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Doisy College of Health Sciences

2021-2022 Program-Level Assessment: Annual Report

Program Name (no acronyms): Athletic Training Program	Department: Physical Therapy and Athletic Training
Degree or Certificate Level: Master of Athletic Training	College/School: Doisy College of Health Sciences
Date (Month/Year): August 2022	Assessment Contact: Anthony Breitbach PhD, ATC

In what year was the data upon which this report is based collected? 2021-2022

In what year was the program's assessment plan most recently reviewed/updated? 2021-2022

Is this program accredited by an external program/disciplinary/specialized accrediting organization? Yes

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

2. Demonstrate effective communication strategies necessary for patient-centered care.
4. Employ evidence-based clinical reasoning in the practice of athletic training.

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe the artifacts in detail and identify the course(s) in which they were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

2. MAT 5700: AT Clinical Practicum I (face-face) - Blog Post Assignments (introduce)
2. MAT 5250: Musculoskeletal Assessment and Management II (face-face) - Final Practical Examination (reinforce)
2. MAT 6750: AT Clinical Practicum IV (face-face) - Preceptor Assessments (achieve)

4. MAT 5650: Research in Athletic Training (face-face) - Critically Appraised Topic Assignment (reinforce)
4. MAT 6960: AT Capstone Project (face-face) - Capstone Project Assignment (achieve)

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (please do not just refer to the assessment plan).

Program Faculty provided deidentified assignments to Program Director on May 2022, these were analyzed over Summer 2022 with attached grading rubric and presented to faculty in August 2022 where the outcomes data were discussed.

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

Due to low number of students in respective cohorts, 100% of artifacts were analyzed using rubric with the following results:

2. MAT 5700: Blog Post Assignments – 100% (12/12) of assignments were performed using the appropriate terminology.
2. MAT 5250: Final Practical Examination – 100% (12/12) of assignments were performed using appropriate format and terminology.
2. MAT 6750: Preceptor Assessments – 86% (6/7) of preceptors stated that students communicated addressing the health literacy level of the patient.

4. MAT 5650: Critically Appraised Topic Assignment – 86% (6/7) of students performed assignment differentiating between levels of evidence in clinical reasoning in CAT paper.
4. MAT 6960: Capstone Project Assignment – 43% (3/7) of students appraises best evidence and applies it to evidence-based clinical reasoning in Capstone Project. 43% (3/7) of students performed assignment differentiating between levels of evidence in clinical reasoning.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

In PLO 4 – student understanding of evidence-based practice is established but application in clinical reasoning could improve but is appropriate for entry-level clinician.
In PLO 2 – communication skills are demonstrated in a progression over time in multiple contexts.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

Discussion at Faculty meeting in September 2022.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Artifacts of student learning • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of these findings.

MAT 5250 could also provide artifact for PLO 4 at reinforce level.
Critically Appraised Topic Assignment moving to MAT 6010.
Reassessment of Capstone Assignment will be done in Spring 2023.
Proposed movement of MAT 5650 – Clinical Research and Design to Fall PY1 – potential "introduce" artifact from this course.

If no changes are being made, please explain why.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

Faculty will also consider data collection methods, frequency/timing of data collection methods, and artifacts of student learning with regards to the PLOs. The program assessment plan will be modified to reflect these August 2021 changes. Incorporation of Milestones and E-Value platform in program assessment will also be examined by faculty.

B. How has this change/have these changes been assessed?

Milestones used to assess PLO 2 in MAT 6750. Much more sensitive assessment on these specific skills.

C. What were the findings of the assessment?

6/7 (86%) students met Achieve level.

D. How do you plan to (continue to) use this information moving forward?

IMPORTANT: *

Please submit any assessment tools (e.g., artifact prompts, rubrics) with this report as separate attachments or copied and pasted into this Word document. *Please do not just refer to the assessment plan; the report should serve as a stand-alone document.*

For DCHS Programs:

If you choose to copy/paste items from the list above* and those below^, clearly label them within the Word document. Example: PLO1 Rubrics

Submit a description of each artifact and whenever possible, an example of a student-completed artifact with the student's name removed.

Submit the actual analyzed data (not the raw data) for each PLO being assessed.

If the items below are submitted as separate documents^, label them following these examples:

2021-2022,HSCI_ArtifactDesciption4PLO1

2021-2022,HSCI_CurrentAssessRubrics4PLO1

2021-2022,HSCI_AnalyzedData4PLO1

2021-2022, HSCI_Revised ProgLvlAssessPlan

Use a similar labelling format for other separate documents germane to the PLO under assessment.

Saint Louis University Athletic Training Program

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October 12, 2021

SLU AT Student Enjoys Connecting Classroom and Clinical Learning at Rockwood Summit HS

SLU AT Clinical Site Spotlight - Rockwood Summit High School

By: Maggie Cannatella (MAT Class of 2023)

I really enjoyed my first clinical experience at Rockwood Summit High School. Although it has only been about a month, I have already learned a lot from my preceptor, Mercy Sports Medicine Athletic Trainer and SLU Alum Tony Mosello MAT, ATC. This semester, I have learned about some injuries and clinical skills in class and gotten the chance to apply or see them in clinical.

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Anthony.Breitbach@health.slu.edu
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As the school year progresses, I am excited to learn more about evals and other skills that I get to see Tony use every day. I have gotten the chance to help tape the athletes and practice modalities I have learned in class. So far, as I have become more comfortable, I have gotten to know some of the athletes at Rockwood Summit and started to develop relationships and establish trust.

The athletes, coaches, and staff have been nothing but welcoming and it has been a great environment to learn in. I am excited for the rest of the semester and for the opportunity to learn more about the profession of athletic training and to continue to learn in class and then apply that knowledge in clinical. I already have learned and seen so much, and I cannot wait to see what else is in store for the rest of the semester.

This is one of a series of posts by the Saint Louis University Athletic Training students featuring their clinical site and their preceptors. The number, quality and diversity of clinical instruction are major assets for the SLU AT Program.

Labels: cannatella, mercy sports medicine, mosello, rockwood summit

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October 03, 2021

SLU AT Students Appreciate Preceptor's Commitment to Preparation and Learning at John Burroughs School

SLU AT Clinical Site Spotlight - John Burroughs School

By: Katie Wissing (MAT Class of 2022) and Olivia Mani (MAT Class of 2023)

John Burroughs School (JBS) has been an incredibly insightful, fast paced, and hands-on experience under the guidance of our preceptor, Dean Tiffany, ATC. No stranger to the word “busy,” Dean is the head athletic trainer, assistant athletic director, and wrestling coach at John Burroughs. This may seem like a full plate to have, but we have quickly learned that the staff at JBS have this strong work ethic and take on this challenge head on, fully committing to their role.

The pride and joy of the fall season, football has been an excellent opportunity for us to heighten our emergency care skills, such as c-spine stabilization and equipment removal, in a highly competitive environment. With the hot St. Louis summers lingering through September, heat illness simulations

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are another necessary practice. We always make sure to have a rectal thermometer and the ice bath on hand!

One of Dean's strong suits as a preceptor, all of this preparation has made us confident in our ability to provide optimal care to our athletes. There are numerous new special tests, taping techniques, rehab exercises, therapeutic modalities, etc. that we have learned in just our first month at this site. Under Dean's supervision and with his trust, we have had numerous opportunities to take the lead and demonstrate our newly learned skills. We know that in the weeks to come there is so much to be absorbed and expand our scope of practice. We look forward to an electric semester ahead.

GO BOMBERS!!!

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Labels: john burroughs, mani, tiffany, wissing

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October 04, 2021

SLU AT Students Enjoy Numerous Clinical Learning Opportunities with Washington University

SLU AT Clinical Site Spotlight - Washington University in St. Louis Athletics

By: Emily Haley, Anastasia Galo, Mason Remeis, Alex Smith (SLU MAT Class of 2023) and Sydney Nash (SLU MAT Class of 2022)

Our clinical experience at Washington University, with preceptors Chris Schultheiss ATC, Jackee Hill ATC and Amanda Lusky ATC, we have primarily been caring for football and have had many opportunities to witness and take care of injuries including ACL tears, patellar subluxation, Achilles tendon rupture, AC joint separation, shoulder dislocation and many more. With the number of injuries from pre-season camp and now, we have had ample opportunity to either create rehab plans or assist in executing rehab with the players.

This experience has given us many opportunities to use modalities that many places do not have like laser, an underwater treadmill, and Hiva mat. Since the sports medicine doctors are frequently at our site, we have also had the opportunity to sit in on and take notes on evaluations as well as the ability to observe suturing.

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The PY1's have learned a lot from this first clinical experience so far and have been building up our skill sets. We have practiced a lot of taping, compression wrapping, wound care, taken histories, assisted with pre-season physicals, observed on field evaluations, and have just begun to practice evals on the foot and ankle. Wash U is a great learning environment for us as there is always something happening.

Sydney, a PY2, has had the ability to practice her evaluation skills on athletes as well as learning the administration side of athletic training. She has had many opportunities to assist in physicals and paperwork regarding them which has been an amazing experience to prepare me for my future experience. Being able to be at this clinical site with all of the PY1's has been an amazing and fun experience.

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Labels: football, galo, haley, hill, lusky, nash, rehab, remeis, schultheiss, smith, washington university, washu

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October 19, 2021

SLU AT Student Appreciates the Clinical Learning Environment at Edwardsville HS

SLU AT Clinical Site Spotlight - Edwardsville High School

By: Alex Davis (SLU MAT Class of 2023)

Hi, I'm Alex Davis and I have been at Edwardsville High School with my preceptor, Katie Hamilton ATC this Fall. This has been an amazing experience to start my first clinical rotation at Edwardsville. Katie is an awesome preceptor and has helped me grow as an AT student. She has helped me with taping, therapeutic modalities, special tests, and evaluation. I love being here and helping Katie out with the athletes.

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Every day I get more and more comfortable with my skills and knowledge that I use outside of class and using them in the field under Katie's supervision. I love being around the student athletes everyday and I hate to go home when we are finished for the day. I love building these relationships with the athletes, coaches, and staff here at Edwardsville and I am excited for the rest of the semester.

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Labels: davis, edwardsville high school, hamilton

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October 13, 2021

SLU AT Students Acknowledge Preceptor's Role Providing an Excellent Learning Environment at Affton HS

SLU AT Clinical Site Spotlight - Affton High School

By: Lauren Swords and Jordan Hyink (MAT Class of 2023)

Affton High School might seem unassuming from the outside, but it is really the Taj Mahal of clinical sites. One of the main reasons is because of the amazing preceptor who resides there, Becky Stigen ATC. Becky has given us the freedom to try new things and fine tune our skills while ensuring proper technique and safety for all the athletes.

We worked with all types of athletes from football to volleyball to cross country which gave us lots of diversity in athletes and injuries. We also had the opportunity to be on the sidelines for a variety of games and learn the different requirements of an athletic trainer on game days. The overall experience has been wonderful so far and has helped expand our knowledge.

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Our clinical assignment at a high school has been an extremely good crash course in what makes an AT. During our peak busy times the AT room will see up to 20 students in the course of an hour. In the beginning of our time at Affton, this involved Becky having to take most of the students herself while we stood back and observed. But now there is a definite flow to how all three of us work together, having our assigned jobs and each seeing different patients.

When we arrived at Affton High School we were not confident in our skills and the knowledge that we had. Throughout our time, we have learned new techniques for taping, instructing athletes in exercises, assessing injuries in both acute/chronic and emergent settings, as well as the ins and outs of game day for an Athletic Trainer. Due to all this hands-on learning, we have noticed a significant increase in our confidence not only with our skills but in ourselves and each other as well.

We would highly recommend Affton High School for future clinical placements because Becky is such a wonderful teacher and Affton is such an interesting place. It really makes for a wonderful overall experience.

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Labels: affton, hyink, stigen, swords

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October 08, 2021

SLU AT Student Gains New Skills Through Clinical Experience at Webster Groves HS

SLU AT Clinical Site Spotlight - Webster Groves High School

By: Muharem Komic (SLU MAT Class of 2023)

At Webster Groves High School with my preceptor Sean Wright ATC and I have learned and experienced quite a lot from being there for about a month even though it feels like I have been doing it longer than that. Sean has been awesome with showing me how everything works in the High School setting. How students come into his office after school to engage in rehab or to get checked out if they feel something is bothering or limiting them from performing. I've learned new ways to tape ankles and thumbs compared to how we were taught at Saint Louis University. Now I am in the process of taking parts from each method and kind of combining them. Some experiences that I've seen are a couple ACL tears and learning there certain special tests to prove the injury, along with MCL, PCL, and LCL.

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Something that happened recently was a possible cardiac arrest or at least from what Sean and I were told a cardiac arrest. It was this past Saturday and there was a volleyball tournament going on along with two soccer games. We just finished a the first soccer game and went back inside to check on volleyball and eat some pizza that was ordered for the staff. We were eating and Sean gets a call from one of the soccer coaches and said cardiac arrest on the field. We ran out there and this elderly man was on the ground conscious and Sean took his BP and it was weak and rapid, the ambulance was already on the way and they came and took over about one minute after we arrived. Turns out he was dehydrated, his BP went from 150 to 100 just from him sitting up. Sean and I were told it was a cardiac arrest so we brought the AED, but it ended up not being that at all. This whole situation made evident that anything can happen at any given moment, even when you're not the first person on site. It showed me that you have to be ready and expect the situation to be a lot worse when arriving and we did.

Overall it's been a great experience for the month being there and I expect to be learning and experiencing more as time goes on.

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Labels: komic, webster groves high school, wright

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October 06, 2021

SLU AT Student Sees the Importance of Communication Skills in Clinical Practice at DeSmet Jesuit High School

SLU AT Clinical Site Spotlight - De Smet Jesuit High School

By: Eldwin Neritani (MAT Class of 2023)

During my clinical experience at De Smet Jesuit High School, I have definitely learned a lot from my preceptor Mercy Sports Medicine AT and SLU alum Dan Herrin MAT, ATC. The dynamics within the athletic training environment has been a new realm that I have never experienced before. One thing that I learned is how important and crucial communication is; whether that be between the athletic trainer and the athletes, or with the coaches, or with any other person. I have learned so much about the athletic trainer-athlete relationship, and how important it is to build that relationship. Having that proper communication between the athlete and I makes the entire process so much easier. With that communication also brings with it a general gaining of trust from the athletes. By being personable with and being able to interact with the athletes allows for a connection to form between us, which just makes the entire process much more enjoyable and streamlined for both parties.

