes. The YBT tool consists of a center platform and three PVC pipes attached in anterior, posteromedial, and posterolateral directions. Each directional pipe is labeled in centimeters (cm) and includes a sliding block that an athlete pushes as they reach in a specific direction (Figure 1). Reliability assessments of YBT measurements in multiple studies suggest strong intrarater reliability between ICC=0.85-0.93 and interrater reliability between ICC=0.91-1.0.^{5,8,15} The measurement protocol utilized was based on a previous protocol.¹⁵ Athletes were instructed to stand barefoot on the center platform and reach out in each direction, with the contralateral limb, to slide a block down the directional pipe. Trials were repeated if athletes removed hands from hips, failed to return to the start, threw the block, or placed excess weight on the block. Athletes completed four practice trials followed by three measurement trials in each direction. The furthest reach in each direction was recorded, normalized to leg length and used for analysis. Two examiners monitored the trials to ensure correct procedure and two others recorded reach distances. YBT examiners completed educational sessions to ensure that those measuring YBT understood the process and could obtain reliable measurements. Leg length was measured following YBT. Leg length was measured from the anterior superior iliac spine to the distal tip of the medial malleolus on both limbs after athletes lifted their hips off of the table and returning to a supine position. All YBT and leg length measurements were completed by the clinical athletic training staff (< 8 years BOC certified) or senior level professional athletic training students who completed a training module with measurement practice at the institution. The information was stored in a Microsoft® Excel spreadsheet to be analyzed with injury data to determine the, if any, relationship exists between balance and LE injury. This was an important first

step in determining the necessity of possible prevention programming.

OUTCOME MEASURES

Injury EMR surveillance occurred via SportsWare® (Computer Sports Medicine Inc. Stoughton, MA.) database and lasted the entire fall 2017 season. Injuries to the LE that resulted from any non-contact mechanism were included if the event required medical care and resulted in time-loss of one or more days of normal football activities. A report was generated through the EMR for the stated conditions and YBT values for those injured were matched in Microsoft® Excel database for analysis. Athletes sustaining multiple injuries were included for their first injury only.

Analyses were conducted using a statistical software program (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp). Means and standard deviations were calculated for all reach distances and asymmetries in each leg for injured and uninjured athletes. Limb asymmetries were calculated by taking the absolute difference between limbs for each reach direction and composite score. Receiver operator characteristic (ROC) curves were created to establish a cut-off point at which a difference in scores correlated with an increased chance of LE injury. This was done for each reach and composite score asymmetry to determine risk of injury in this population. The *P* value was set at *P* < 0.05 a priori.

RESULTS

Non-contact LE injuries occurred in 62 of 136 athletes who completed the 2017 football season (Table 1). The normalized reach distances and composite scores are presented in Table 2 for injured and uninjured athletes. Non-significant asymmetries (Table 3) were noted among injured and uninjured populations (*P* = 0.382) with mean asymmetries for each direction and composite being within 1% except for the posteromedial reach direction (2%). ROC data failed to reach significance in establishing cut off points for reach or composite score asymmetries.

Table 1. Sustaining Non-Contact LE Injuries.

	Number	Percentage
No Injury	74	54.4
Injury	62	45.6
Total	136	100.0

Table 2. YBT individual and composite reach scores.

	Uninjured (74)		Injured (62)		Total (136)	
	Left	Right	Left	Right	Left	Right
Anterior	67.7 ± 10.2%	66.9 ± 10.8%	67.6 ± 10.5%	67.2 ± 12.0%	67.7 ± 10.3%	67 ± 11.3%
Posteromedial	112 ± 12.1%	112 ± 11.4%	111 ± 17.8%	110 ± 13.2%	112 ± 14.9%	111 ± 12.3%
Posterolateral	107 ± 15.5%	107 ± 13.1%	107 ± 19.6%	108 ± 15.7%	107 ± 17.4%	108 ± 14.3%
Composite	96.0 ± 10.6%	95.7 ± 9.4%	95.6 ± 12.4%	95.4 ± 11.0%	95.8 ± 11.5%	95.5 ± 10.1%

Note: Values are expressed as a percentage of the limb length (Reach/Limb Length)

Table 3. YBT Asymmetry Values for each direction

Group (n)	Anterior	Posteromedial	Posterolateral	Composite
Uninjured (74)	5.8 ± 4.8%	7.5 ± 6.7%	9.1 ± 7.4%	4.3 ± 4.2%
Injured (62)	6.4 ± 5.6%	9.5 ± 14.1%	9.0 ± 11.7%	5.2 ± 6.2%
Average (136)	6.1 ± 5.2%	8.4 ± 10.8%	9.1 ± 9.6%	4.7 ± 5.2%

Note: Values are expressed as a percentage difference between limbs

Table 4. Receiver Operator Characteristic Findings

Asymmetry Measure	Area	Std. Error	P value	Cut Off Score	Sensitivity	Specificity
Anterior	.519	.050	.702	0.1%	61.3%	47.3%
Posteromedial	.532	.050	.526	7.2%	43.5%	67.6%
Posterolateral	.456	.050	.382	1.0%	98.0%	11.0%
Composite	.513	.051	.800	8.4%	19.4%	91.9%

DISCUSSION

The purpose of this study was to determine if a relationship exists between YBT performance and the incidence of LE injury in NCAA Division III football players. Our results did not find any YBT reach direction that was predictive of LE injury. This is in contrast to recent investigations of YBT performance in other populations. Using the star excursion balance test (SEBT), Plisky⁶ found that high school basketball players with anterior reach asymmetries greater than 4 cm demonstrated a 2.5 times greater injury risk. Additionally, female athletes were 6.5 times more likely to sustain injury if their composite reach score was less than 94% of their limb length.⁶ The relation of anterior reach asymmetry to increased injury risk was corroborated using the YBT in a population of NCAA Division I athletes from various sports in a 2015 investigation by Smith et al. which found that participants with anterior reach differences of over 4 cm were almost 4 times more likely to sustain a LE during their competitive season.⁹ Similar YBT procedures have been applied among amateur and professional soccer players finding a 4 cm difference in the posteromedial direction as a risk factor for injury.¹⁶ In contrast, another investigation using the YBT among NCAA Division I football players was unable to corroborate injury risk in those with anterior reach

asymmetries, but did find a 3.5 times higher injury rate in those with composite scores of less than 89% of limb length.⁸ The combination of these findings highlight the variation in the predictive ability of the YBT/SEBT and underscores the importance of continued investigations within multiple populations. Before adopting quality improvement interventions, athletic trainers should incorporate evidence from their own patient population along with current research evidence to ensure the usefulness of those interventions. Practice-based research and analysis of such data can help focus efforts on the needs of our patients and improve overall outcomes. Despite our results, the YBT can still be a useful marker of neuromuscular control in patients after specific injuries. Investigations among patients with lateral ankle sprains, chronic ankle instability, anterior cruciate injury, and patellofemoral pain syndrome consistently exhibit significant reach deficits in the directions used in the YBT.⁴ Additionally, rehabilitation focusing on improving balance while reaching in anterior, posteromedial, posterolateral directions has shown improvement within injured populations.⁴ One such study among those with chronic ankle instability found significant improvement in reach distances after 4 weeks of balance exercise focused on the anterior, posteromedial, and posterolateral directions.¹⁰ Within our application, baseline

measurements were used as objective return to play criteria for those injured throughout the season. Evidence has established the YBT as an appropriate measure of dynamic postural control, and that interventions focusing on balance and neuromuscular control exercises lead to improved reach scores.¹⁷⁻²⁰