DE SMET JESUIT

And with those different people coming through the door, comes with different needs and expectations. There is no cookie-cutter one size fits all method that works for everyone. It helps to be creative and be able to think on the spot about a better treatment for an athlete. It could be something

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as simple as a small addition of an extra figure 8 or stirrup in my ankle tape for them to give them better support, or if an athlete has not been showing results in their rehab I observed as my preceptor Dan tries different techniques that might be of more help.

I have also learned that it is very much alright to not understand everything, something that I have definitely had to work on. Being able to understand my limits and what I know and don't know how to do has definitely been eye opening for me. The thing that has helped me the most in situations like this is admitting when I don't know something, but then paying attention to and asking Dan questions has been one of the biggest helps for me. Or even when I do something wrong, or if an athlete wants their ankle or wrist re-taped because they didn't like how I did it the first time. These are all moments that I have learned from and will continue to learn from through the experiences I have had.

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Labels: de smet jesuit, herrin, mercy sports medicine, neritani

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Concussion Evaluation in the Athletic Setting

[redacted]

Introduction

A concussion is defined in the NATA guidelines as, "'trauma induced alteration in mental status that may or may not involve loss of consciousness." (Breglio et al.[1]) The athletic setting is a common site for Sports Related Concussions (SRC) to occur. Athletic Trainers are the first line of defense for the athlete after they potentially suffer a SRC. The purpose of this Capstone is to show the many factors that affect the ability of the Athletic Trainer to assess for a concussion in an athletic setting and in general. For this capstone, I am defining athletic setting as a game or competition involving athletes. This excludes practices, recreational activity, and activities unrelated to the athlete's organized sport. I used six articles discussing my topic or something similar and one article shares the guidelines put out by the National Athletic Training Association (NATA). The research shows that the majority of Athletic Trainers do not follow the NATA guidelines completely (Notebaert and Guskiewicz[6]) and that different reference points show how to manage a head injury situation differently [1,2,5,6]. The main reason this topic stuck out to me is because of how new most concussion management protocols are and how I have seen these situations handled differently in my clinical education between preceptors. Therefore, I wanted to consolidate any relevant research to potentially put Athletic Trainers along the path of using similar methods and what methods seem to be most useful in an athletic setting.

Background

To properly study how concussions are assessed on sidelines in an athletic setting, I had to start by looking at how concussions are evaluated in general and what common guidelines do most Athletic Trainers follow or not follow and why. Concussions are traumatic injuries to the head commonly found in contact sports. General tools used for assessing concussions are the SCAT-5 and the Impact Test. These tools are effective but in a game situation they are too long

or not portable enough to be used effectively. Head injuries are very serious and should be treated as such, but our job as Athletic Trainers also includes quick assessments in high stress situations that can lead to misdiagnosis due to outside pressure (Crowd, Coach, Player) and multiple distractions (Noise, lights, other athletes). Many Athletic Trainers face situations where a star player is needed in a big game and if the Athletic Trainer rules them out then they might be looked down on even though they did their job properly. We should not look to give these players special treatment, but everyone needs to be trained on how to properly assess someone with the athlete's safety as the number one priority. While immediate removal from play is often done in regard to head injuries, whether the player is sidelined fully or not often depends on the Athletic Trainer's decision based on a quick assessment of symptoms as well as an evaluation of the athlete's physical ability and whether that brings on any new symptoms or makes existing symptoms worse. Symptoms are often underreported in high stress situations due to outside pressures of being seen as weak by teammates who seemingly support underrating (Carter et al.)[(7)].

According to the NATA guidelines[(1)], "When the rapid assessment of concussion is necessary (eg, during competition), a brief concussion-evaluation tool (eg, Standardized Assessment of Concussion (SAC) should be used in conjunction with a motor-control evaluation and symptom assessment to support the physical and neurologic clinical evaluation." In my clinical experience, I have seen concussion quick assessment as well as performed it on athletes. Often times the ATC looks for symptoms like headache, nausea, dizziness, confusion, and sensitivity to light and/or sound. The problem with this way of assessing is that it is all based on player reporting. If a player knows what to say and what not to say in those quick assessments then they will be able to avoid being taken out of games even when removal is necessary. That

being said, there is not currently an accepted method of quick assessment that involves a clinical test like blood-work or diagnostic imaging. Rather than just using a symptoms check, ATCs should follow the NATA guidelines and use methods of testing that include balance, running, and answering questions similar to what is on the SCAT-5 assessment tool. While it is part of the NATA guidelines to perform such tests, "To assess concussion, 95% reported using the clinical examination, 85% used symptom checklists, 48% used the Standardized Assessment of Concussion, 18% used neuropsychological testing, and 16% used the Balance Error Scoring System" [(1)]. This study shows that the majority of ATCs use symptoms more often than any other assessment and that only a small percentage use anything other than that. Standard of Care should be seen as needing to use more than one assessment tool in order to evaluate properly for a concussion. Guidelines are often not followed due to the infrequent updates and sometimes outdated research that is used for these guidelines. More medical journals should be used and should be in contact with each other to put out common and regulated required quick assessment steps in order for the standard of care for concussion evaluation to be standardized and more likely to be successful in preventing injuries that stem from an undiagnosed concussion.

Part of being able to recognize what is and is not normal after a traumatic head injury is knowing a baseline for these same tests that will be used to compare after an injury and if the athlete has a concussion these same tests are used to test if the athlete has returned back to baseline. These tests should be included in all preparticipation exams every year for athletes so a baseline is always recorded and is updated annually. "Approximately 4 in 10 universities complied with recommendations for preparticipation assessments that included concussion history, neurocognitive testing, balance testing, and symptom checklists; this low proportion was partially attributable to 43.4% not using balance testing" (Kerr et al [4]). There is no point in using

these tests to assess for concussion if there is no baseline to compare them to. For instance, if an athlete does not have great balance on the BESS test then that is used to help assess for a concussion if the numbers are worse than the preparticipation exam (PPE) that is notable, but if there is nothing to compare it to then who is to say that the athlete just does not balance well. The same can be said about any of the other assessment tools used for concussion evaluation.

Methods

In order to find information and articles on my topic of concussion evaluation, first I needed to figure out what questions I wanted answered and then how far back was I willing to go in terms of years published. I wanted to know about concussion evaluation in a sideline setting specifically done by an ATC and how that differed from an assessment tool like the SCAT-5 or Impact test. I used keywords including Concussion, Evaluation, Athletic Trainers, Athletes. I also set the parameters to not include anything before the year 2000. This search yielded over 100 results and needed to be refined to find the most accurate and relevant information available to me. I then added return to play as a key phrase to reduce the articles down to 37. From there, I looked through all of the articles to find the ones most relevant to my research and used their abstracts to determine this.

Results

There are such a small amount of guidelines that are posted for Athletic Trainers to follow and some of them can contradict others. There needs to be a set standard of care for concussion evaluation and more specifically there should be rules in place for sideline evaluation. I do not believe that athletes should be automatically ruled out of games when they are taken to the sideline for concussion evaluation, but steps need to be taken to ensure that

athletes are being assessed efficiently and effectively on the sideline to reduce the risk of secondary injuries that can result from a lack of action by the ATC or other medical professional. A great way to start is with patient education and baseline testing for concussion symptoms. "The NATA position statement on concussion management recommends that all athletes, especially those playing sports with high concussion risks, be enrolled in a program involving cognitive and postural stability testing. These tests should be performed before the athlete engages in activity to establish a baseline for the individual and then after a concussion is diagnosed to identify any deficits that cannot be determined by self-reported symptoms" [(6)] If multiple tests are performed for baseline, the better you will be able to test them when they do get diagnosed with a concussion.

Education is another key factor in being able to have your players report their symptoms once they know about what symptoms to look for and the risks that come with not reporting symptoms. Many schools offer education on concussions to their athletes in order to give them the necessary skills to recognize when you should go to the ATC on staff. "Most universities provided concussion education to student-athletes (95.4%)"[(4)]. Including this in your preparticipation exam makes it a faster and more efficient way to ensure the safety of all athletes. "…parents and coaches are educated on the following aspects of concussion: prevention, mechanism, recognition and referral, appropriate return to participation, physical and cognitive restrictions for concussed athletes, and ramifications of improper concussion management"[(1)]. Most college age students have a good knowledge of concussion symptoms and still choose not to report due to high stress situations like a game atmosphere[(7)]. Therefore, education needs to go beyond just symptom knowledge and what to do in the event of a symptom occurrence. They need to include situational descriptions that provide athletes with examples of bad situations

caused by improper or underreporting. Another key factor in education is who is backing the education. If coaches and other important people on the team do not support reporting of symptoms then the culture and stigma surrounding concussions can never change[7]. "Overall, Peer Concussion Education Program (PCEP) participants were more likely to discuss concussions with teammates and athletic personnel than were control participants" (Kneaver et al.)[8].

Assessment of a concussion is the root of the issue and is the most important part because if the ATC or other medical professionals who may evaluate the athlete miss the concussion and it goes undiagnosed the consequences could cause further damage resulting in Second Impact Syndrome or CTE (Hobbs et al)[5]. The assessment on the sideline is very crucial to prevent further damage, therefore the proper assessment plan should be followed. This plan should include multiple tests and a symptom checklist. Players can lie about the symptom checklist and so using other assessment methods to ensure you are not missing anything is highly recommended. "For these reasons, a concussion-assessment model that uses objective baseline testing and careful postinjury testing is recommended"[1]. Many quick assessments that are objective and could help the ATC find any red flags or potential problems and that can help them decide to allow the player to go back in or to keep them from participating. For instance, the use of a light to check pupil dilation and responsiveness is quick and could show that there is a serious injury if they are not in sync with each other. Asking questions about location, time, day, and the score of the game can help determine if the person has a potential brain injury or concussion. Functional testing on the sideline allows for symptoms to present themselves and be a red flag for the Athletic Trainer. It also allows balance, posture, and strength of the athlete to ensure they are physically capable of competing in the rest of the game[3]. This along with

balance testing and a symptom checklist would ensure a higher percentage diagnosis of a concussion if one was present. "For concussion knowledge, ATs scored 78% on average in recognizing concussion signs and symptoms" (Lempke et al.)[9]. Symptom checklists are only effective if every AT is able to recognize a high amount of signs and symptoms when asked by an athlete or evaluating an athlete. Once the AT is able to recognize common and uncommon signs and symptoms of a concussion then each AT will be more effective in spotting signs of possible signs and symptoms. Thus ensuring that the athletes are safer from complications of further damage to the brain causing Second Impact Syndrome or CTE. "The odds of using standardized concussion sideline tools were affected by clinical experience… indicating that for every additional year of clinical experience, the odds of using sideline tools decreased by 3%"[9]. This indicates that as Athletic Trainers get more experience they believe they do not need a multi-step assessment in order to best treat an athlete. They feel as though they can ignore the NATA position statement and go by their own rules based on their clinical experience alone.

The only way to get these assessment plans regulated amongst all medical personnel involved in the care of athletes is to have concussion protocols that give a step by step plan to concussion evaluation for all medical personnel involved in care of athletes. Once that is accomplished there can start to be improvements in diagnosis and care. These protocols should be the same at all levels of play and need to be taught to all players, coaches, and medical personnel to ensure a standard of care is set for the athletes. When protocols like this are put into place and taught to all relevant parties there will be fewer arguments about players remaining in games and fewer instances of a player returning to the game with a misdiagnosis. The protocol would also provide the appropriate parties the opportunity to work with each other on getting faster and more efficient with concussion sideline testing. Many involved parties want

concussion testing to be brief to allow faster return, so they will not like the idea of adding more components of testing to it, but the end result will be better for the athlete and very efficient after multiple practice runs with it.

Discussion

The reality is that concussion testing and evaluation has improved immensely in recent years and it will continue to do that with development of technology and fast tests, but until those days are here we need to improve the skills we have already been taught. The most common profession to assess and diagnose sport related concussions are Athletic Trainers due to the increasing prevalence of Athletic Trainers across the country. We are more active in the athletic setting than doctors or other medical professionals which makes us the first line of defense when it comes to diagnosing concussions during sideline assessments in a game. If there is not a team physician present then the ATC on staff is seen as responsible for return to play decisions in athletes with suspected concussions (Table 5)[(6)]. Having protocols in place for evaluation and concussion management would go a long way to improving evaluation and lowering the instances of misdiagnosis. The safety that would provide for players, especially in high risk contact sports, would go a long way to preventing further damage to the brain. Many Athletic Trainers use their own combination of methods and some just use symptom checklists to assess athletes. This practice is dangerous because of how fleeting or delayed some symptoms are for athletes. More extensive testing would provide a more accurate measure while also providing something to compare to when in the return to play protocol after concussion diagnosis. The type of concussion protocol I am suggesting is more than just evaluation because it starts with preparticipation exams which include baseline testing for concussions and also provides education about concussions to the athletes. Providing the right kind of education that athletes

will relate to could make the difference between someone reporting or not reporting symptoms. The next phase is about using those baseline tests to compare when the athlete presents with a possible concussion. This will all be to decide if a player needs to be held from participation and referred to the team physician or allowed to return to play in that game.

If a protocol like what I am suggesting was implemented it would raise the standard of care to a higher level and make it so any medical professionals still using their own methods could be reported while also ensuring that every athlete gets the care they deserve from whoever is on their medical staff. All healthcare providers should strive to provide their patients with the best possible care so having legislation about concussion evaluation and management would likely pass. “Only 3% of certified athletic trainers surveyed complied with the recent position statement, which advocated using symptom checklists, neuropsychological testing, and balance testing for managing sport-related concussion”[(6)]. In order for these numbers to change, the protocols need to be regulated and required to ensure compliance among all personnel. “The majority of ATCs also indicated that standardized methods of concussion assessment (SMCA) would help provide more information for concussion management” [(6)]. With a lot of ATCs wanting a SMCA, legislation should be able to pass putting it into law without much fight. In fact, it might help to manage the pressures of sideline evaluations from all outside distractions or pressures due to the regulated fashion of the protocol. As long as you are following what is supposed to be done, then you do not have to worry about the eyes on you or the pressure of whether or not to take an athlete out of participation. The hardest part of implementing a new protocol would be ensuring that every person caring for an athlete in a medical setting was adhering to this new protocol. Another limitation to this would be writing the legislation and forming a team to create the protocol in a fast enough time that they would still be up to date

when finally published. After that, yearly updates could be made to the protocols in order to ensure they are still in line with current research.

Future research into this topic needs to be done in order to figure out the right protocol to ensure the safety of all athletes while still maintaining brevity for sideline evaluations. More research needs to be done into the effects of education on symptom reporting for high level athletes. Different combinations of methods need to be tested among athletes who have suffered concussions to show what would and would not be sufficient to diagnose a concussion in a sideline assessment. The limitations on this potential future study is finding participants who have a concussion and are willing and able to participate in the study.

Conclusion

Concussions are being treated more seriously than they ever have before and that means we need to keep evolving how we evaluate, prevent, and rehabilitate concussions. The more research that is done into the topic of concussions and all that branches out of it, the better the chances are that we start to understand and recognize them more easily even in crowded and distracting environments. Having legislation passed to put in a new protocol for concussion evaluation would limit the uncertainty of what method the Athletic Trainers would be using to evaluate athletes while also honing in and regulating care for all athletes whether they are high school football players or players in the NFL. This legislation would also make the pressures of sideline and on-field evaluations lessen because you are following a step by step plan regardless of who the player is or how important they are to the team. No athlete should be put at risk just because their coach wants them in the game and the guidelines put out do not provide the ATC on staff with enough power to overrule the coach.

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Slipping Rib Syndrome: A Functional Rehab Progression

Abstract

Introduction: Slipping Rib Syndrome (SRS) is a musculoskeletal condition that has been present in the literature for over 100 years. Although it has been documented for a long time, little consensus is made as to how it occurs or what exactly it is. This case study not only highlights what is known in the literature about SRS, but also highlights an athlete's rehab progression post-surgery to return to exercise protocol. **Background**: SRS is an elusive diagnosis as it is a clinical one. Often being confused for similar conditions, however imaging and diagnostics tools regularly report negative findings in the case of SRS. Although, through better understanding of the condition as it effects most commonly the cartilage of ribs 8-10, clinicians are better equipped to diagnose SRS. **Methods:** The subject of this study was a 18 y/o white female Division 1 Soccer goalie who reported to summer training with left sided rib pain. Popping and clicking was not always reported at the same time as pain, but often did. This pain was debilitating at times with no specific motion that would trigger incidence of pain. **Results:** Through the analysis of the literature, there is no defined or suggested rehab protocol for someone with SRS post-operatively. The approach we took with this athlete was like rehab used for an oblique strain as the bottom of the thoracic cage serves as an attachment site for the external obliques. The subject progressed well with little difficulty except as it related to conditioning. Something we viewed as common for athletes returning from any condition as they become deconditioned over time. However due to the area of the Injury extra precautions were taken as respiration utilizes the thoracic cage movement.

Introduction

Slipping rib syndrome (SRS), a condition documented in the literature since 1919 [1] [2] is a commonly missed diagnosis, often being underdiagnosed as the presentation is similar to that of other rib pathologies. However, radiologic imaging comes back as negative[2] for these possible other conditions. Although research does suggest diagnostic ultrasound has the potential as a diagnostic tool for SRS [3] [1, 4] [2] [5] the condition is mostly identified as a clinical diagnosis and its prevalence in the literature is not reflected in common practice as the condition is not commonly known by healthcare professionals. While present in the literature for over 100 years, and enough publications to conduct comprehensive and clinical reviews on SRS [1, 2, 5] there is still a gap in literature when it comes to post operational rehab and return to play protocol. The purpose of this study is to document the rehab and return to play protocol of a division 1 Women's soccer player to better understand the deficits that need to be addressed and overcome post-surgically, to allow for an athlete to return to elite level competition.

Background

Pathophysiology:

SRS is a defect of the cartilage of ribs 8-10 [5], this defect causes slipping of these ribs which can lead to damage or agitation of the intercostal muscle, or neurovasculature [1] sometimes it can even affect the 11th and 12th ribs not attached to the cartilage[1]. Sometimes this cartilage deficit can also lead to the affected ribs being

shifted up or down and getting wedged underneath an adjacent rib, causing a clicking sensation. In addition to defect in the cartilage, it is also theorized that repetitive trauma to this part of the rib cage can lead to SRS as well. [1, 2, 4, 5]

Diagnosis

While the signs and symptoms of SRS are like a large of other rib conditions[1, 2, 4], the diagnosis of SRS is considered a clinical one [1, 2, 4], as diagnosis has much to do with the patient's presentation, history, and paying close attention to the signs and symptoms present. Although the hooking maneuver is utilized in the clinical diagnosis of SRS it is not considered necessary as it elicits pain and a positive sign does not rule out all other rib conditions [6], while dynamic ultrasound has been shown to be a helpful tool in the diagnosis of SRS[1, 2, 4-6]. One study by Tassel et. Al. examined three different methods of utilizing dynamic Ultrasound to diagnose SRS. [3] In the study they had the patients lie supine and perform 3 different maneuvers while a radiologist conducted the ultrasound imaging. They would perform the Valsalva maneuver, a crunch maneuver with no raising of their shoulders off the table, and lastly, they had the radiologist apply deep and upward pressure to the rib being imaged and would note any displacement. They would also image the rib while the pt. would perform movements that would normally elicit a click or popping sound, however the findings from this imaging were not noted in the study. In this study they found that the use of the crunch maneuver and what they called the rib push maneuver correctly detected SRS in 89% of cases where the patients had SRS and did not detect it in 100% of the cases that did not have SRS.

Methods

Due to SRS being an uncommon condition, search strategy was left broad to include enough articles for background information. The terms used for both search strategies were the same and are provided in the figure below. The additional search strategy included a requirement of Human subjects and in the English language. When that search strategy yielded too many results, a publication date of 2010 to the present was added resulting in 48 total results. From there, the articles were reviewed with most being individual case studies on surgical intervention. Due to this not aiding in formatting of a rehabilitation plan and with many of the surgical interventions across case studies being the same; the sources included for use in this report included 6 published articles and one text book used as the primary source for formatting the rehab protocol of the athlete in this case study.

Fist Search Strategy	Second Search Strategy
Search Terms: (slipping rib syndrome) AND ((((("Diagnosis"[Mesh]) OR "Return to Sport"[Mesh]) OR "Surgical Procedures, Operative"[Mesh]) OR "Rehabilitation"[Mesh])	**Search Terms:** (slipping rib syndrome) AND ((((("Diagnosis"[Mesh]) OR "Return to Sport"[Mesh]) OR "Surgical Procedures, Operative"[Mesh]) OR "Rehabilitation"[Mesh])
Filters: Languages: English Species: human	**Filters:** Languages: English Species: human Publication date: 2010-present
Search Results: 71	Search Results: 48

This case study was performed on an 18-year-old, Division 1 soccer goalie. Due to the nature of her position and the constant impact on her rib cage, it can possibly be concluded that the repetitive trauma to her rib cage may have been the cause of her injury. She presented in pre-season summer workouts with intense and sharp pain on the left side of her rib cage. This pain fluctuated in how much pain it caused her, and no one specific movement would replicate her symptoms. She would often report a clicking or popping sensation but was not always consistent nor would it directly relate to the amount of pain she was in. The slightest amount of pressure could cause pain and nausea so when there was incidence of pain, ice was rarely applied. The Patient would take NSAIDS as needed for pain modulation. After going through an exploratory surgery to conform the condition as SRS and surgically fixate the affected rib, the patient was asked if they would be willing to participate as the subject of this case study to record the progress of their rehab and return to play protocol. The patient agreed and signed a document for written consent.

Results

Struggle receiving Diagnosis

Imaging was performed, there was no significant findings reported about the rib cage. Due to the signs and symptoms with no signs of fracture, SRS was determined as the diagnosis. Several referrals were made between orthopedic and cardiothoracic surgeons as both specialties deemed the condition something the other should be able

to handle. After several months of this, the patient's family reached out to a cardiothoracic surgeon they knew, and they were able to see her for a consultation.

After the consultation, it was decided an exploratory surgery would be performed to examine the injury site and determine if the issue was SRS. If it was confirmed to be SRS, the surgeon would resect part of the costal cartilage and pin the mobile rib to the sternum to prevent any further movement and alleviate the agitation to the intercostal neuromuscular.

Through the exploratory surgery, the doctor noted that the 10th rib was notably smaller and wedged underneath the 9th rib. The doctor noted that this was most likely causing irritation of the 9th intercostal nerve which was resulting in the issue. Additionally, costal cartilage meant to be attached distally and inferiorly to the 10th rib was protruding out and not attached to the 10th rib. The procedure that was then performed included an excision of the floating 10th rib cartilage and then the surgeon sutured around the distal 9th rib and through the remaining attached 10th rib cartilage to elevate the 10th rib and secure it above the 9th rib to prevent it from slipping back underneath the 9th rib and irritating the intercostal nerve. Then they sutured up the wound and sent the patient home the same day.

Rehab Process

After consulting the literature, there are no published works on specific rehab protocols for post operative SRS patients. When the patient's surgical incision had healed, the surgeon had cleared them to return to full sport activity. Due to physical demands and the constant impact a goalkeeper has, we were not going to allow them to

fully return to sport without strengthening the affected area as well as helping them recondition. Through consulting, *Rehabilitation Techniques for Sports Medicine and Athletic Training* [7] my preceptor and I developed a rehab progression based on fundamentals of core strengthening techniques similar to those that would be used for an oblique strain as the bottom of the rib cage where the injury occurred serves as an articulation for the external obliques. The following chart highlights our athlete's progression in her rehab. The primary incidence of the patient struggling to handle exercise was when it had to do with conditioning. This can be explained as the patient had been living a significantly more sedentary lifestyle due to the pain, they were in. Patient fully expected to return to their normal once properly conditioned.

The approach taken for the rehab progression centered around a 3 stage progressive core stabilization program. [7] The first phase of our rehab started focusing on core stabilization as well as mobility. A commonly practiced rehab intervention for Athletic Training is helping restore proper range of motion. To do so we wanted to make sure our athlete was able to mobilize her lumbopelvic complex as well as her thoracic spine due to the articulation to the affected ribs. This was achieved through exercises such as pelvic tilts, thoracic rotation, and lateral flexion. Additionally, we wanted to make sure the patient was still capable of proper respiration due to the close relation the diaphragm and thoracic cage have. We used diaphragmatic breathing to ensure that the bucket handle mechanism of the ribs was not negatively impacted by the SRS, or the procedure performed. Lastly, we used the Valsalva maneuver as the que to our patient to make sure they were fully engaging their core to provide proper stability. Isometric dead bugs were also used to encourage proper core activation during this first step.

The next phase of our rehab began to incorporate aspects of the second stage of the core stabilization program, strengthening.[7] We kept several of the exercises from the previous phase, such as diaphragmatic breathing and Valsalva maneuver, but started adding tasks that would require strengthening of muscle groups above and below the affected area. An example of this would be the addition of the glute bridge that works not only on stabilization of the core, but also the strength to maintain the same core position while also activating the glutes. We also added cardiovascular training as the patient had not been able to perform conditioning activities since the onset of symptoms. Lastly, we started moving out of isometric exercises and progressed to isotonic exercises to challenge the stability of the patient's core. While some of the progression was well tolerated such as glute bridges, our patient struggled with some of the stabilization exercises that were previously tolerated as well as the conditioning we added and the progression from isometric dead bug to regular dead bug.

The next phase we entered was another progression into some more challenging stabilization exercises such as standard and side planks, both on the patients' knees. We also added more functional strengthening exercises that still required core stabilization such as the squats and squat-holds on a bosu ball.

Lastly, in the final phase of our rehab before our patient started working more with sports performance. We challenged both their strength and stability by increasing volume and making the exercises more challenging, for example full planks for longer amounts of time. Additionally, we progressed to the third level which is power with

exercises such as Russian twists, weighted ball toss with rotation, and medicine ball diagonals.

Week of Nov. 29th	**Day 1**	**Day 2**	**Day 3**
Ultrasound	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle
Diaphragmatic Breathing	5 Min	5 Min	5 Min
Valsalva Maneuver	2x10, 5 sec hold	2x10, 5 sec hold	2x10, 5 sec hold
Pelvic Tilts	3x10	3x10	3x10
Isometric Dead-bugs	1x10, Bilateral, 5 sec hold	1x10, Bilateral, 5 sec hold	1x10, Bilateral, 5 sec hold
Thoracic Rotation	3x10	3x10	3x10
Lateral flexion	3x10	3x10	3x10
Marching on foam	5 min	5 min	5 min
Ice	15 min	15 min	15 min

Dec. 6th – Dec- 30th	**Week 2**	**Week 3**	**Week 4**
Ultrasound	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle	5 min, 3.3 MHz, .8 W/cm^2, 100% Duty cycle
Diaphragmatic Breathing	3 Min	3 Min	3 Min
Valsalva Maneuver	2x10, 5 sec hold	2x10, 5 sec hold	2x10, 5 sec hold
Glute Bridge	3x12 w/ 10 lbs	3x12 w/ 10 lbs	3x12 w/ 10 lbs
Dead-bugs	3x8	3x8	3x8
Isometric Thoracic rotation **(GTB?)**	3x8, 10 sec. hold	3x8, 10 sec. hold	3x8, 10 sec. hold
Lateral Flexion	3x10, 8 lbs	3x10, 8 lbs	3x10, 8 lbs
Single Limb Balance on foam (difficult but tolerable)	3x30 sec.	3x30 sec.	3x30 sec.
Glute bridge on heel	5x15 sec, isometric hold	5x15 sec, isometric hold	5x15 sec, isometric hold
Bike	7-8 min, 60 RPM level 3/ 4 resistance (tried for 10, not tolerated)	7-8 min, 60 RPM level 3/ 4 resistance (tried for 10, not tolerated)	7-8 min, 60 RPM level 3/ 4resistance (tried for 10, not tolerated)
Ice	15 min	15 min	15 min

Jan. 3rd – Jan. 14th	**Week 4**	**Week 5**
Valsalva	2x10, 5 sec hold	2x10, 5 sec hold
Glute Bridge on heels	5x30 sec, isometric hold	5x30 sec, isometric hold
Deadbugs	3x8, w/ 3lbs	3x8, w/ 3lbs
Plank on Knees	3x30 sec	3x30 sec
Squats on Bosu Ball	3x8	3x8
Squat-hold on Bosu Ball	3x30 sec	3x30 sec
Isometric Rotation	BTB 3x12, 5 sec. hold	BTB 3x12, 5 sec. hold
Reverse Crunches	3x5	3x5
Side Plank on Knees	3x30, both sides	3x30, both sides
Bike	20-30 min, 70 RPM, level 3/ 4 resistance	20-30 min, 70 RPM, level 3/ 4 resistance
Ice	20 min post exercise	20 min post exercise

Jan. 17th- Feb 7th	**Week 6**	**Week 7**	**Week 8**
Bike	10 min. warmup	10 min. warmup	10 min. warmup
Dead Bugs	3x8, 10 lbs., bilateral	3x8, 10 lbs., bilateral	3x8, 10 lbs., bilateral
Plank	3x 40 sec plank	3x 40 sec plank	3x 40 sec plank
Squat on Bosu Ball	3x12	3x12	3x12
Weighted Ball toss w/ rotation	3x10	3x10	3x10
Russian Twists	3x10	3x10	3x10
Side Plank	3x20, both sides	3x20, both sides	3x20, both sides
Med Ball Diagonals	3x10	3x10	3x10
Ice	20 min post exercise	20 min post exercise	20 min post exercise

Key:

Green indicates ease of the exercise progression

Yellow indicates moderate level of difficulty with exercise progression compared to previous phase

Red Indicates high level of difficulty with performing exercise progression

[redacted]

Return to normal exercise/ sport

After 8-week rehab progression, the patient returned to lifting with their team as tolerated. They progressed in weight at their own pace but were able to practice and be around their team. Athlete also began to progress into more sports specific training such as diving with no problems. This information was not documented as Sports Performance took over their strength training and return to function/ sport progressions. Athlete is still progressing to activity level from the summer before injury occurred, but there have been no substantial setbacks or lack of progress noted.