There were a number of challenges experienced in the implementation of the YBT testing procedures, which may have affected measurements collected. A large number of football athletes (139) reported for the pre-participation exam that was scheduled for a 3-hour time period. The addition of a balance testing station increased the time required to complete all components of the exam, which created a sense of fatigue in athletes and clinicians. The YBT was a new procedure for staff and professional level students who were conducting measurements. Training and practice sessions were employed, but unforeseen challenges during a time-sensitive exam may have compromised the ability to record accurate measurements. Additionally, returning players may not have provided maximal effort as this was a new and unexpected task that was seen as a burden. Lessons learned through unsuccessful experiences provide valuable information on how to improve procedures and must be addressed in future investigations of the YBT as a predictive assessment of injury. Educational sessions for athletes and coaching stakeholders can lead to buy-in and commitment to gathering accurate measurements. Further training and experience among those conducting measurements will increase efficiency and accuracy of the measurement process. Finally, procedures to limit the number of athletes measured in one session may help with the impatience of athletes and the fatigue of clinicians.

The results of this practice-based research did not identify YBT measurements predictive of lower extremity injury. Adjustments to implementation policies will be necessary if the YBT will be continued to be used as a predictor of lower extremity injury or an objective rehabilitation measure. One of the benefits that resulted from our investigation was an additional clinical outcome measure to assess return to activity status for those that incur lower extremity injury. Comparisons to YBT baseline measures of

dynamic balance will be useful information to assist clinical decision making regardless of injury predictive ability.

CLINICAL APPLICATION

While identifying and using current evidence to guide clinical practice is an important function of an athletic trainer, implementation of specific interventions designed to prevent injury should be tailored to the individual setting and population being treated. Practice based research provides information on potential usefulness of interventions and can provide additional clinician-rated outcomes to improve clinical decision-making. Continuous data collection and assessment of interventions is crucial for clinicians to make the best decisions for their patients.

REFERENCES

1. Henderson J. *The 2015 Athletic Trainer Practice Analysis Study*. Omaha, NE: Board of Certification; 2015. http://www.bocatc.org/system/document_versions/versions/24/original/boc-pa7-content-outline-20170612.pdf?1497279231. Access Date: May 1, 2018.
2. Hoffman M, Bovbjerg V, Hannigan K, et al. Athletic training and public health summit. *J Athl Train*. 2016;51(7):576-580. <https://doi.org/10.4085/1062-6050-51.6.01>
3. Dick R, Ferrara MS, Agel J, et al. Descriptive epidemiology of collegiate men's football injuries: National Collegiate Athletic Association Injury Surveillance System, 1988-1989 through 2003-2004. *J Athl Train*. 2007;42(2):221-233.
4. Gribble PA, Hertel J, Plisky P. Using the Star Excursion Balance Test to assess dynamic postural-control deficits and outcomes in lower extremity injury: a literature and systematic review. *J Athl Train*. 2012;47(3):339-357. <https://doi.org/10.4085/1062-6050-47.3.08>
5. Shaffer SW, Teyhen DS, Lorenson CL, et al. Y-balance test: a reliability study involving multiple raters. *Mil Med*. 2013;178(11):1264-1270.

- <https://doi.org/10.7205/MILMED-D-13-00222>
6. Plisky PJ, Rauh MJ, Kaminski TW, Underwood FB. Star Excursion Balance Test as a predictor of lower extremity injury in high school basketball players. *J Orthop Sports Phys Ther.* 2006;36(12):911-919. <https://doi.org/10.2519/jospt.2006.2244>
 7. Trojian TH, McKeag DB. Single leg balance test to identify risk of ankle sprains. *Br J Sports Med.* 2006;40(7):610-613. <https://doi.org/10.1136/bjsm.2005.024356>
 8. Butler RJ, Lehr ME, Fink ML, Kiesel KB, Plisky PJ. Dynamic balance performance and noncontact lower extremity injury in college football players: An initial study. *Sports Health: A Multidisciplinary Approach.* 2013;5(5):417-422. <https://doi.org/10.1177/1941738113498703>
 9. Smith CA, Chimera NJ, Warren M. Association of y balance test reach asymmetry and injury in division I athletes. *Med Sci Sport. Exerc.* 2015;47(1):136-141. <https://doi.org/10.1249/MSS.0000000000000380>
 10. McKeon P, Ingersoll C, Kerrigan DC, Saliba E, Bennett B, Hertel J. Balance training improves function and postural control in those with chronic ankle instability. *Med Sci Sports Exerc.* 2008;40(10):1810. <https://doi.org/10.1249/MSS.0b013e31817e0f92>
 11. McGuine TA, Greene JJ, Best T, Levenson G. Balance as a predictor of ankle injuries in high school basketball players. *Clin J Sport Med.* 2000;10(4):239-244.
 12. Emery CA, Rose MS, McAllister JR, Meeuwisse WH. A prevention strategy to reduce the incidence of injury in high school basketball: A cluster randomized controlled trial. *Clin J Sport Med.* 2007;17(1):17-24. <https://doi.org/10.1097/JSM.0b013e31802e9c05>
 13. Herrington L, Hatcher J, Hatcher A, McNicholas M. A comparison of Star Excursion Balance Test reach distances between ACL deficient patients and asymptomatic controls. *Knee.* 2009;16(2):149-152. <https://doi.org/10.1016/j.knee.2008.10.004>
 14. Hertel J, Braham RA, Hale SA, Olmsted-Kramer LC. Simplifying the star excursion balance test: Analyses of subjects with and without chronic ankle instability. *J Orthop Sports Phys Ther.* 2006;36(3):131-137. <https://doi.org/10.2519/jospt.2006.36.3.131>
 15. Plisky PJ, Gorman PP, Butler RJ, Kiesel KB, Underwood FB, Elkins B. The reliability of an instrumented device for measuring components of the star excursion balance test. *N Am J Sports Phys Ther.* 2009;4(2):92.
 16. Gonell AC, Romero JAP, Soler LM. Relationship between the Y balance test scores and soft tissue injury incidence in a soccer team. *Int J Sports Phys Ther.* 2015;10(7):955.
 17. Leavey VJ, Sandrey MA, Dahmer G. Comparative effects of 6-week balance, gluteus medius strength, and combined programs on dynamic postural control. *J Sport Rehabil.* 2010;19(3):268-287. <https://doi.org/10.1123/jsr.19.3.268>
 18. McLeod TCV, Armstrong T, Miller M, Sauers JL. Balance improvements in female high school basketball players after a 6-week neuromuscular-training program. *J Sport Rehabil.* 2009;18(4):465-481. <https://doi.org/10.1123/jsr.18.4.465>
 19. Fitzgerald D, Trakarnratanakul N, Smyth B, Caulfield B. Effects of a wobble board-based therapeutic exergaming system for balance training on dynamic postural stability and intrinsic motivation levels. *J Orthop Sports Phys Ther.* 2010;40(1):11-19. <https://doi.org/10.2519/jospt.2010.3121>
 20. Filipa A, Byrnes R, Paterno MV, Myer GD, Hewett TE. Neuromuscular training improves performance on the star excursion balance test in young female athletes. *J Orthop Sports Phys Ther.* 2010;40(9):551-558. <https://doi.org/10.2519/jospt.2010.3325>

Implementing a Behavior Health Policy in the Secondary School

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ABSTRACT

Site-specific policies and procedures outlining the available services and emergency action plan (EAP) is vital to any athletic training clinic. The purpose of the following document is to provide athletic trainers with a framework for the development and successful implementation of evidence-based policies and procedures to improve athletic training services at secondary schools. Using a behavioral health policy as an example, the challenges and barriers to the development and implementation of new policies at a secondary school will be discussed. Policy development was largely influenced by each of the individual stakeholders involved in the approval process including school administration, school nurses and counselors, as well as community organizations. As in any setting, challenges to implementation of the behavioral health policy in these schools did occur. Each secondary school or school district will have a different model for medical services that will inherently change the policy at each location. Athletic trainers must know the resources available to them on and off-campus, and develop policies and procedures dependent on these resources. For clinicians in any athletic training setting, it is important to review your current policy and procedure manual to determine where improvements can be made. These documents help ensure patients are being provided the best possible care and help protect athletic trainers legally.

Key Phrases

Policy and Procedure Development, Professional Standards, Secondary Schools Patient Population

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Full Citation

Nikander J, Eberman LE. Implementing a behavior health policy in the secondary school. *Clin Pract Athl Train*. 2018;1(1):21-29.
<https://doi.org/10.31622/2018/0001.5>

Submitted: May 8, 2018 **Accepted:** May 29, 2018

CURRENT MODEL

In 2011, The Commission on Accreditation of Athletic Training Education (CAATE) published the 5th edition of the competencies required to be taught and evaluated in entry-level athletic training education.¹ “Psychosocial Strategies and Referrals”¹ remains to be a stand-alone competency vital to the minimum education for athletic trainers.¹ Identification, referral, and support for patients with behavioral health conditions will also be included in the updated competencies that will apply in 2020 as minimum athletic training education advances to a Master’s degree.² Athletic trainers must have the ability to recognize when a patient is experiencing a social, emotional, or psychological concern.^{1,3} In addition to simple recognition, the Role Delineation Study,⁴ which guides practicing athletic trainers⁴, states that athletic trainers must understand the steps for intervention which includes emergency management, emergency action planning, and appropriate referrals. Although athletic trainers may currently be familiar with the impact of injury on mental health as it relates to athletic identity and participation, it may be even more important to understand underlying behavioral health conditions and when life events that are related, or unrelated, to athletic participation may trigger a more serious psychological concern.³

In the college and university setting, athletic trainers have resources from both the National Athletic Trainers Association (NATA), the National Collegiate Athletics Association (NCAA), and each individual institution regarding psychological concerns in this population. However, for athletic trainers in the secondary school setting, there may be limited resources. As most colleges and universities have student health centers and psychological services available for referral on campus, secondary school athletic trainers may be in a unique setting to require community resources and outside relationships to assist in management and referral of these patient cases. Athletic trainers in the secondary school setting need to have an understanding of the common conditions

experienced by their patient population, and have site-specific policies and procedures reflective of best practices.

Site-specific policies and procedures outlining the available services and emergency action plans (EAP) is vital to any athletic training clinic to minimize organization and personal risk.⁴ The first step for athletic trainers is to establish the need for site-specific policies and prioritize the development of these policies based on patient needs. In review of the current policies and procedures manual at the target high school, there was a clear need for several new or updated policies. Within the needs assessment, we noted that a behavioral health policy was not currently included in the policy and procedure manual. As athletic trainers are bound by the practices set forth in position and consensus statements provided by the NATA, it was clear that our clinic could be legally vulnerable in a legal setting without procedures guiding the management of psychological concerns. Of the identified needs, the behavioral health policy then became our first priority. The purpose of the following document is to provide athletic trainers with a framework for the development and successful implementation of evidence-based policies and procedures to improve athletic training services at secondary schools. Using the process of developing a behavioral health policy for three high schools within a rural school system in Indiana as an example, the challenges and barriers to the implementation of new policies at a secondary school will be discussed.

PDSA CYCLE

Plan - Researching the topic for your chosen policy and procedure is important for the drafting of the document, as well as the advocacy and education that may be required for staff and stakeholders to buy-in to implementation. For the behavioral health policy, research was focused on epidemiology of mental health concerns in adolescents^{5,6}, recommendations for best practices^{3,7}, athletic trainers practice analysis⁴, and what athletic trainers already know about identifying psychosocial concerns.⁸ In the research phase, we also chose to reach out to school counselors as a key resource in the development of the policy. The school counselors provided us with specific

contact information for community behavioral health resources, contact information for appropriate school administration as well as current policies for management of behavioral health concerns during school hours. During school hours, teachers and other school personnel had direct access to guidance counselors as well as an established emergency response team. Although these individuals were not on campus during most athletic practices and events, it served as a framework for the hierarchy of communication within the school administration that we needed to implement when an incident did occur. After discussion with guidance counselors, we were also able to establish the best mechanism for follow-up of non-emergent concerns that could be addressed during the following school day, which was an important portion of our final document.

Table 1. Timeline for Implementation of Behavior Health Policy.

Draft document	January 12
Review draft with supervisor	January 20
Schedule meeting with outreach coordinator	January 31
Develop educational materials	February 15
Schedule meeting with school counselors	February 20
Schedule meeting with school nurse	February 25
Schedule meeting with school administration	February 28
Edit document with stakeholder feedback	March 1
Submit for final approval	March 15
Disperse to each secondary school	March 20
Discuss policy with staff and students	March 25

It is also important to consider each of the individual players that might be involved in the approval process of a new policy. Stakeholder buy-in is a common challenge encountered when attempting to implement change in any setting. The timeline for implementation included individual meetings with each stakeholder that would be impacted or included in the policy. Developing education materials such as handouts and Microsoft PowerPoint® presentation may be

an effective way to communicate the importance of the change you are intending to implement at each of these stakeholder meeting. The individual meetings and discussions that were included in the process of implementing a behavioral health policy were integral to the successful approval by the school board (Table 1).

Do - The behavioral health policy was developed for a hospital-based athletic training outreach program that provided services to three area secondary schools. The purpose of the policy was to outline the referral and management processes for psychological concerns. The policies were highly reflective of the suggestions from the NATA *Interassociation Recommendations for Developing a Plan to Recognize and Refer Student-Athletes with Psychological Concerns at the Secondary School Level: A Consensus Statement*.³ Table 2 outlines the sections that were present in our policy and procedure document that were developed based on best-practice guidelines.

Table 2. Sections of Behavioral Health Policy & Procedure Document.