Discussion

Through the patient's progression, there were minimal challenges. As is common with athletes who spend time injured, our patient struggled with conditioning. In addition, the area of concern is constantly moving when breathing occurs, making it another barrier to returning to what would be considered normal conditioning for this patient's sport. There is no conclusion as to if the patient reacted in accordance with the literature, as there is no available information on rehab and return to play protocol for this condition.

The literature present on SRS focuses mostly on surgical interventions and the importance of proper diagnosis. Additionally, although it is well established what SRS is, causality is variable in the literature as is the population that it occurs in. Some studies seemed to indicate that the condition is more prevalent in females than in males and others say SRS is no more prevalent in one sex to the other. Additionally, some studies seem to indicate that youth are not as likely to have SRS due to their flexible cartilage and body structure, and that SRS is more common in middle aged populations. While

some case studies have most patients with SRS in their late teens and early to mid-twenties. Although SRS has been in the literature for over one hundred years, due to its uncommon nature, or possibly the lack of common knowledge of the condition, little consensus is made in the literature.

Conclusion

The purpose of this case study was to bring more attention to SRS in addition to highlighting the rehab process for an individual who had surgery to repair this condition. Through analyzing the available literature, not only must this condition be more commonly talked about and addressed to help better diagnose people with this condition. But that more comprehensive research must be done on SRS to better understand what populations are more commonly affected by this condition, what surgical interventions may be used to treat this condition, how to better diagnose this condition, and what rehab exercises and protocols should be used for patients post-operatively.

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The FIFA 11+ : Can an ACL Injury Prevention Program be a Hamstring Injury Prevention Program?

[redacted]

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MAT 6960 – Athletic Training Capstone Project

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Abstract

Introduction*: Hamstring strains are a debilitating injury that take a large amount of time to fully recover. The objective of this study is to evaluate if the FIFA 11+ injury prevention program is effective at reducing hamstring strains in male soccer players aged 17 to 23.*

Methods*: A literature search was completed on PubMed in March of 2022. PICO statement is as follows: P – male soccer athletes, I – eccentric hamstring training OR FIFA 11+, C – N/A, O – hamstring strains, T – course of a soccer season. A filter was added to only include subject ages 13-18 and 19-24. Inclusion criteria are as follows: peer-reviewed text, full-text, original publication in English, published in the last 20 years; included components of the PICO statement; evaluated male soccer (football for European studies); included eccentric hamstring training as part of the FIFA 11+ injury prevention program as a warm-up; study design of clinical trial, a randomized control trial, a systematic review, or a meta-analysis; mean age fell within the range of 17 to 23. Exclusion criteria are as follows: alternative outcomes were evaluated as primary outcome measures and related the data back to injury incidence; interventions evaluated other than the FIFA 11+ as an injury prevention program.*

Results*: There was a reduction of hamstring injury incidence with the use of the FIFA 11+ as the warm-up for male soccer athletes aged 17 to 23 compared to groups that did not use the FIFA 11+ as a warm-up.*

Conclusion*: The FIFA 11+ injury prevention program is effective at reducing hamstring strains in male soccer players aged 17 to 23. There is room for growth within sports warm-up procedures if other sports model a warm-up program off of the FIFA 11+ to reduce lower extremity injuries. Other sports should start to adapt principles of the National Academy of Sports Medicine warm-up and the FIFA 11+ to create standardized warm-up and injury prevention programs to reduce hamstring strain injuries.*

Introduction

Hamstring injuries are one of the most prevalent and time intensive injuries that occur in sports. The rapid motion from a concentric to eccentric contraction of the hamstrings in running, stopping, and cutting causes strain in the hamstring that supersedes the threshold of injury. They require extensive treatment, long rehabilitation periods of more than a month, and are often accompanied by injury recurrence after the initial injury.[1] One recommendation to reduce hamstring injuries is to incorporate Nordic Hamstring Exercises into a training program focusing on the eccentric contraction of the hamstrings. There has been extensive research performed to find ways to reduce the occurrence of lower extremity injuries and to determine proper ways to implement a warm-up procedure in sports. One of the most heavily researched warm-up programs in soccer is the FIFA 11+. The FIFA 11+ uses eccentric hamstring contractions and

sport-specific exercises to prepare athletes for physical activity and increase strength to prevent injuries. With knowledge of hamstring injuries and proper warm-up techniques, the FIFA 11+ could be effective at reducing hamstring strains. The purpose of this study is to evaluate if the FIFA 11+ injury prevention program is effective at reducing hamstring strains in male soccer players aged 17 to 23.

Review of Literature

Hamstring injuries the most common non-contact injury in any athletic sport that involves sprinting, cutting, or any quick starts, stops, or change of direction.[1] Hamstrings cross two joints, the hip and the knee. Because of the orientation of the hamstring and the quadriceps, Lombard's paradox is observed: the hamstrings and the quadriceps contract at the same time despite them being antagonists to each other. There is much debate on the type of contraction a hamstring has during a sprinting pattern.[2] Some argue there is an equal amount of concentric and eccentric hamstring contraction during sprinting while others argue the majority of the length of the contraction is the isometric phase due to Lombard's paradox. The most common time in a contraction to obtain a hamstring injury is during the lengthening phase, or the eccentric contraction.[3] At the beginning of a sprint, an athlete goes from a stop to a quick acceleration and experiences all phases of a muscle contraction in a very short period of time.

Hamstring injuries also take a long time to fully repair from acute injury to full return to play. Additionally, the risk of subsequent hamstring injuries increases after an athlete has injured a hamstring once.[4] The incidence of acute hamstring injury is up to 1.9 per 1000 exposure hours in men, accounting for up to 15% of all soccer-related injuries and up to 68% of those hamstring injuries are reinjured within a season.[5] From the 2014-2015 to 2018-2019 soccer season, hamstring tears accounted for 7.0% of the 2821 injuries to NCAA male soccer

players, making them the second most reported injury.[6] Based on the NCAA Surveillance Data, hamstring strains are a prevalent injury and confirming the need for hamstring injury prevention programs.

Exercises that evoke muscle soreness but not injury are effective exercises in increasing muscle strength.[7] General muscle strength deficiencies have been proposed as one of several risk factors for hamstring injuries.[8] Increasing general hamstring strength may reduce incidence of hamstring injuries. The Nordic Hamstring Exercises (NHE) have been shown to be an effective tool to increase eccentric hamstring strength, developing higher maximal eccentric hamstring strength torques when compared to regular hamstring curls.[3] NHE are one of many eccentric hamstring exercises that encourage hamstring strengthening and can prevent hamstring injuries in male soccer athletes. [1,3,4,7] Increasing muscle strength during the eccentric phase may reduce the vulnerability of the muscle to strain and subsequently reduce the overall incidence of injury.[8] Research suggests eccentric training for the hamstrings prevents both single occurrence and recurrence of hamstring injuries.[1,3,4,7,8]

The FIFA 11+ is an injury prevention program that was developed by an international team of experts as a complete warm-up program to replace the usual warm-up prior to training. Throughout the program, attention is paid towards correct posture, good body control, balance, and neuromuscular control. Most research on the FIFA 11+ has focused on ACL injury prevention programs. Fewer ACL injuries have been reported when teams use the FIFA 11+ as a warm-up program compared to teams that do a general, non-specific warm-up program, accounting for a 4.25-fold reduction in the likelihood of incurring an ACL injury.[9] There has been little research done on the efficacy of the FIFA 11+ for preventing hamstring injuries. The evidence has shown that college-aged male soccer players may benefit from performing the

FIFA 11+ program during warm-up for training and competition, or from including NHE in their strength training regimen.[10] Since eccentric hamstring training is included as part of the FIFA 11+, it was evaluated if there is a correlation between the use of the FIFA 11+ as a warm-up program and rate of hamstring injuries in male soccer athletes aged 17 to 23 over the course of a soccer season.

Methodology

In March of 2022, a literature search was conducted for eligible studies that included the appropriate criteria for evaluation and inclusion. Articles had to be peer-reviewed, full-text, original publications in English, published in the last 20 years, and included the components of the PICO statement. The PICO search terms are as follows:

- Population – male soccer athletes
- Intervention – eccentric hamstring training OR FIFA 11+
- Comparison – not applicable
- Outcome – hamstring strains
- Timing – course of a soccer season.

Additionally, a filter was added to limit the age range to adolescents (13-18) and young adults (19-24) on PubMed. PubMed was the source of all relevant articles for the study. The following terms were used to perform the electronic search: ("male" AND ("soccer" OR "football")) AND (("eccentric" AND ("strength*" OR "train*")) OR “FIFA 11+”) AND ("hamstring" AND ("strain" OR "injur*")).

Inclusion criteria are as follows: peer-reviewed text, full-text, original publication in English, published in the last 20 years; included components of the PICO statement; evaluated

male soccer (football for European studies); included eccentric hamstring training as part of the FIFA 11+ injury prevention program as a warm-up; study design of clinical trial, a randomized control trial, a systematic review, or a meta-analysis; mean age fell within the range of 17 to 23. Exclusion criteria are as follows: alternative outcomes were evaluated as primary outcome measures and related the data back to injury incidence; interventions evaluated other than the FIFA 11+ as an injury prevention program.

Reporting of Results

After the electronic search was run in PubMed with appropriate filters, 14 studies were obtained. Out of those 14 studies, three met the inclusion criteria. Table 1 includes the results of those three studies.

Table 1. Results

	Grooms et al.[11]	**Nouni-Garcia et al.[12]**	**Silvers-Granelli et al.[13]**
Study design	Prospective cohort study	Cohort Study	Randomized control
Sample	One American College Men's soccer team – 41 male collegiate athletes.	Two men's amateur soccer teams – 86 players.	65 NCAA Division I and Division II men's college soccer teams (1525 players).
Procedure	Control – standard dynamic warmup before every practice and game; intervention – F-MARC 11+ injury prevention program before every practice and an abbreviated form before games.	Control – regular training program; intervention – performed 11+ protocol twice per week. All players trained three times per week for 1.5 hours per day.	Control – unchanged warmup from normal procedures; intervention – FIFA 11+ was utilized three times weekly as a warm-up.
Outcome Measure	Lower-extremity injury risk and time lost to lower-extremity injury.	Incidence of hamstring injury.	Lower-extremity injury incidence rate and total days missed due to lower-extremity injury
Results	The muscle strain injury rate in the referent	There were 35 hamstring injuries in the	There were 55 hamstring injuries in

	season was 6.2/1000 AE. In the intervention season, muscle strain injury rate was 0.55/1000 AE. Time lost to thigh muscle strain in the intervention season was less than the referent season.	CG compared with 18 hamstring injuries in the IG. The number needed to treat to prevent one new case was 3.31 in bicep femoris injuries and 10.7 in recurrent hamstring injuries.	CG compared with 16 in the IG, accounting for 2.74-fold reduction in the likelihood of incurring a hamstring injury.

F-MARC – FIFA-Medical Assessment and Research Center; AE – athlete exposures; CG – control group; IG – intervention group; NCAA – National Collegiate Athletic Association

Discussion

Of the articles found, hamstring injury rates decreased with the implementation of the FIFA 11+ injury prevention program.[11-13] Time lost due to injury was also decreased with the implementation of the FIFA 11+.[11] The conclusions formed from the articles agrees with previous research studying ACL prevention techniques and the FIFA 11+.[9] As previous research has shown, NHE help reduce the incidence of hamstring strains.[1,3,4,7,8] The articles found have similar results to previous research surrounding NHE and hamstring strains as the FIFA 11+ includes NHE as part of the injury prevention program.

The purpose of a warm-up prior to physical activity is to optimize performance, prevent injury, and prepare an athlete psychologically. A warm-up leads to increases in peripheral blood circulation, soft tissue elasticity, synovial lubrication of the joints, oxygen uptake kinetics, ATP turnover, muscle cross-bridge cycle rates, and muscle fiber conduction velocity rate.[14] A warm-up should not cause fatigue, but it should elicit the internal physiological changes necessary to promote performance and prevent injury. A proper warm-up should include submaximal activity, stretching, sport-specific movement, injury prevention techniques, a gradual progression

in the intensity level and movement specificity for the activity, and an increase in speed from half-tempo to "game pace" by the conclusion of the warm-up.[14]

The FIFA 11+ is a 20-minute program that is utilized on the field without any required additional equipment.[13] The "11+" consists of three parts with a total of 15 exercises that should be performed in the specified sequence prior to the start of each training session. Part 1 (8 minutes) focuses on running exercises at a slow speed combined with active stretching. Part 2 (10 minutes) consists of six sets of exercises focusing on core and leg strength, balance and plyometrics / agility, each with three levels of increasing difficulty. There are three levels for each exercise (levels 1-3) that increase difficulty to allow for both individual and team progression throughout the season. Part 3 (2 minutes) consists of running exercises at moderate to high speed combined with planting and cutting movements. By the end of the warm-up, participants should be ready for athletic participation.

Part 1 of the FIFA 11+ contains six running exercises at submaximal speed and activity stretching: Straight Ahead, Hip Out, Hip In, Circling Partner, Shoulder Contact, and Quick Rorwards & Backwards. Part 2 contains strength, plyometric, and balance exercises: the Bench (plank), Sideways Bench (side plank), Hamstrings, Single-Leg Stance with a Ball, Squats, and Jumping. Part 3 contains running exercises at game pace: Across the Pitch, Bounding, and Plant & Cut. The FIFA 11+ starts with submaximal activity as players are running at half-speed. Active stretching is included with the hip out and hip in movements. Sport-specific movements are performed via circling partner, shoulder contacts, quick forwards and backwards, running across the pitch, and plants and cuts and the use of a soccer ball in some drills. Injury prevention techniques are included in Part 2 of the program with the bench, sideways bench, hamstrings, single-leg stance with a ball, squats and jumping. These exercises focus on injury prevention by

strengthening the core and legs with balance and plyometrics while steadily increasing difficulty over time. The program gradually increases in intensity level by progressing from submaximal speeds to strengthening exercises to full speed running while adding in sports specific moves at different speeds to be ready for full activity and participation.

The FIFA 11+ contains exercises which focus on neuromuscular control and eccentric strengthening of the muscles. As athletes are progressing through Part 1 of the FIFA 11+, they warm up their muscles and decrease the viscosity of the synovial fluids within their joints, especially the knee and hip joints which the hamstrings act upon. As they start to incorporate contact drills, the athletes begin to incorporate sports specific moves that the muscles are able to adapt to at a slow speed. In Part 2, the plyometric training alters lower limb kinematics and increases eccentric hip torque and functional performance. The balance exercises increase kinesthesia of the hip and knee joints and allows for an increase in proprioception of the hamstring and body in space. NHE are used as the hamstring strengthening exercise with an increase in repetitions as the program advances. In Part 3 as they are running, bounding, planting, and cutting, athletes are further improving their kinesthesia and allowing the body to adapt to their imposed demands. Due to the neuromuscular adaptations that occur during the warm-up, hamstring injuries are reduced with the use of the FIFA 11+ injury prevention program.[11-13]

Implications and Limitations

As with all academic research, there are multitudes of implications and difficulties in implementing interventions in a real-world context. Positive study outcomes do not directly translate into injury prevention.[3] Specific collaborations and intervention protocols are typically followed throughout a study and may not be reproducible in a real-world situation. The results

from these studies do provide a basis for injury prevention with eccentric hamstring exercises but cannot guarantee injury prevention. Additionally, eccentric hamstring exercises are a fundamental exercise in injury prevention, but a comprehensive prevention program should be diverse and tailor to individual sports and athletes needs to provide overall strengthening.[1,7] Coaching and medical staff also must consider if the eccentric exercises should be implemented for the whole team or just for previously injured players.[4]

One limitation seen around the use of the FIFA 11+ is it is soccer specific. The program is created by the Federation Internationale de Football Association and is published by the FIFA Medical Assessment and Research Centre. The articles referenced in this paper only observed athletes in the setting of soccer, limiting its generalizability to all populations. There is a multitude of research on male soccer athletes and hamstring injury prevention programs but there is a lack of extensive research in other sports. Soccer is also the only sport that has a standardized warm-up program that is internationally recognized.

Future Recommendations

NHE were found to be an effective eccentric hamstring exercise to strengthen the hamstring and decrease overall risk for hamstring injury occurrence. Not only does this exercise contribute to decreasing risk of first time injuries, it also decreases the risk of reinjury after recovery. Further research should be conducted to evaluate the timing of the intervention to find out what is most effective. Future studies can also focus on pitfalls and opportunities regarding implementation of eccentric strengthening as an injury prevention in soccer and including a longer follow-up time to analyze the long-term effects of eccentric hamstring exercises and effectiveness on recurrent injuries in this population.

For the future, there is a need for more studies to demonstrate that the FIFA 11+ reduced hamstring injuries. While research on this topic exists, there is not a large depth of research. It is already known that the FIFA 11+ is effective at reducing ACL injury incidence, but more studies should be done with different populations to better generalize the results of the FIFA 11+'s efficacy in reducing hamstring injuries within soccer. I also recommend that all sports have a warm-up program that is standardized similar to how the FIFA 11+ is for soccer, however each program can be tailored to the demands of the athletes in each sport. The FIFA 11+ not only has been shown to reduce incidence of hamstring injuries in male soccer athletes, but it reduces overall lower-extremity injury rate.[13] Future research should investigate if the sport-specific concepts behind the FIFA 11+ can be replaced with different sports' sport-specific activities and maintain its effectiveness as in injury prevention warm-up program. If we are able to create and effectively test alternative warm-up programs that have all of the National Academy of Sports Medicine guidelines for an effective warm-up, we may be able to reduce the occurrence of hamstring injuries in other sports.

Conclusion

Hamstring injuries are one of the most prevalent lower extremity injuries seen in soccer. After an athlete suffers from one hamstring injury, they are likely to suffer from another hamstring injury in the future. Studies have shown NHE are an effective way to reduce hamstring injuries in male soccer athletes. The FIFA 11+ has incorporated NHE into the strengthening section of the warm-up and has been shown to reduce hamstring injuries in male soccer athletes. There is room for growth within sports warm-up procedures if other sports model a warm-up program off of the FIFA 11+. There was extensive research put into creating the FIFA 11+ to be an effective warm-up and injury prevention program within soccer, and the

results from these studies suggest that other sports may adapt similar methods to prevent lower extremity injuries. Sport-specific training is imperative in warm-ups to create the connection with the body and the sport. In the future, we should adapt the FIFA 11+ to other sports and create alternative warm-up and injury prevention programs that can reduce the incidence of hamstring injuries across all sports.

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The Effects of Blood Flow Restriction Training on Range of Motion after ACL Reconstruction

[redacted]

MAT 6960

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Introduction

One of the primary goals and toughest challenges of rehabilitation after anterior cruciate ligament reconstruction (ACLR) is regaining extension range of motion and rebuilding muscle strength. Blood flow restriction training (BFRT) combined with low-intensity resistance training has been shown to improve quadriceps function and strength at a comparable level to high-intensity resistance training (HI-RT). This makes it a viable option for those that are unable to do HI-RT due to an injury or surgical procedure. Because of this, we would like to assess if BFRT will help our patient regain full extension range of motion by improving knee extensor activation and strength. The patient, who was about 9 weeks post-ACLR and meniscus repair, underwent BFRT twice a week for about 12 weeks and extension ROM measurements were taken before rehabilitation and again after each BFRT session. The purpose of this study was to assess if BFRT can be used to aid in regaining extension ROM after ACLR.

Background

Anterior cruciate ligament (ACL) tears are one of the most common sports injuries that we encounter. With a long recovery process in the months to come, it is important to outline the goals we have for patients after ACL reconstruction. Our primary goals for rehabilitation after surgery include full range of motion, full weight bearing, recovery of neuromuscular control, restoration of muscle strength, and eventually return to the activity level and function they were at before injury.[8] Rehabilitation plans will include exercises and treatments targeted at all of these goals.

The most common problem that we may encounter during this rehabilitation process is a loss of extension.[6] If extension is not regained shortly after surgery, it is typically more difficult to regain later in the rehab process. A loss of 5+ degrees of extension directly causes an athlete to

have abnormal gait, which can lead to patellofemoral pain and quadriceps weakness. Aside from the addition of knee pain, muscle imbalances can lead to reinjury once they return to sport.

Blood flow restriction training is a technique that has broken a lot of ground in the last 20 years. The treatment began as KAATSU in Japan in 1966 and prior to 2008 the equipment was rarely available outside of Japan.[9] It consists of using a pressurized cuff that is placed proximal to the targeted joint to impede venous blood flow from the limb, but not arterial flow into the muscle. Little is still known about the cellular mechanisms that occur due to BFRT. It has been shown that using BFR with low load resistance training can provide almost identical strength gains to those doing heavy-load resistance training.[1] while also decreasing pain and joint stress.[2] Considering that our post-surgical patients after ACLR are not able to work out at a high intensity but still need to rebuild the muscle lost to atrophy, BFR can be a viable option.

An important goal of pre- and post-operative rehabilitation is restoring quadriceps function as it will have a positive effect on the overall outcome after surgical intervention to the lower extremity.[4] While there were no articles directly linking BFR to improving range of motion, we believe that the restoration of quad function, decrease of knee pain, and improved quadricep strength would help to improve our patient's ROM. In one study comparing BFRT to HL-RT, there was a greater increase in ROM in the BFRT group (78± 22%) compared to the HL-RT group (48 ± 13%).[3]

The purpose of this study is to assess if BFRT can be used as an aid in regaining extension ROM in our patient that was about 9 weeks post ACLR and meniscus repair and lacking about 12 degrees of extension when coming in cold.

Method

The patient is a 23-year-old male that underwent ACLR and meniscus repair. After trying numerous methods in rehabilitation to regain extension ROM, we found that the patient was stuck at around 10-12 degrees when coming in for treatment and only gaining a few degrees after. Based on our research, we felt it would be beneficial to incorporate BFRT to assist with quadriceps activation to help gain more ROM. Consent was obtained from the patient before the study began.

The patient begins receiving blood flow restriction therapy about 9 weeks after ACLR and meniscus repair. The intention is for the patient to continue their supervised physical therapy sessions twice a week in the athletic training room which will then be followed by a BFRT session at the physical therapy clinic. Range of motion measurements will be taken before the physical therapy session and again after BFRT. Pain ratings on an NPS scale will also be documented before rehabilitation begins. For the other three days the patient will do rehabilitation exercises in the athletic training room as instructed by the PT and athletic training staff.

Lower extremity cuffs from RockCuff brand will be used. Limb occlusion pressure will not be measured, but rather perceived pressure ratings of 6-7/10 will be used to determine pressure.[5] About 2-3 turns on the cuff for the patient are recommended by the maker. Skin coloration and venous appearance will be monitored during the session. Check-ins with the patient will also be done to monitor for pain, numbness, or tingling.

Physical therapy sessions will typically range from 45-60 minutes depending on the planned exercises for the day. Strengthening exercises, manual therapy, jumping progressions, running progression, and ROM exercises will all be included in some way in these sessions. A hop test will be done during this time period and shooting drills will also be implemented.

BFRT sessions will be 35-45 minutes long. Trial exercises begin with straight leg raises, short-arc quad, long-arc quad, and bodyweight squats. These exercises will be progressed with good feedback from patient and others will be added as strength progresses. Single leg shuttle press, treadmill walking forwards and backwards, single leg RDL, hamstring curls on swiss ball, and balance exercises will be included among others that the PT feels is appropriate at the corresponding stage of rehabilitation. PT will refrain from adding exercises during BFRT that were already done in the physical therapy session before it.

Results

The table below shows extension ROM measurement and pain scale ratings on the days that PT and BFRT were both done.

	Ext ROM before BFR	Ext ROM after BFR	Pain rating NPS
1/18/22	-8	-5	2/10
2/10/22	-12	-4	0/10
2/15/22	-12	-5	0/10
2/22/22	-10	-5	0/10
3/3/22	-8	-5	1/10
3/8/22	-11	-5	1/10
3/22/22	-7	-3	1/10
3/25/22	-6	-3	1/10
3/29/22	-9	-5	0/10
3/31/22	-9	-3	0/10
4/5/22	-7	-3	1/10
4/8/22	-8	-2	2/10

Discussion

The main goal for implementing BFRT for this patient was to improve quadriceps activation and strength, which we hoped would help to improve extension ROM. While no statistical analysis was completed with the data, the patient is trending in a positive direction with gaining full extension range of motion. The pain ratings that were reported showed no specific trend, but some soreness and pain was associated with days following an increase in activity and some following a hop test.

Something that we hoped to achieve was retaining the gained ROM from the previous session. The patient would typically come in cold and have less extension but then improve after rehabilitation. In the earlier sessions the patient would come in and measure at lacking around 10-12 degrees of extension. After several weeks, this began to improve, and we were getting lower numbers initially when they came in (around 6-9 degrees). Following PT and BFRT they would improve in ROM in comparison to their initial measurement, but only gained 3 degrees of extension from the first post-BFR measurement to the last.

The improvement in extension could likely be associated with the strength gains and quad activation from the BFRT. However, we did not use strength/hypertrophy measurements or muscle cross-sectional area as an outcome measure for this study which is something that most of the studies have used as their outcome measures. For this reason, we cannot say that this case followed the trends of previous studies because none of them used ROM as an outcome measure. Regarding pain ratings, the patient had low pain ratings before BFRT began and there was no trend in increasing or decreasing pain so we cannot relate this to the literature either. Observation notes did indicate that the patient did not have pain during BFRT sessions.

While the intention was for the patient to receive BFR twice a week, this was very difficult to achieve while the athlete was in season as they were traveling with their team to away

games. Availability of the physical therapists was also an issue at times such as during school breaks, which is why there is a two-week gap in March. It was not until the second half of the study that the patient was able to do BFRT twice a week consistently. This could have impacted the results as most studies that were successful with the use of BFRT had higher frequencies of treatment.

There could be some error in interrater reliability. Initial measurements (pre-rehabilitation) were done by the physical therapist or AT staff while the post-BFR measurement was done by a different physical therapist that was doing the BFRT. There could be some differences in how measurements were taken, so there could have been slightly less or more of an impact by the BFRT.

There was no way to limit other exercises and therapy techniques that could have been helping the athlete gain ROM. PNF stretching was added over the last two weeks of the study which could have had some impact on ROM. Other exercises were progressed, and manual therapy techniques were done as well. The patient also did rehabilitation before BFRT so we cannot say that the BFRT was the sole reason for an improvement in range of motion. Because of these confounding variables we cannot establish a causal relationship between the BFRT and the gain in ROM.

For the future, a more consistent schedule could be beneficial in achieving better results. Having the patient receive BFRT 2-3 times a week as recommended by literature would be ideal if it is possible.[7] Outcome measures could be better controlled by having the same person measuring both before and after rehabilitation. It could also be beneficial to begin doing BFRT earlier in the rehabilitation process as it can help to improve physical function and control pain. Some research indicates that BFRT could be used in the stage after injury and before surgery to

help prevent deterioration of muscle endurance after the procedure, which could also be beneficial for many different procedures.[10]

Conclusion

The results of the study did conclude that BFRT can be used to improve ROM. Overall, the patient's range of motion did improve enough to avoid arthroscopic surgery as they were within 5 degrees of normal range. The patient will continue the BFRT until it is no longer beneficial. BFRT could be incorporated more in the rehabilitation process not only for those undergoing ACLR, but other lower extremity injuries and procedures as well. It is a relatively simple treatment that has positive effects on improving strength and controlling pain.

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Labral Repairs: Does External Rotation Ever Fully Return?

[redacted]

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April 30, 2022

Abstract

Purpose: Decreased external rotation (ER) active range of motion (AROM) is a common complaint following shoulder labral repair. In this critical analysis, I researched the clinical results as well as methods used to increase ER AROM following arthroscopic labral repair. **Type of Study:** Critical analysis. **Methods:** I researched studies looking at postsurgical arthroscopic labral repairs and the results as well as complications that were related to the repairs. My search included multiple types of labral repairs including Bankart and SLAP repairs. **Results:** Following research studies have shown there are many factors that contribute to an increase in ER AROM post labral surgery. Studies show surgical techniques, early mobilization, reduction of post-operative pain and consistent physical therapy will increase post-surgical ER AROM as well as shoulder strength. **Conclusions:** Arthroscopic labral repairs commonly reduce ER AROM but this deficit can be regained by combining multiple techniques such as certain types of surgical anchoring, early mobilization, and consistent physical therapy throughout athlete rehabilitation.