Policy	Brief statement of guiding principles
Recognition	Depression, anxiety disorders, substance and alcohol abuse, ADHD, eating disorders/disordered eating, bullying, and hazing
Procedures	Emergency referral, non-emergent referral, bullying, suspected child abuse, documentation
Contacts	School administration, school counselors and nurses, community emergency rooms, community behavioral health centers

When developing the document, keep the audience, most likely highly influential stakeholders, in mind. The final policy and Procedure (Appendix A), whereby the introduction included information to establish the need for the patient population as well as the

policy. Especially for a topic such a psychosocial concerns, it was important to educate stakeholders on what the impact of these conditions are in secondary school settings, as well as the educational background and role that athletic trainers are prepared to play when such situations arise.⁴

When drafting a document, it is also important to remember that a policy is very different from procedures, and they should be easily identified as separate components of a document. A policy should be a short 2-3 sentence summary of the overall expectations or principles for the policy. A procedure on the other hand, are typically long, very descriptive, step-by-step instructions on how to achieve the policy.⁹ The following is an example of the behavioral health policy developed for these schools:

The athletic trainer is responsible for the recognition and referral of psychological concerns in student-athletes. The athletic training staff will differentiate between emergent and non-emergent concerns and refer to the school administration and appropriate medical professionals in all cases. The athletic training staff will report any concerns to the high school administration and parents/guardian for further case management.

Study - As in any setting, challenges to implementation of a new policy in the secondary school setting did occur. For this particular model of outreach athletic training services, a policy/procedure had to be developed that was broad enough to cover 3 different athletic training facilities. This document did not include any site-specific contact information or emergency action plan details. This model would then allow for the approval of an overarching behavioral health policy that would then require each individual clinic to develop an amendment to this document that included site-specific contact information and locations. The biggest challenge was the lack of accountability for individual clinics to develop site-specific policies and procedures. The response to a behavioral health incident may not be as effective without the requirement of this amendment from each individual clinic.

Another unexpected barrier was the inconsistency of hours that school nurses spent on-

campus. The school district has a pool of school nurses that provide services during limited hours at several different locations depending on weekly needs. During initial drafting of this document, school nurses played important roles as potential healthcare providers to assist in response and follow-up care for emergency cases such as self-harm or physical violence towards others. However, after meeting with several stakeholders, we decided to edit the document to reflect minimal requirements of school nurses to respond or be involved in these patient cases. Although the model for secondary school services will be different at each site, it is important for athletic trainers to know the resources available to them on-campus and within the community, and develop policies and procedures dependent on these resources.

An additional barrier during implementation was the sharing of medical information related to a patient. The Health Insurance Portability and Accountability Act (HIPAA) and the Family Education Rights and Privacy Act (FERPA) place strict and important guidelines for the protection of personal health information of minors.¹⁰ In the development of the behavioral health procedures, school counselors were a required call after an emergent situation, as well as a resource for athletic trainers in non-emergent cases. Upon review of the confidentiality waiver located in athlete's pre-participation evaluation, it appeared that school counselors were not specifically listed as individuals in which health information may be shared. To avoid any potential legal complications for sharing medical or personal information between athletic trainers and school counselors, the form was modified to specifically list school guidance counselors. This will hopefully ensure that each patient and parent will be agreeing to the collaboration of these individuals in patient care.

Act - For clinicians in any athletic training setting, it is important to review your current policy and procedure manual to determine where improvements can be made. Policy and procedure manuals are meant to guide clinical practice at your site, and include details about any services you may provide. These documents help ensure your patients are being provided the best possible care, but they also help protect you legally. Although the current project remains in

the "study" phase, the information gathered will need to be used to enhance and continually evolve this policy. School administrators and athletic trainers should conduct an end-of-year review to discuss modifications and improvements to the policy. The efficiency of emergency response, timeliness of communications and referrals, as well as patient outcomes may be areas worth evaluating.

CLINICAL BOTTOM LINE

The first step in improving your policies is to establish the need. This step may include researching NATA position and consensus statements to evaluate how your current practices compare to best practice guidelines. During development of policies and procedures, it is important to meet and discuss procedures with each stakeholder who may be involved and impacted after implementation. After approval from the needed stakeholders, it is also important to remember that the process is not yet complete. Staff education and evaluation of policy and procedure implementation success is a continuous process. Although barriers will undoubtedly arise during the development and implementation process, improving policies and procedure manuals for athletic training services in the secondary school setting is possible with a clear plan and the inclusion of stakeholders throughout the process to improve buy-in.

REFERENCES

1. National Athletic Trainers Association. *The Athletic Trainer Educational Competencies. 5th Edition*. The Commission on Accreditation of Athletic Training Education, Austin TX. 2011. Accessed January 2017.
2. CAATE 2020 Standards for Accreditation of Professional Athletic Training Programs. Commission on Accreditation of Athletic Training Education Website. <https://caate.net/new-standards-release-for-professional-masters-level-athletic-training-programs/>. Accessed May 2018.
3. Neal TL, Diamond AB, Goldman S, et al. Interassociation recommendations for developing a plan to recognize and refer student-athletes with psychological concerns at the secondary school level: A consensus statement. *J Athl Train*. 2015;50(3):231-249.

<https://doi.org/10.4085/1062-6050-50.3.03>

4. Henderson, J. *The 2015 Athletic Trainer Practice Analysis Study*. Omaha, NE: Board of Certification; 2015. Accessed January 2017.
5. *Mental Health Information*. National Institute of Mental Health Website. www.nimh.nih.gov/health/topics/index.shtml. Accessed January 2017.
6. *Substance Abuse and Mental Health Services Administration, Results from the 2013 National Survey on Drug Use and Health: Mental Health Findings*. NSDUH Series H-49, HHS Publication No. (SMA) 14-4887. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.
8. Bonci CM, Bonci LJ, Granger LR, et al. National athletic trainers' association position statement: Preventing, detecting, and managing disordered eating in athletes. *J Athl Train*. 2008;43(1):80-108. <https://doi.org/10.4085/1062-6050-43.1.80>
9. Cormier ML, Zizzi SJ. Athletic trainers' skills in identifying and managing athletes experiencing psychological distress. *J Athl Train*. 2015;50(12):1267-1276. <https://doi.org/10.4085/1062-6050-50.12.02>
10. Ray R, Konin JG. *Management Strategies in Athletic Training*. 4th Edition. Champaign, IL: Human Kinetics; 2011.
11. Department of Education. *Joint Guidance on the Application of the Family Educational Rights and Privacy Act (FERPA) and the Health Insurance Portability Act of 1996 (HIPAA) To Student Health Records*. 2008. <https://www2.ed.gov/policy/gen/guid/fpco/doc/ferpa-hipaa-guidance.pdf>. Accessed January 2017.

APPENDIX A - PSYCHOLOGICAL CONCERN: RECOGNITION AND REFERRAL POLICY

INTRODUCTION

The rate of mental disorders in youth is high, with approximately 1 in every 4-5 meeting the criteria.¹ Athletic trainers in the secondary school setting may play a vital role in identifying and referring patients with psychological concerns. Adolescent athletes are exposed to the same stressors that place them at-risk for new or worsening mental disorders as other adolescents; however, performance expectations, time-loss, career ending injuries, team conflict, and other sports-related pressure may cause additional strain.¹ Although approaching patients regarding mental health may be uncomfortable or new for athletic trainers, we may have unique relationships with our patients that allow them to confide, seek help, or speak openly in our presence. The secondary school athletic trainer must be prepared to recognize, respond, refer and advocate for a patient's mental health appropriately.