Background

Anatomy

The shoulder joint is commonly compared to a golf ball on a tee[1]. The shoulder is stabilized by muscle (commonly the rotator cuff muscles), ligaments (glenohumeral ligaments: superior, middle, and inferior) and the capsulolabral complex. The labrum is a ring consisting of fibrocartilage that connects to the rim of the glenoid fossa. The labrum is poorly vascularized like the meniscus in the knee. Due to poor vascularization the healing rate in some areas of the labrum decreases compared to more vascularized areas such as the superior and anterosuperior

portions. The labrum creates an increased depth of the glenoid fossa creating stability as well as a suction like closure.

Labrum Injury Types:

SLAP Tear Classification[3]

Type I	Fraying and degeneration of the superior labrum with a stable biceps tendon anchor
Type II	Detached labrum and biceps anchor from the superior glenoid as well as the complex arching away from the glenoid neck
Type III	Bucket handle tear of superior labrum with the biceps tendon and remaining labrum intact
Type IV	Similar to type III, however the tear extends into the biceps tendon

Bankart Lesion Classification[4]

Type I	Detached labrum with a well-developed broad glenohumeral ligament and no inferior foramen
Type II	Detached labrum with a poorly developed glenohumeral ligament and inferior foramen
Type III	Ligament tear with labrum disruption on a shrunken inferior glenohumeral ligament and wide inferior foramen
Type IV	Severe ligament disruption, with a large bony defect of the glenoid

Mechanisms of Injury (MOI)

Tears in the labrum commonly occur in contact sports as well as overhead athletes. SLAP tears commonly have 2 distinct MOI's: acute or overuse. UW Health identify some common MOI's such as: "falling on your arm, bracing your arm in an accident, arm tackling in football or any large sudden force applied to the arm[1]". Bankart lesions commonly occur due to recurrent anterior dislocation of the shoulder. In more severe Bankart lesions a portion of the glenoid may be fractured when the labrum, if this occurs, they call it a bony Bankart lesion.

SLAP tear Surgical Repair

Surgical repair is commonly done by placing suture anchors in the glenoid fossa and passing them through the labrum. They then tie knots in the suture to approximate the labrum back to the glenoid fossa allowing for stabilization within the shoulder.[1]

Bankart Lesion Surgical Repair

During this injury the shoulder is commonly forced out of socket creating a tear in the anterior-inferior labrum from 3-6 o'clock which commonly occurs in conjunction with deformation of capsuloligamentous restrictions. Repair of this injury is commonly done by arthroscopically repairing all tissues back to their correct anatomical position.[2]

Labrum Repair Rehabilitation

Phase 1 (0-6 weeks): during this phase the main goals are to protect the surgical site and achieve ROM goals provided by physician. This can be done by focusing on passive and active assisted ROM. These can be achieved by doing table step backs, where you rest your hands on a

table and begin to step back leaving your hands on the table, and active assisted range of motion with a cane. Other exercises permitted in this phase include scapular, elbow, and wrist exercises.[5]

Phase 2 (6-12 weeks): the main goals during this phase include patient education of activity limitations, ROM, and beginning rotator cuff and scapular neuromuscular control activities. You will gradually increase ROM without overloading tissues, complete cross body stretching to increase IR as well as complete dynamic stabilization. Scapular stability will be a large part in this phase as well as active resistive elevation exercises (recommended to be done in scapular plane to increase subacromial clearance).[5]

Phase 3 (12-24 weeks): this phase is tailored to the athlete as it is the last phase of labral repair rehabilitation programs. During this phase we will focus on neuromuscular training, strengthening, endurance, power, and dynamic stability exercises. As this phase will be tailored to the athlete and the sport, they are returning to the exercises will vary depending on sport. If the patient is not an athlete a home exercise program can be made for continuation after completion of rehabilitation.[5]

Search Strategy

- Terms Used to Guide Search Study
    - Patient/Client Group: athletes, general population, young adult
    - Intervention: Labral repair, SLAP repair, Bankart repair
    - Comparison: N/A
    - Outcome: ER AROM
- Sources Searched
    - PubMed, google scholar,
- Inclusion Criteria

- Limited to English
- Investigated results of shoulder labrum repair and techniques used during surgery as well as therapy.

- Exclusion Criteria
  - Articles published before 2000

Results

Article Title	**What the article looked at**	**Findings**
Accelerated Rehabilitation After Arthroscopic Bankart Repair for Selected Cases: A Prospective Randomized Clinical Study[6]	Article compared the effects of early mobilization rehabilitation to conventional rehabilitation.	This study showed a reduction in post-operative pain as well as an accelerated increase of ER AROM. During follow up there were no significant differences found between the 2 groups. However, the accelerated rehabilitation showed a faster improvement in regaining 90% of final range ER.
Descriptive report of shoulder range of motion and rotational strength six and 12 weeks following arthroscopic superior labral repair.[7]	Article looks at short-term post-surgery strength, ROM, and self-reporting ratings following SLAP repair	The study shows the value of limited immobilization and early ROM physical therapy. Consistent physical therapy allowed for the athlete to regain full ER 12 weeks post-surgery
Stiffness: friend or foe? A cohort study evaluating	This looks at stiffness as a common complication of type	The study found that patients who report ER stiffness 6 weeks post operatively

the effect of early postoperative stiffness on the outcomes of patients who underwent superior labral repair.[8]	II SLAP repair. They hypothesize that patients who are stiffer 6 weeks post-operative have a better long-term result.	reported less stiffness and less severe pain overnight as well as with overhead activities compared to patients who reported less stiffness 6 weeks postoperatively 2 years before. This study also showed that ROM was fully regained by stiff patients 6 months post-op
Clinical outcome of arthroscopic SLAP repair: conventional vertical knot versus knotless horizontal mattress sutures[9]	This study looked at the different results provided between 2 different surgical knotting techniques: horizontal mattress and conventional vertical knot	The study showed that there was a significant difference in ROM between the knotting techniques. The horizontal mattress knot rendered better ROM in ER at the side, IR at abduction and total ROM at the last follow up compared to the vertical knot technique.

Discussion

After researching this topic, I realize there are a lot of factors that are placed on the health care provider that can aid in regaining ER ROM following repair. Surgical techniques, early mobilization, as well as diligence in completing rehab are concepts that mainly concern the provider. I believe as health care professionals we should discuss and further research the possibility of decreasing immobilization time as well as exploring different surgical techniques that may aid in a better ROM. Working with athletes, they commonly disregard the instructions of providers regarding the length of time they should wear the sling although advised against

doing so. If discussion occurs between health care providers and further research is done on early mobilization as we can not only create an accelerated rehabilitation program that has a reduced immobilization period but create an environment that athlete will be more compliant with. Articles presenting on information regarding labral repairs put a large emphasis on athletes being diligent on completing their rehab and reaching the goals of each phase. As health care providers we can aid in them completing their rehab with interesting rehabs that are engaging for the athlete when such exercises are permitted. Patient education will also be very helpful in future practice. If you educate them on things, they need to do and how they can aid in their own care and success by being diligent in rehabilitation as well as being patient and completing things.

Recommendations for further practice

Being able to give athletes the best possible care and aid in their rehabilitation are key goals for future practice following this study. Advocating for your athlete and discussing the best care for this athlete with their physician is going to be key on helping them not only have a successful rehabilitation but also regain full ROM.

Conclusion

This paper shows that there is no exact science when it comes to regaining full ER following labral repair. Loss of ER in labral repairs is a constant problem that is seen, studies show that there are many contributing factors that can aid in regaining full ROM including early mobilization, diligence while completing rehab, surgical technique and the hardest one to accomplish: patience.

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Effective Communication with Athletes with Autism Spectrum Disorder

[redacted]

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Abstract

The goal of this research is to find effective strategies for athletic trainers to utilize and resources to educate athletic trainers on managing athletes with autism spectrum disorder (ASD). Per research, communication is defined as discord with athletes with ASD and demonstrates ways in which they communicate differently than those who are neurotypical. For individuals with ASD, the expressions of objective quantities for pain varies from those who are neurotypical. This requires the utilization of different scales when attempting to quantify their pain. Athletes with ASD are also more adherent to routines and require clear and concise communication on the part of athletic trainers for effective communication. The purpose of this research is to find and utilize best practices and skills for communicating and understanding athletes with ASD.

Introduction

In the Athletic Training Profession, we interact with diverse populations of people and must do our best to cater to their needs within our scope of practice. However, the majority of those we treat every day are athletes who are neurotypical and our training has been centered on their treatment. Neurotypical is defined by the Merriam-Webster dictionary as not being affected with a developmental disorder and especially autism spectrum disorder: exhibiting or characteristic of typical neurological development. The number of athletes who are neuro-divergent including, those with ASD, comprise a much smaller percentage of the population that we treat, but the training that is provided in order to help manage their care is lacking in most programs. Neuro-divergent is defined by the Oxford Languages dictionary as differing in mental or neurological

function from what is considered typical or normal (frequently used with reference to autistic spectrum disorders); not neurotypical.

My own clinical experience has focused on secondary school athletes and the injuries as well as diagnoses that are associated with that population. I have focused this research on athletes who are in their adolescent years of development and have tailored my search parameters to fit this criterion. Survey data from the Centers for Disease Control (CDC) and Prevention's 1991-2019 High School Youth Risk Behavior Survey Data shows that about 57% of high school students played on a sports team in the past year.[1] We know that physical exercise is good for physical health and that participating in sports promotes physical exercise, provides an opportunity to engage with others in the community, and builds bonds to grow social circles. Engaging in sports, whether team or individual, also helps athletes build certain skills like goal setting and leadership.[2] Along with the diversity in the backgrounds of our athletes, comes diversity of medical histories including: disorders, disabilities, and diagnoses. In my own experience with a diverse population of athletes, I have noticed that Athletic Trainers (ATs) do not have the necessary tools in order to manage athletes who are not neurotypical. Those with ASD and other individuals who are neuro-divergent are often not catered to as they should be by their ATs. The ATs often lack the necessary education and training in order to best cater to the needs of athletes with ASD.

According to the CDC an estimated 1 in 44 children are affected by autism in the United States. ASD is an umbrella term that encompasses four distinct autism diagnoses into a singular term. ASD covers a broader spectrum of conditions characterized by challenges with speech, nonverbal communication, social skills, and

behaviors.[3] The literature available is greatly reduced when search parameters are limited to those pieces that specifically note of working with athletes with disabilities. However, one recent study surveyed sixty-six athletic training program directors to determine the extent to which their curriculum covered content related to people with disabilities. The study also surveyed the director's opinions on their current level of education on disabilities as well as if they would be receptive to increasing the education of students on athletes with disabilities. It was found that seventeen percent (17%) of the programs reported that students are receiving an entire class on providing care for people with disabilities. This percentage shows that approximately eleven out of the sixty-six surveyed directors offer a class specifically relating to teaching AT students about athletes with disabilities. The practicality of a single class devoted entirely to this this content area in an already heavy course load could account for the low percentage of programs surveyed offering one. However, this is also something that needs to be addressed as many ATs will face diversity in their placements and need to be capable of aiding athletes with disabilities. Eighty-five percent (85%) of the program directors surveyed offer some content integrated into their coursework. However, for programs that integrate disability studies into their course work, thirty percent (30%) of these programs address three or less of the 10 disabilities utilized in the study. For this particular study, the disabilities that were incorporated included: ASD, intellectual disabilities, learning disabilities, ADHD, paralysis, cerebral palsy, multiple sclerosis, vision loss, hearing loss, and amputation.[4]

This study alludes to changes that should be made to the current curriculum to better prepare Athletic Trainers to work in the diverse world of athletes with disabilities

such as autistic athletes. One such addition to current curriculum is teaching communication strategies tailored to those with disabilities. This can help AT's have effective, clear, and concise communication which is especially important to use with an autistic athlete. The medical background of an athlete is not always clear and athletic trainers are only privy to the information directly pertaining to an athlete's health when it comes to their ability to participate in high school athletics. However, it is a benefit to have the necessary training in order to help aid those athletes who may be autistic, whether they choose to tell us about it or not. There are often other ways in the field that we come to find out about the conditions of athletes; such as from parents or even coaches. Athletic trainers should have the necessary tools to effectively communicate with all athletes regardless of their disability status.

Therefore, the purpose of this research is to find and utilize best practices and skills for communicating and understanding athletes with ASD. The goal of this research it to be able to provide key tools that can be used for improvement in navigating a conversation effectively with an autistic athlete. As health care providers, we must strive to treat the patient as effectively and safely as we can, and these tools can help us achieve that goal.

Methods

In my search to find relevant articles I used the **PICO** Framework which stands for population, intervention, comparison, and outcomes. **P**opulation, "Athletes with ASD" was used because the premise of the research is to find ways to communicate effectively with this population. **I**ntervention is "communication" as this is what we strive to use as our means of communication with these athletes. There are often barriers to

communication that arise when attempting to communicate with an athlete with ASD, but these barriers must be identified and tactfully navigated in order to provide the highest quality of care. **C**omparison was not used in my search strategy as there are a myriad of communication strategies that are often used in order to best cater to each athlete. There are also often combinations of different communication strategies that are used to help tailor communication with an individual athlete with ASD. There is no superior communication strategy because all athletes are different and may respond to different strategies. The **O**utcomes of the research are the “strategies” and tools that are used to provide effective communication with athletes with ASD. These strategies allow for athletic trainers as the provider to have more productive dialogue with autistic athletes and receive more pertinent information when doing medical evaluations post injury.

The sources of evidence include: Sports Discus, NIHL, and Taylor & Francis Online. I also made use of another source with first-hand knowledge of catering to the needs of those with ASD and was also consulted and aided in finding material relevant to the composition of this research paper. The inclusion criteria for studies utilized were studies done within the last 10 years and that have been peer reviewed. Resources outside of the search parameters included reputable sources from organizations that focus on the ASD including: Autism Speaks, The Arc Autism Now, and the Child Mind Institute. The exclusion criteria for studies was not relevant to search terms and not relevant to questions.

Results of Search

The results obtained in the search of the literature revealed six relevant studies which were identified. The literature search returned 44 results using the search terms, “athletes AND autism AND athletic trainers AND communication”. Thirty-eight of these studies were irrelevant in regards to the central questions and goal of this research and were excluded from this research. However, resources were utilized from reputable organizations associated with providing the best and most up to date research and facts on autism.

Discussion, Implications for Practice, Education, and Future Research

With the lack of education on managing athletes with disabilities in current curriculums, athletic trainers are left with a deficit when it comes to treating a diverse population of athletes. There is also an undeviating number of children diagnosed with ASD who wish to play high school sports. Athletic trainers will continue to see an influx of student athletes with ASD in our training rooms and on the field and need to have the tools to cater to their needs. Having a solid foundational understanding of ASD is an imperative tool to help better understand athletes and will go a long way in gaining the trust of the athletes, providing quality treatment, and increasing positive outcomes in their treatment.

Alexander et al. created a clinical commentary with effective strategies to be used by athletic trainers in providing effective treatment for athletes with ASD. The clinical commentary focuses on four areas which include social skills, communication, consistency, and sensory perception. “ATs should also note how athletes with ASD express their emotions. Not uncommon is an expression of emotion in an atypical

manner, such as laughing when angry or in pain”[5]. These expressions are counterintuitive when compared with those athletes who are neurotypical. Recognizing the differences between athletes who are neurotypical and those who are neurodivergent is a key distinction especially when trying to do a full examination on an athlete with ASD.

Gaining trust is also crucial in relationship building with athletes. It is often best to utilize the care circle of autistic athletes as they are familiar and often already trust these individuals. This care circle can include, but are not limited to the athlete’s coaches, parents, and teachers. These individuals can help you build a relationship with an autistic athlete and help foster a relationship built upon trust which is imperative as you may be called upon to render aid in an emergent situation on or off the field.

Communication is key to any interaction with athletes when they seek the help of the AT, but is especially imperative when it comes to athletes with ASD. In my own clinical experience, I have found being adaptable is important to success when it comes to athletes with ASD. When you ask a question and aren’t receiving any pertinent feedback you, as the athletic trainer, must be able to reword the question in order to help elicit a response. It is also crucial to remain calm and patient when waiting for an answer to any questions. Giving the athlete ample time to form their answer as well as the opportunity to seek clarification of the question will help and establish a fruitful dialogue. If the athlete does not understand the question you can ask them directly if they understand it and have them repeat the question back to you to help you confirm their understanding. In word choice, it is important to remain clear and concise as well as avoid any ambiguity which is often misconstrued. Communication is more than mere

words it encompasses body language, eye contact, posture, and even tone and cadence. It is important to remain mindful of all these aspects of communication when treating athletes.

When it comes to sensory perception, those with ASD often find it hard to materialize abstract concepts. In cases such as pain, the use of a pain scale can vary widely even in athletes who are neurotypical. Each athlete has a different perception of pain and using a numerical scale can often be ambiguous especially when comparing two different athletes. One athlete may perceive the same injury as a level 5/10 while the other perceives it as a 10/10. When it comes to athletes with ASD, this ambiguity of a numerical system can increase tremendously. Some athletes with ASD do not fully understand the numerical pain scale and will just guess a number. Those with ASD also seek to please and will just say a number because the AT is asking them to give one. It makes systems such as the numerical pain scale something that is not as effective in treating autistic athletes and can skew exam results and findings. There are other options when it comes to pain scales which may be more effective in eliciting accurate responses from athletes with ASD. When a normal numerical scale is not the right tool, it is important to be able to be versatile and try other methods to accommodate your athlete. One such option is utilizing a chart with faces and colors like an upset face with red or a smiley face with green which may be more accessible for athletes with ASD.

Below in Figure 1 you see a pain scale which is similar to the Wong-Baker FACES Pain Rating Scale. The scale below while similar to the Wong-Baker utilizes colors in addition to the facial expression which provides another facet to help those with ASD better understand the scale. The faces alone which are a trademark of the

Wong-Baker FACES Pain Rating Scale may not be enough to help elicit a pain rating from autistic athletes as they often misinterpret facial expressions alone and often need other supplementary information to help them make their determination. When utilizing any scale, it must be understood by the athlete. Alexander et al. notes that if the athlete's condition is known to you, "consider talking with the athlete at the beginning of the season to devise a scale that makes sense to him/her."[5] However, knowing and utilizing different scales such as numerical, Wong-Baker Faces, color analog scale, or the Universal Pain Assessment Tool will be useful to know and utilize in practice when you need to assess pain. This is an essential part of the athletic trainer's repertoire and will allow for a different form of communication if verbal communication is not the clearest form that can be used with a specific athlete. If you do not have a personalized scale devised for an athlete, it is imperative that you can get confirmation from the athlete that they understand the scale before trying to utilize it. This will increase the reliability of the scale. However, it is recommended that the best scales are those that are devised by the AT and an athlete with ASD prior to injury so that they can discuss what each of the figures mean to a particular athlete. This is also a way to increase trust and to open dialogue before the season and allow for the best possible care in emergent situations when a pain scale may need to be utilized.

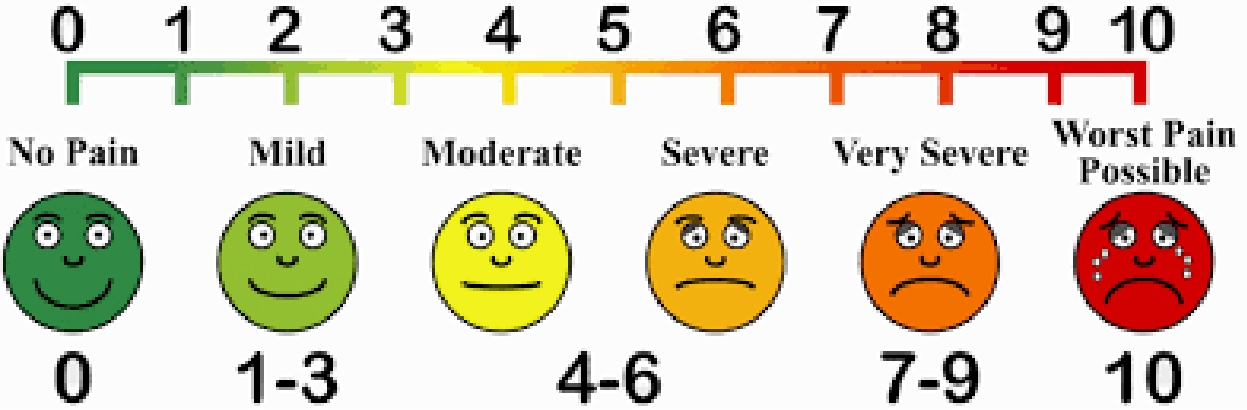

Figure 1

A periodical by Braun et al. focused on managing the challenges of hidden disabilities in youth sports. This is from a sports psychology point of view, but can also be useful for athletic trainers. In a section on ASD, they note some of the difficulties you might see in athletes with ASD. These difficulties can include, “difficulty understanding or interpreting directions and difficulty with unexpected changes in structure or routines”[6]. For this reason, creating routines is beneficial to the treatment of athletes with ASD by an athletic trainer. Just as sports programs have set routines for practices, treatment by the AT should be as regimented as possible for those athletes with ASD. In addition to the regimentation of a treatment plan, it is also important to give clear and concise instructions. These instructions are also more beneficial to athletes with ASD when they are given a step by step approach as opposed to other methods. Figure 2 below represents how we must approach conversation, questions, and directions with athletes with ASD. By keeping conversations simple and concise there is only one direction that the dialogue can logically follow. However, if we over explain or ask things in a complex way we can create unnecessary ambiguity and complexity of conversation.

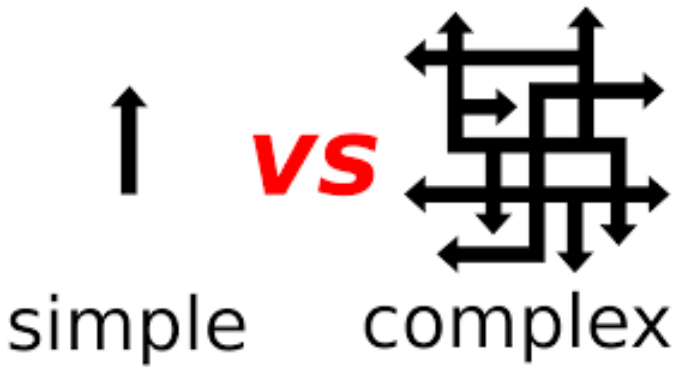

Figure 2

Rzucidlo compiled a useful article called Autism 101 for EMS. She provides a quick background on autism, exam tips, and other helpful information and ideas which can be utilized in any athletic training practice. I particularly found the information in exam tips to be insightful and pertinent to an AT's exam of an athlete with ASD. Rzucidlo notes,

> "Move slowly, performing exams distal to proximal. Explain what you plan to do in advance and as you do it in short phrases. If you have to move them explain where you are going and what they may see and who might be there. This may avert unnecessary anxiety and/or aggression from the patient. Individuals who appear not to understand may have receptive language that is not entirely evident."[7]

This is especially pertinent in patients with ASD as pain can be perceived in many ways. When working with an injured athlete with ASD they may express no pain at all, but still be in pain or suffering from an injury. Others may overly express the pain that they are in when their pain in actuality is only minor. It is important to have the necessary skills to navigate towards a clear understanding of the extent of the pain or discomfort for our exam in order to come to the correct diagnosis. Another pertinent reality given to us by Rzucidlo is to, "expect the unexpected… look less for obvious causality and inspect

carefully for other injuries”[7] This is important especially when working with athletes with ASD as what they tell us can help or hinder our examination process. This brings to mind situations where an athlete falls and scrapes their head for example. The athlete may come to the athletic trainer for a bandage or to have the cut or abrasion examined. We must remember to ask about how the injury occurred, if they remember the incident occurring, or if there are any other associated symptoms. These symptoms can include, but are not limited to headache, sensitivity to light, or neck pain. We are not merely tasked with treating visible injuries, but also diving deeper; seeking to find any other immediate complications as a result of an injury. This may include evaluation for concussion if the symptoms meet the criteria or may be as simple as treating a wound if no other symptoms are present.

From my own clinical experience, I had a male athlete with a suspected learning disability that suffered a neck injury during wrestling practice, but it took time to realize that there was more going on than met the eye. The patient presented to the athletic training office with a chief complaint of neck pain. If no more questions were asked about the mechanism of injury or other associated symptoms, the athlete would be given some exercises to help his sore neck and the matter would have been closed. However, upon more extensive questioning the patient endorsed neck pain as well as head pain following being “slammed onto the mat during wrestling practice”. Upon exam, the patient was sensitive to neck palpation, experiencing sensitivity to light, and had a headache. These symptoms are less obvious as they are not visible and we need the athlete to aid in their care by articulating to us the symptoms that they have. It is through communication techniques that we were able to elicit the symptoms that were

associated with the athlete's chief complaint and come to a more precise diagnosis. It was determined that the athlete also suffered from a concussion as well as the neck pain that he originally came to be seen for.

Other strategies that can be used include utilizing the athlete's caretaker as a resource in their treatment in the athletic training office. This can be as simple as utilizing the parents, teachers, and coaches to find answers or to help better communicate with that athlete. Those who are close to the athlete are often better known to the athlete and can help interpret for the athletic trainer during an examination. Those who know athletes with ASD are better able to understand them and can be utilized as a resource by the athletic trainer.

Using your best judgement is also important as it is hard to distinguish a concussion in athletes with ASD. Some of the symptoms that are utilized in the SCAT 5 are typical for those with ASD to answer positively for. The test can also be challenging for them regardless of being concussed or not such as asking if they are in a fog, feeling tired, or having trouble concentrating. You must use your judgement and elicit help from resources like the parents, coaches, teachers, and nurses to help determine your patients baseline and what is considered normal for the athlete. This will help athletic trainers come to the most accurate diagnosis.

In an article about youth sports written by Murphy and Feigley they explored the world of coaching athletes with ASD. They note that routine is important, similar to what Braun et al mentioned previously in this paper. As an athletic trainer, we can create routine especially with rehabilitation, but we must be prepared to give clear and concise instructions. Murphy and Feigley mention,

> “Because of [autistic athletes] difficulties with change, regularly warn them of upcoming changes by providing transition prompts whenever possible. A prompt might announce upcoming changes in an activity (“We’re going to stop stretching and begin batting practice next.”). Only quantify when it is accurate and precise (i.e., “We’re leaving in 2 minutes.” A child with ASD will watch the clock and expect to leave in precisely 2 minutes.). Use a transition prompt to remind them of the impending change again at 30 seconds prior to the change.”[8]

While their article is for coaches it is something we can utilize because athletic trainers are, in reality, the coaches of an athlete’s rehabilitation. Knowing these behaviors can help us effectively communicate goals, routines, and clear direction.

Further research should be done with larger sample sizes of athletic trainers. Questions should be posed such as if athletic trainers feel they understand athletes with ASD and if they feel prepared to work with autistic athletes. There should also be a push for further incorporation of a disability course into the curriculum of Athletic trainers as the number of autistic athletes is on the rise. In a world that is becoming ever more inclusive of neurodivergent athletes, as well as all different types of athletes, it is imperative that medical professionals be ready to accommodate them. There should be more education on this in our curriculum in addition to a better exposure to athletes with ASD as part of our clinical competencies. It is imperative, with the high prevalence of children diagnosed with ASD or other forms of neurodivergence that athletic trainers be ever more competent in providing aid to these athletes, both in the office and on the field. The primary responsibility of the athletic trainer is the safety and care of our

athletes which can only be accomplished through an openness to continued education; including better diversification of our tool kit when it comes to aiding those athletes with ASD.

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COVID-19, Adolescent Athletes, and the Mental Pandemic

[redacted]
Dr. Anthony Breitbach
MAT 6960 – Capstone Project
1 May 2022

Abstract

Clinical Scenario: The Coronavirus pandemic and subsequent public health measures have significantly disrupted the lives of individuals around the world; the widespread nature of the virus left no individual hidden from the effects of the crisis. Globally, 10-20% of adolescents suffer from mental health conditions.[5] Adolescents lack the psychological skills of resilience and coping, as well as the physiological development of their adult counterparts. It has been indicated adverse consequences of the public health measures may continue to affect adolescent mental health long term. ***Clinical Question***: How has the COVID-19 pandemic affected adolescent mental health, more specifically, adolescent athletes? ***Clinical Bottom Line***: The COVID-19 global pandemic has adversely and negatively affected the mental health of adolescents, specifically adolescent athletes, with demonstrated increases in depression and anxiety responses. ***Strength of Recommendation***: Based on the Oxford Centre for Evidence-Based Medicine Scale strength of recommendation, there is Grade C evidence to support the suspicion that COVID-19 has had a negative impact on mental health outcomes in the adolescent athlete population.