This policy was developed for a hospital-based athletic training outreach program with the purpose of outlining the referral and management process of psychological concerns. The policies outlined below were highly reflective of the suggestions from the National Athletic Trainers' Association (NATA) *Interassociation Recommendations for Developing a Plan to Recognize and Refer Student-Athletes with Psychological Concerns at the Secondary School Level: A Consensus Statement*,¹ and athletic trainers should familiarize themselves with this resource. This consensus statement, as well as an NATA position statement regarding mental health, can be found on the NATA website.

POLICY

The athletic trainer is responsible for the recognition and referral of psychological concerns in student-athletes. The athletic training staff will differentiate between emergent and non-emergent concerns and refer to the school administration and appropriate medical professionals in all cases. The athletic training staff will report any concerns to the high school administration and parents/guardian for further case management.

Recognition

Distinguishing an emergent versus a non-emergent case is crucial in the management of psychological concerns in athletes and is outlined in the consensus statement as well as later in this policy. As athletic trainers we interact with our patients often daily, and build close relationships. Triggering events in life or sport can cause the worsening or development of a psychological concern. It is important for athletic trainers to be empathetic and recognize when these triggering events may have occurred to better monitor the patient's status. Triggering events specific to athletes may be overtraining, termination of sport participation, inability to manage sport, academic, and personal expectations, injury, as well as any changes in home or social environments. Athletic trainers may see these events begin to affect motivation, pain levels, injury occurrence, attention, mood, or behavior. Although there does not always need to be a specific triggering event prior to development or worsening of a mental disorder, athletic trainers need to recognize these changes as they are some of the primary signs of mental disorders. The primary mental disorders discussed in the NATA consensus statement include:

- Depression
- Anxiety Disorders
- Substance and Alcohol Abuse
- ADHD
- Eating Disorders

- Bullying and Hazing.

Athletic trainers should read this consensus statement and understand the signs and symptoms of each. Detailing each disorder is beyond the scope of this policy, but athletic trainers should attest to having read and understood this document, as well as the consensus statement, prior to patient contact.

Suicide

Any student-athlete who has expressed intent, indicated a plan, or has attempted or discussed attempted suicide, should be treated as an emergency referral. Athletic trainers should not engage in an attempt to determine the seriousness of the expressed thoughts. Stay with the patient, listen, and make an immediate referral.

- If an attempt is in progress: Call EMS.
- If an attempt has not already begun: Call the school counselor and/or school administrator. Parent/guardian will also be notified immediately. If these individuals are not available to respond, call the “insert community resource name.”

PROCEDURES

As stated in NATA *Interassociation Recommendations for Developing a Plan to Recognize and Refer Student-Athletes with Psychological Concerns at the Secondary School Level: A Consensus Statement*, a “Yes” to ANY of the following questions should constitute an emergency:

- Am I concerned the student-athlete may harm himself/herself?
- Am I concerned the student-athlete may harm others?
- Am I concerned the student-athlete is being harmed by someone else?
- Did the student-athlete make verbal or physical threats?
- Is the student-athlete exhibiting unusual ideation or thought disturbance that may or may not be due to substance use?
- Does the student-athlete have access to a weapon?
- Is there potential for danger or harm in the future?

Any threat or perceived suicide attempt, changes in mental status or destructive behaviors constitutes an emergency under any circumstances and EMS should be activated.

In the case of a “yes,” school administration (principal/athletic director and school counselor) should be immediately notified. If administration is currently not on-site, they should still be notified about the incident as soon as reasonably possible. If possible, one athletic trainer will continue to monitor and manage the patient, while another athletic trainers call administration, parents, and/or referral. If a second athletic trainer is not available, a school administrator can be used to contact parents. The responding school administrator will also be responsible for activating EMS if needed.

If possible, the athletic trainer should always defer the incident to a school counselor, administrator, or the school nurse or health assistant. As a school nurse is not always on campus, athletic trainers should report to the guidance counselor first. Once a non-emergent situation is deferred to a school administrator, the athletic trainer can be relieved of immediate responsibility and return to other duties.

Bullying: The school corporation has a no-tolerance policy for bullying of any kind. Bullying can include physical, sexual, or emotional abuse. If the athletic trainer witnesses or suspects bullying, this includes hearing student-athletes discussing previous events, they are to report to the school administration or school guidance counselors immediately. The athletic trainer will intervene in the case of active bullying.

Child Abuse: SUSPICION alone mandates and justifies action by a healthcare provider. Athletic trainers will make a direct report to Department of Children’s services or a law enforcement agency. However, athletic

trainers will report that a call was made to appropriate school administrators and the sports medicine director.

- Child Protective Services: 1-800-800-5556

Emergent Referral Process

Listed below are the options for referral or resources in the case of an emergency.

1. List local behavioral health organizations & contact information
2. List local emergency rooms & contact information
3. National Suicide Prevention Lifeline: 1-800-273-TALK (8255)
4. Child abuse/neglect hotline: 1-800-800-5556

Non-Emergent Referral Process

Student-athletes must be referred to the school counselor prior to non-emergent referral to the local behavioral health clinic. Our school corporation has a working relationship with this clinic and the proper forms required for referral are available from a school guidance counselor and attached to this document.

Notify parents, school administration, and counselors.

Documentation

After any of the above incidents, multiple levels of documentation are required within 48 hours of the incident.

1. "Incident Report" form- This form is available from the athletic office. Upon completion, follow instructions on the form to distribute to the Athletic Director or appropriate administrator.
 - a. This form can be saved on the computer, but needs to be password protected.
2. Sportsware (Medical Records System)-Document this incident in the "Notes" tab under the "athletes" tab. No specific injury needs to be created unless relevant. This documentation needs to at least include:
 - a. Date
 - b. Time
 - c. Observations
 - d. Summary of patient encounter
 - e. Who was contacted and when
 - f. Referral
 - g. Plan of care/follow-up.
3. Following a mental health referral, a note from the treating healthcare provider should be obtained prior to return to activity.

Legal Considerations

In the case of self-harm, or harm to others, patients and parents should be aware that patient and personal information will be shared among appropriate personnel. This is addressed in the medical release form of the pre-participation physical packet.

Contact Information

Each individual school should compile a contact list and working relationships with the following personnel to effectively execute these policies and procedures:

- Principal

- Assistant Principal
- Athletic Directors
- Assistant Athletic Directors
- School Nurse/Nurses and health assistants
- School Counselors
- Local behavioral health centers and hospitals.

SOURCES OF ADDITIONAL INFORMATION

- Emergency Action Plan Guidelines: Mental Health Emergency Secondary School Athletes https://www.nata.org/sites/default/files/mental_health_eap_guidelines.pdf
- Interassociation Recommendations for Developing a Plan to Recognize and Refer Student Athletes with Psychological Concerns at the Secondary School Level: A Consensus Statement
- Indiana State Suicide Prevention Plan: <http://www.in.gov/issp/files/plan.pdf>
- Indiana State Statutes: <https://www.childwelfare.gov/topics/systemwide/laws-policies/state/?CWIGFunctionsaction=statestatutes:main.getResults>
- Suicide prevention organizations in Indiana (contacts) <http://www.in.gov/isdh/25392.htm>

REFERENCE

1. Neal TL, Diamond AB, Goldman S, et al. Interassociation recommendations for developing a plan to recognize and refer student-athletes with psychological concerns at the secondary school level: A consensus statement. *J Athl Train*. 2015;50(3):231-249.

Secondary School Athletic Training Facility Scavenger Hunt

Orientation

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ABSTRACT

The purpose of this case study is to explain an educational game that was utilized as part of an orientation component with Commission on Accreditation of Athletic Training Education (CAATE) accredited professional phase athletic training students. The students were guided through a scavenger hunt in 3 phases to help locate items within the athletic training facility and then analyze the item's function and non-traditional usages. In Phase 1 the students were asked to search throughout the athletic training facility and fostered engage in dialogue regarding unknown items. The preceptor asked the students to retrieve random items during Phase 2. During Phase 3 the preceptor found random items and asked the students to think of traditional and non-traditional uses for the chosen item. This activity utilized the educational theory of Bloom's Taxonomy to introduce knowledge of athletic training supplies and equipment, and help students implement that knowledge into future clinical practice. Additionally, medical education literature has shown that games engage learners by increasing interest, retention, and stimulates students into higher levels of thinking.

Key Phrases

Orientation, observation experiences

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Full Citation

Vogler J. Secondary School Athletic Training Facility Scavenger Hunt Orientation. *Clin Pract Athl Train*.

2018;1(1):30-32.

<https://doi.org/10.31622/2018/0001.6>

Submitted: April 30, 2018 **Accepted:** May 30, 2018

INTRODUCTION

Professional athletic training students (ATs) in Commission on Accreditation of Athletic Training Education (CAATE) accredited athletic training programs (ATPs) are required to engage in clinical education experiences at various sites throughout the curriculum. Many ATs begin clinical rotations at secondary schools and are unaware that often times secondary school athletic trainers are forced to be more resourceful than their collegiate counterparts due to decreased budgets and staffing ratios.¹ Since many secondary school athletic training facilities are smaller than their collegiate counterparts, organization skills and knowing where items are located is essential for students.² Due to these differences, ATs assigned to the secondary school must hone in on their organization and resourcefulness skills from day one. As a result, the training activity described in this paper was done on one of the first days ATs began a rotation at the secondary school level during the professional phase.

ATHLETIC TRAINING STUDENT CHARACTERISTICS

The activity was performed with 1-2 CAATE accredited professional phase ATs in their first secondary school clinical rotation.

PRECEPTOR CHARACTERISTICS

The preceptor practiced at a local secondary school in a large suburban school district. The preceptor has been an athletic trainer for 4 years and has been a preceptor for 2 ½ of those 4 years. The preceptor has been through a formal graduate level class on educating athletic trainers and attended numerous preceptor workshops over the previous 3 years. There are 2 other

athletic trainers, 1 part time, 1 full time, who interacted with the ATSs on a semi-regular basis.

EXPERIENCE

As an orientation to the secondary school setting, the ATSs took part in a scavenger hunt that has been designed in three phases. In Phase 1 the ATSs were asked to explore and rummage through closets, cabinets, drawers, and kits to discover the location of all items in the clinic. If they did not know the item or its function, they were supposed to ask a preceptor for explanation. Once the students completed Phase 1 by searching through the entire athletic training room, Phase 2 was introduced gradually when the preceptors start asking students to find random items from around the clinic. Phase 3 usually occurred once ATSs were familiar with all items. In this phase the preceptors pulled various items and asked the ATSs if they could think of 3-5 non-traditional functions for that item as it related to athletic training clinical practice.

The objective of Phase 1 was to familiarize the ATSs with all supplies and items located in the athletic training facility and to spark conversations about the function of the items. The obvious benefit to this is that in an urgent situation (i.e. needing an epinephrine injector in the gymnasium for a patient experiencing anaphylactic shock) the ATS is familiar with the location of the item. An additional benefit is that the athletic trainer had an opportunity to plan for future educational discussions based on what items the ATS was familiar and unfamiliar with. For example, if the ATS asked questions about modalities, the preceptor could spend some time discussing modalities in greater detail. Questions that sparked further dialog were often about unique non-traditional items such as, “Why is there a can of dusting spray in the rehab area?” (correct answer: to help decrease the friction of the slideboard), or “Why are there two tongue depressors taped together in the football equipment removal kit?” (correct answer: to remove cheek pads from a football helmet in a cervical spine emergency). However, there have also been questions posed about therapeutic modality and rehabilitation equipment that was not seen at previous observations such as, “How do you use the Vibracussor?” or, “What type of rehabilitation is a BAPS board used for?”

The objective of Phase 2 was to get students familiar with important items or items that may have been missed. Often times this was used as an informal assessment to make sure students were familiar with the location of emergency and acute care items. For example, making sure that a student knew where nasal sponges were, so that during a situation where a patient presented with an epistaxis, they are able to treat the bleeding before there was significant blood loss.

The objective of Phase 3 was to encourage the ATSs to think outside of the box and help them understand that in the athletic training setting, especially at the secondary school level, athletic trainers must be resourceful and items can serve many purposes. Phase 3 sparked other conversations that led to a chain reaction of tangential learning. The preceptor prompted the ATS by finding a random item, such as baby powder, and asked them to list 3-5 athletic training uses of that item. For example, baby powder can be utilized for reducing friction in a multitude of ways. Often times the ATSs mentioned the most common usages such as treating chaffing or sweat reduction in a shoe or cleat. However, often the students did not think of the additional usages, such as using baby powder to help slide on a neoprene sleeve, or helping a patient put on a wet sock back on over a fresh ankle taping. Additionally, baby powder can be used with deep oscillation therapy (i.e., the HIVAMAT 200 Evident unit),³ and this particular usage created an educational opportunity to learn about deep oscillation therapy on numerous occasions.

RESULTS AND DISCUSSION

The overall results of the activity have been positive. The ATSs started out thinking that the task was busy work, yet soon realize that it ignited educational discussions. The execution of this activity worked best when the ATS starts at the clinical site and a period of the day with a low patient-load, to allow an opportunity for open dialog. After the scavenger hunt, there was a short debriefing session among the ATSs to ask for their impressions and ways to make the activity better in the future. There was some competitive nature to the activity as the ATSs competed to be the first to find items, and to come up with more unique answers during the Phase 3 questions.

CLINICAL BOTTOM LINE

When looking at educational research, the scavenger hunt activity aligned with Bloom's Taxonomy, an educational theory explained by Benjamin Bloom in 1956, with each phase of learning building upon the previous phase of learning.⁴ In Bloom's Taxonomy, there are 6 levels (1. knowledge, 2. comprehension, 3. application, 4. analysis, 5. synthesis, 6. evaluation) that students experience during instruction.⁴ When analyzing the scavenger hunt in Phases 1 and 2, the ATS are asked to retrieve knowledge by looking for items and then asked to comprehend that knowledge by posing questions for clarification and explanation from the preceptor.⁴ In Phase 3 the ATSs were asked to apply, analyze, and synthesize their knowledge as they critically thought about the usage of items in clinical practice.⁴ The ultimate goal is that the ATSs will then take what they have learned in the scavenger hunt and put it together with other components of their athletic training education to apply this knowledge to their future clinical practice.⁴ Additionally, by turning this experience into a scavenger hunt the ATSs saw it as a game and were competitive. In medical education games have been indicated to promote interest, increase retention, and stimulate students into higher levels of thinking within Bloom's Taxonomy.^{5,6}

STUDENT PERSPECTIVE

Athletic training students have stated, "I really enjoyed the scavenger hunt activity that we did at the beginning of the semester. It helped me to feel more comfortable in the [athletic training facility] and was helpful for when I needed to find something quickly. It was a really fun way to get oriented and feel more confident there." Moreover, "The scavenger hunt game in the athletic training [facility] is very beneficial and an engaging game. It helped me learn where everything is in the room in a short amount of time. Knowing where all the equipment and supplies are is very important, so there is no delay or questioning when needed to acquire equipment/supplies."

REFERENCES

1. Mazerolle SM, Raso SR, Pagnotta KD, Stearns RL, Casa DJ. Athletic directors' barriers to hiring athletic trainers in high schools. *J Athl Training*. 2015;50(10):1059-1068. <https://doi.org/10.4085/1062-6050-50.10.01>
2. Cooper L. Ready to renovate. *Training & Conditioning*. <http://training-conditioning.com/4ATS/ready- renovate>. October 11, 2017. Accessed May 21, 2018.
3. Compass Richmar Corporation. *Operating Instructions: HIVAMAT 200 Evident*. 2017. <http://richmarweb.com/Websites/richmar/images/pdf/operation-manuals/hivamat-200-evident-manual.pdf>. Accessed March 21, 2018.
4. Bloom BS, Engelhart MD, Furst EJ. *Taxonomy of Educational Objectives: The Classification of Educational Goals Handbook I: Cognitive Domain*. New York, NY: David McKay Company; 1956.
5. Meterissian S, Liberman M, McLeod P. Games as teaching tools in a surgical residency. *Med Teach*. 2007;29:e258-e260. <https://doi.org/10.1080/01421590701663295>
6. Akl EA, Mustafa R, Slomka T, Alawneh A, Vedavalli A, Schunemann HJ. An educational game for teaching clinical practice guidelines to Internal Medicine residents: Development, feasibility and acceptability. *BMC Med Educ*. 2008;8(50). <https://doi.org/10.1186/1472-6920-8-50>

Specialization in Athletic Training: A Natural Evolution

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Key Phrases

Emerging settings, organizational and personal outcomes, public health, residency, advanced practice

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Full Citation

Wetherington J. Specialization in athletic training: A natural evolution. *Clin Pract Athl Train*. 2018;1(1):33-36.
<https://doi.org/10.31622/2018/0001.7>

Submitted: May 4, 2018 **Accepted:** May 29, 2018

COMMENTARY

The skill set of the athletic trainer, like the skills of other allied health professionals, has evolved to match the changing demands of patient populations. As the skill set of the athletic trainer has grown, so has the settings that this skill set has been utilized. No longer are athletic trainers only recognizable in the interscholastic and professional sports arenas. The value of the athletic trainers' skillset has resulted in the proliferation of the profession into settings such as physician practice, industrial, public safety, military, and research. As the practice of athletic training has evolved to meet these growing workplace demands, some individuals have developed specialized skills and knowledge that has allowed them to thrive in these emerging settings.

Specialization was first recognized by Adam Smith and immortalized in his seminal publication *The Wealth of Nations*.¹ As with the labor sector, specialization in medicine has characterized progression for nearly two decades.² The catalyst for specialization in medicine can be traced to the publication of the, *1910 Flexner Report*. After this report healthcare delivery, specifically medical education, radically changed.³ Flexner's call for educational reform emphasized more research/evidence-based education and advocated for the pursuit of greater knowledge.³ As practitioners devoted their intellectual endeavors to furthering their understanding about

increasingly narrower topics, practitioners started to differentiate themselves into specific areas of expertise or focus which led them to dedicate their time in training to those specific areas.² The first medical specialty to create its own assessment board was ophthalmology in 1917.² In 1933, the four specialties of dermatology, obstetrics and gynecology, otolaryngology, and ophthalmology created a federation called the American Board of Medical Specialties (ABMS). Because of the emergence of these specialties, a national system of standards was created for recognizing specialists and providing information to the public. By 1970, there were 20 specialties. With the most recent addition of Genetics and Genomics in 1991, there are currently 24 specialties recognized by the ABMS.⁴ Specialization is not exclusive to physicians, but also evolved in physical therapy, occupational therapy, and nursing. No matter the profession, specialization in medicine is driven primarily by 3 factors: innovation in medical science and technology, professional preferences, and economic considerations.⁵

Education

Innovation in medicine is correlated to increasing knowledge about a particular field.⁶ As knowledge increases, advancements in technology inevitably follow, which leads to more complex technological skills and intellectual competencies among practitioners.⁶ Increases in knowledge place new and major burdens on professional-level preparation which can neither teach all the new information, nor quickly revise curricula to exclude the outdated information.⁶ To ensure that all this new knowledge is included, professional programs must sacrifice depth. What results is a generalist preparation, which often requires those passionate few who choose to devote their intellectual energies to understanding specific areas of this new knowledge base to seek post-professional education to develop specialized expertise.

The profession of athletic training, similar to other professions in medicine, has struggled to balance

and evolve educational system to meet the growing knowledge base in our field. Athletic training education and accreditation of athletic training programs progressed from being controlled by the member organization of the National Athletic Trainers' Association (NATA) to being independently run by the Commission on Accreditation of Athletic Training Education (CAATE). Along with structural changes, the way that education was delivered has radically changed over that period.⁷ Athletic training evolved from an internship driven-model to a curriculum-driven model. Most recently, the CAATE announced that by 2022 professional programs must transition to the master's level. The educational elevation has inspired an expansion in the breadth of the practice of athletic training. Expanding education is truly the only way to widen scope and demonstrate in a practice analysis that this new knowledge base includes the responsibilities required of the profession. A worry of some surrounding the change in professional degree requirements is that the education for athletic training is becoming too watered down and athletic trainers are lacking depth in their entry-level knowledge base. This is a common worry amongst the athletic training community and is also a concern for other medical professions. For example, this was also a fear of general practitioners, as their knowledge base has widened considerably since its creation. As more and more athletic trainers advance their practice into new and narrower fields, the knowledge base that athletic trainers are expected to know is reaching a critical mass. This increase in knowledge base is placing an increased burden on athletic training educators to teach all the new knowledge without sacrificing depth. As educators spend the majority of their time in the classroom with students teaching the expanding scope of practice, there is even less time for them to clinically practice and evolve their own skills. The lack of time for educators makes it even more difficult for them to teach and provide meaningful experience-based mentorship for their students. This tipping point has happened in other professions and resulted in the creation of formalized specialist training to further clinical skill sets.

Along with the athletic training educational requirements changing, so is the practice of

athletic training. Athletic trainers are not only increasing their knowledge base and clinical practice skill set, they have expanded their footprint into settings outside of the interscholastic and professional sports arenas. This expansion of practice into new arenas has required athletic trainers to deepen their current skill set, as well as develop new skills. These new skills are not transferrable to all athletic training practice. Residencies organically developed to meet the need for athletic trainers to deepen their current skills, and learn new skills to help them thrive. The residency model is well known in medicine and is intended to build upon the generalist education that all receive. The CAATE, recognizing the growing trend in specialized training, developed standards for residency programs to ensure that students were receiving advanced preparation through a planned program of clinical and didactic education in specialized content areas. The CAATE has initially recognized eight specialty areas: prevention & wellness, urgent & emergent care, primary care, orthopedics, rehabilitation, behavioral health, pediatrics, and performance enhancement.⁷ The CAATE has acknowledged that this list is not all encompassing, and has laid out steps to propose new specialties areas as they arise. These are all great steps for the profession that will continue to help the profession advance.

Specializations may narrow even further, or occur when specialties are combined to develop subspecialties (e.g., pediatric neurology).⁶ As subspecialties develop, so will the need for training through fellowships training. The fellowship is seen in medicine, and is intended to deepen a practitioner's focus on a specific topic to the level of content expert. Athletic training has not reached this point yet, but it is not too far off in the future. Similar to physicians, athletic trainers are starting to subspecialize by patient population or body part. In orthopedics alone there are athletic trainers who have subspecialized their practice to pediatrics, trauma, total joint and adult reconstruction, foot and ankle, spine, hand, and/or upper extremity. These ground breaking athletic trainers will be the ones to foster the growth of fellowship training in the field of athletic training.

Professional Practice

Specialization is an organic evolution of medical practice, but specialized practitioners cannot reach their full potential without support and backing from the profession. As the few innovative professionals devise and test these advanced skills, the profession must perfect who should be utilizing these skills.⁶ Not all of these advanced skills can be performed by all practitioners, and in these cases specialization is often needed to support these particular practices.⁶ The idea of specialization is not always met with resounding support. Athletic training is no different than other medical professionals who have worried about fragmentation of their profession and the loss or under valuing of the generalist skillset.² Physicians had these same concerns, and specialization was seen as a benefit for the generalist practice, as it allowed for the strengthening, focusing, and reinvestment of the generalist practice and education.

Another concern of specialization is the misrepresentation of unqualified practitioners.² The creation of board certification of specialty status was seen as an ingenious way for professions to control the concerns of specialization. In response to the growth of optometry as a separate discipline, the American Medical Association, and the American Ophthalmological Society created an independent board of specialists. This board was tasked with creating standards that would recognize physicians whose knowledge and skills demonstrated expertise in identifying and treating disorders of the eye.² Physicians created the AMBS as an independent board to maintain the standards for physician certification.⁴ Proposals for new specialties initially come from professional societies and are exhaustively vetted by the board.² The profession of athletic training should follow this blueprint by creating an independent board of specialties who does not seek to create specialties, but instead focus on the maintenance of quality for the specialty certification. The creation of the specialty certification should come from the specialty practice societies who can properly recognize the specific patient populations, the highly focused knowledge required to treat such patients, and the skills that need to be obtained beyond that of the generalist practice for that specialty field of practice. In addition, these specialty societies

should determine the qualifications required to sit for the certification examination.

Specialization does not end with satisfactory performance on a single examination. Practitioners need to remain competent throughout their careers. The practice of athletic training has evolved significantly in a short amount of time, and for some athletic trainers this is within the life of their whole career. It has been demonstrated that skills decay and innovation happens, so once a specialty certification is obtained it needs to be maintained.² Recertification requirements are just as vital to the success of the specialty development as initial certification.²

Economic Considerations

In the age of healthcare delivery changes and quality movement, consumers are demanding more from health care. Consumers as well as healthcare organizations are demanding more transparency and higher standards to ensure their providers have the knowledge and skills required for positive patient outcomes.² Board certifications of specialty training is one of the frequent criteria used to ensure competence.² When the public identifies an area of need or an aspirational goal develops, new areas of specialization tend to arise.⁶ Initially these new fields usually have a great shortage of professionals who have both the interest and the specific expertise to address to these problems.⁶ As known from the law of supply and demand, as the supply decreases the demand and cost of the product goes up. Even without specialty certification, the economic benefit of specialty skill set has already been seen. Research has demonstrated that athletic trainers who report performing seven or more specialized skills indicated that they earn significantly higher yearly salaries than those who did not.⁸ However, a proliferation of specialties without adequate reasoning may confuse the public and healthcare organizations, thus minimizing the positive impact of the profession. The value of specialty certification should be undeniable, but most people do not understand what criteria that certification represents, or fully appreciate that different kinds of organizations can offer certificates that represent varying degrees of rigor and clinical relevance.

Conclusions

Specialization should be difficult to obtain and just as hard to maintain. It is not meant to degrade or diminish the work of the generalist practitioner. It is, in fact, the recognition that within a generalist discipline it is becoming increasingly difficult to keep up with the depth of knowledge needed for this type of practice, especially when including technical, clinical, and managerial skills. The intended goal of specialization is to promote and foster the growth of the profession. Specialization is not something to be feared. It is something that should be embraced and cultivated. If properly done it can be a huge step forward in the evolution of athletic training. If poorly managed it could mean even more stagnation as the profession is presented with the changing landscape of healthcare delivery.

REFERENCES

1. Smith A. *Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan and T. Cadell; 1776.
2. Cassel CK, Reuben DB. Specialization, subspecialization, and subspecialization in internal medicine. *New Engl J Med*. 2011;364(12):1169-1173. <https://doi.org/10.1056/NEJMsb1012647>
3. Flexner A. *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching*. Bulletin no.4. New York: Carnegie Foundation for the Advancement of Teaching, 1910.
4. *ABMS History of Improving Quality Care*. American Board of Medical Specialties Web site. <http://www.abms.org/about-abms/history/>. Accessed April 16, 2018.
5. Detsky AS, Gauthier SR, Fuchs VR. Specialization in medicine: How much is appropriate. *J Am Med Assoc*. 2012;307(5):463-464. <https://doi.org/10.1001/jama.2012.44>
6. Peplau H. Specialization in professional nursing. *Clin Nurse Spec*. 2003;17(1):3-9. <https://doi.org/10.1097/00002800-200301000-00002>
7. *Residency Programs*. Commission on Accreditation of Athletic Training Education Web site. <https://caate.net/residency-programs/>. Accessed April 16, 2018.
8. Hassell J, Wetherington J, Kitano J, Scharer K, Paturzo M. The roles and responsibilities of athletic trainers working the physician practice. Poster session presented at: Big Sky Athletic Training Sports Medicine Conference; 2018; Big Sky, Montana.