Background

Impact of COVID-19 (Generally)

The Coronavirus pandemic and subsequent public health measures have significantly disrupted the lives of individuals around the world; the widespread nature of the virus left no individual hidden from the effects of the crisis. Not only is the virus associated with respiratory illness, uncertainty and unprecedented measures were a hallmark of the past few years. Stay at home orders led to empty grocery shelves and sparse resources. Food insecurity was likely worsened as a result. The public health

measures promote to mitigate the spread of the virus, such as border closures, travel restrictions, and lockdowns, affected every facet of daily, functioning life: labor markets, consumption patterns, and economic activities all over the world.[1] The lower fatality rate of COVID-19 allows for more survival, however, this leaves recovered individuals to face the psychological consequences.[2] There is copious evidence from previous epidemics to suggest individuals who recover from acute viral illnesses will possibly experience significant mental anguish and go on to develop psychiatric complications.[2]

Adolescents, individuals experiencing a time of significant change and evolution already, lack financial stability, have lower health literacy, and higher rates of food insecurity. Pandemics cause unprecedented stress, worry, helplessness, and social and risky behavioral problems among adolescents.[3] Initial evidence suggests the Coronavirus pandemic can be classified as a traumatic experience for young people; this notion no doubt increases the psychological stress on adolescents.[4]

Mental Health in Adolescents

Globally, 10-20% of adolescents suffer from mental health conditions.[5] Adolescents lack the psychological skills of resilience and coping, as well as the physiological development of their adult counterparts. As children and adolescents are in a critical developmental period, half of all mental health disorders develop before the age of 14, and 75% manifest by the mid-20s.[4] This stage of sensitive psychosocial development exposes adolescents to the psychological distress of major changes which may lead to long-term consequences. Limited mechanisms of resilience and coping in adolescents that develop with aging leave these individuals vulnerable to developing

anxiety disorders and high levels of stress, conditions associated with increased alcohol use.[4] Negative coping skills are risk factors for depression, stress and trauma among adolescents; as aforementioned, adolescents lack the efficiency and positive coping skills to process difficult situations.[5] Young people must be provided with tools to cope in order to adjust in times of distress to stay resilient and mentally well.

Additionally, with the always advancing technology, adolescents are spending more time with electronic devices and have greater access to internet outlets, such as social media. Studies have shown internet overuse can lead to mental or behavioral problems, cause poor academic performance, decrease genuine social interactions, cause neglect in personal lives, and cause relationship disorders and mood dysfunction.[3]

COVID-19 and Mental Health

Due to the global reach of the COVID-19 virus, every domain of life was affected through physical restrictions and social distancing measures. Although this virus targeted an older population, adolescents were not protected by these measures. Social distancing, school closures, job loss, financial and housing instability, and isolation, all of which influence this critical period of growth and development, have threatened the mental health of adolescents. The most common presentations of mental distress include anxiety, depression, and sleep and appetite disturbances.[3] It has been indicated adverse consequences of the public health measures may continue to affect adolescent mental health long term.

The emotional reactions and new social regulations due to the virus are associated with negative mental health outcomes in young people. Literature suggests children and adolescents with pre-existing mental health conditions may be more susceptible to new mental health conditions during traumatic and stressful events, i.e. this global pandemic.[1,4] Unfortunately, resources to aid in mental health decline were already limited before the pandemic; therefore, as health care priorities shift, these resources during a time of social distancing are even more difficult to access. Schools often provide direct access to mental health services; school closures have cut off this support network to adolescents during a time of heightened isolation and loneliness. Additionally, as noted by Nearchou, et al., the peer pressure of social distancing may increase depression and anxiety because peer pressure has been previously linked with these conditions in adolescents. Stressors and motivations to practice social distancing becomes difficult for adolescents to process, leading to these declines in mental health.

As aforementioned, general internet overuse can lead to mental or behavioral disorders; along with pressures to stay inside, the time spent socializing with others declined throughout the course of the stay at home orders, while screen time doubled to over five hours per day.[3] Along with general health concerns associated with screen time, this frequent social media exposure to COVID-19 related news and information occurs more often and intensely. This constant social media exposure during the pandemic has been linked with an increased likelihood of depression and anxiety.[2]

With isolation and social distancing, loneliness is associated with a larger cortisol awakening response; there is strong evidence to support poor sleep has a bidirectional

relationship with depression and anxiety.[1] Lack of sleep leads to degradation of neurocognitive functioning which in turn affects mood and emotional regulation.

Suicidal ideation also increased during the pandemic when compared to the pre-pandemic time period.[1] Overall, the majority of evidence suggests depression or depressive symptoms worsened, along with heightened anxiety, as a result of COVID-19 pandemic measures when compared to the time period pre-pandemic.

COVID-19 and Mental Health in Athletes

As the time and extent of commitment in sport increases, so does the identity trait of the athlete. This personal identity may engulf the individual's sense-of-self, social life, and/or career. Individuals who hold heavy attribution of their identity to their athleticism are most at risk for suffering poor mental health when cut off from their sport or going through significant transitional periods.[6] Although athletes are often praised for their mental toughness and resilience, a loss in access to the sport may prove difficult for athletes with a strong athletic identity. Negative affectivity is a subfactor to the athletic identity used to "assess the negative emotions that occur due to non-participation."[6] Athletes report greater anxiety than non-athletes, a disparity mediated by negative affectivity.[6]

An estimated 8.4 million of the 15.3 million US high school students participate in interscholastic athletics; these high school athletes often demonstrate higher academic achievement, greater levels of physical activity, and a better quality of life than their non-athlete counterparts.[7] Along with attribution to athleticism when considering identity, large disruptions to physical activity can increase risk in developing depression,

especially during COVID-19.[1] Athletes going through transition periods, often seen during periods of injury or retirement, have heightened feelings of depression and anxiety, especially when there are feelings of a lack of a present support network.[6] The cessation of athletics during COVID-19 has forced athletes to experience these transition periods in a non-traditional sense. Suddenly, athletes experienced a reduction in activities and opportunities to satisfy their basic psychological needs, increasing loneliness and poor wellbeing. The predictability of a transition period will determine how well an athlete adapts to the pressures of this time. Positive mental outcomes are associated with predictable, normative transitions. As confinement interrupted the daily lives of all humans, athletes saw a sudden interruption to their training schedule and an earlier and abrupt closure to their careers.[8] Therefore, the unpredictability and constantly changing aspects of pandemic life leads to a non-normative transition period and causes feelings of depression and anxiety, similar to a response to injuries or premature retirement to the sport. As seen in the literature, a sports injury causes a plethora of psychological and emotional reactions in response to the injury itself, the rehabilitation process, the return to competition, and a fear of relapse.[8]

Focused Clinical Question

How has the COVID-19 pandemic affected adolescent mental health, more specifically, adolescent athletes?

METHOD

Summary of Search, Best Evidence Appraised, and Key Findings

- The literature was searched for peer-reviewed articles investigating the effect of the COVID-19 pandemic and lockdown on mental health in adolescents and athletes.
- The search yielded 22 articles that included full text, journal articles within the lasts 4 years in English.
- The search yielded eight studies which met the inclusion criteria and were included for analysis.
- Three cross sectional studies investigating the negative impact of COVID-19 on mental health in adolescents and athletes met the inclusion criteria and were used.
- Four Systematic Reviews (two rapid) exploring the impact of COVID-19 on mental health outcomes in adolescents met the inclusion criteria and were included for analysis and concluded that mental health and the lives of young people were negatively affected as a result of the pandemic and subsequent lockdown.

Clinical Bottom Line

- The COVID-19 global pandemic has adversely and negatively affected the mental health of adolescents, specifically adolescent athletes, with demonstrated increases in depression and anxiety responses.

Strength of Recommendation

- Based on the Oxford Centre for Evidence-Based Medicine Scale strength of recommendation, there is Grade C evidence to support the suspicion that COVID-19 has had a negative impact on mental health outcomes in the

adolescent athlete population. The results were consistent across all eight studies included in this appraisal.

Search Strategy

- Sources Searched
    - PubMed
- Inclusion Criteria
    - Level 4 evidence (according to the Oxford Center for Evidence-Based Medicine scale hierarchy) or above.
    - Assessed patients inside of the target population (adolescents and adolescent athletes).
    - Investigated effect of the pandemic lifestyle on adolescent mental health, utilizing reliable assessment tools.
    - Limited to the English Language
    - Limited to the last 4 years
- Exclusion Criteria
    - Level 5 evidence or lower
    - Studies that were not in English
    - Studies over 4 years old
    - Studies that investigated non-COVID-19 related mental health factors
    - Studies that did not utilize reliable mental health outcome measures

Results of Search

- For this report, 22 articles were identified, with eight articles meeting the inclusion criteria (listed above). The level of evidence was assessed using the Oxford

Centre for Evidence-Based Medicine Scale. The eight relevant studies were located and categorized as shown in Table 1.

Summary of Best Evidence

- The studies selected for inclusion in this research study are listed in Table 1. The eight studies included were identified as the best evidence and selected as the most appropriate given the inclusion and exclusion criteria, and the focused clinical question. The Oxford Centre for Evidence-Based Medicine Scale was used to assess the quality of the studies.

Table 1

Article	Giuntella, et al.	Zolopa, et al.	Nearchou, et al.	Meherali, et al.	McGuine, et al.	Knowles, et al.	Leguizamo, et al	Jones, et al.
Study Design	Randomized Control Trial	Rapid Systematic Review	Systematic Review	Rapid Systematic Review	Cross Sectional Study	Cross Sectional Study	Cross Sectional Study	Systematic Review
Participants	682 students from the University of Pittsburgh	Inclusion criteria included (1) a focus on youth and (2) associations between any aspect of the COVID-19 pandemic and the specified outcomes. Primary publications and systematic reviews were included.	Seven studies, conducted in China, two in Italy, one in Poland, one in Turkey and one in the United States. All studies applied quantitative cross-sectional designs.	18 articles fitting inclusion and exclusion criteria were used	A total of 13002 US adolescent athletes (age = 16.3 +/- 1.2 years, females = 52.9%, males = 47.0%) completed an anonymous online survey.	A total of 753 participants over the age of 18 were recruited. Of these, 744 participants over the age of 18 were included.	The sample consists of 310 athletes (141 women) from 18 to 49 years of age	16 studies fitting inclusion and exclusion criteria were used; . The total sample size used in the studies varied from 102 to 9554, having a median sample size of 1054.
Outcome Measures	CES-D, Fit-bit data, American Time Use Survey	Data on changes in substance use, mental health outcomes, and service delivery in the context of the COVID-19 pandemic were extracted.	Eight studies used psychometric tools that have been previously standardized and/or established for their psychometric properties, three studies used questionnaires developed by	The primary outcomes include anxiety and depression, and the secondary outcomes include fear of infection, frustration, boredom, fear of pandemic-related uncertainty, fear of running out of basic supplies, and finances	GAD-7, PHQ-9, PFABS, PQLI 4.0; Mental health, physical activity, and health-related quality-of-life variables were compared among sex, grade, sport(s) played, and poverty level using means	7-point Likert scale, SLS, HADS-A, HADS-D, and the MHC-SF	An *ad hoc* protocol, The *Multidimensional Perfectionism Scale*, The *State-Trait Anxiety Inventory, t*he short version of *Depression, Anxiety, and Stress Scales,* The *Profile of Mood States,* The *Approach to Coping in Sport*	All of the 16 studies utilized a quantitative methodology.

			the authors, while one study does not provide information on how the questionnaire was developed.		and 95% confidence intervals (CIs) from the survey-weighted analysis of variance.		*Questionnaire* and a *Sports Sleep Questionnaire*	
Main Findings	Sharp drop in the average number of steps, disruptions to sleep habits, large increases in depression during the pandemic.	The evidence from the majority of included publications (79%) indicated that depression or depressive symptoms, anxiety, stress and externalizing behaviors worsened during the pandemic as compared to the pre- pandemic period.	Three studies indicated that COVID-19-related emotional reactions are present in children and adolescents by reporting rates ranging from 22% to 62.2%. Overall, the findings of the included studies suggested that COVID-19 emotional reactions and new social regulations (e.g., social distancing) were associated with a number of negative mental health	The most-reported outcome in these studies was the negative impact of a pandemic/epidemic on psychological health, which the researchers measured as anxiety, depression, fear, stigma, and posttraumatic stress symptoms. The anxiety levels among the adolescent population were significantly higher than those in children.	Females reported a higher prevalence of moderate to severe anxiety symptoms. The Pediatric Functional Activity Brief Scale score was highest (best) for grade 9 and lowest for grade 11. The prevalence of depression symptoms was highest in team sport (74.1%) and lowest in individual sport (64.9%) participants. The total Pediatric Quality of Life Inventory	Findings showed that resilience was moderately positively correlated with all four MHC-SF variables (i.e., overall, social, psychological, and emotional wellbeing) and moderately negatively correlated with all SLS variables, HADS- A and HADS-D.	The results show that maladaptive perfectionism was related to all the indicators of athletes' mental health. The use of coping strategies such as cognitive restructuring and emotional calm was associated with lower levels of negative emotional states. The Iceberg Profile is observed in the mood of athletes, both in men and in women, although women showed higher levels of anxiety, stress, and	Five studies (31%) addressed depression among non-special populations and identified an association between the pandemic and depression. In this systematic review, there was conclusive evidence to support the potential negative impact of the pandemic on adolescent mental health.

			outcomes in young people.		score was lowest (worst) for athletes from counties with the highest poverty levels.		depression than men.	
Level of Evidence (Oxford Centre for Evidence-Based Medicine Scale)	2	2	1	2	4	4	4	1
Conclusion	Analyses suggest that disruption to physical activity is a leading risk factor for depression during the pandemic.	The findings highlight serious negative impacts of the COVID-19 pandemic on young people's mental health and psychological wellbeing in many settings	The findings show that COVID-19 has an impact on youth mental health and is particularly associated with depression and anxiety in adolescent cohorts.	The impact of COVID-19 on the mental health of children and adolescents is of great concern. Anxiety, depression, disturbances in sleep and appetite, as well as impairment in social interactions are the most common presentations.	The health of US adolescents during the COVID-19–related school closures and sport cancellations varied to differing degrees depending on sex, grade level, type of sport participation, and level of poverty.	For athletes, overall athletic identity was weakly positively correlated with anxiety and loneliness but had no relationship with wellbeing or depression.	High-performance athletes in the studied sample showed negative emotional state values below the expected average.	Globally, adolescents of varying backgrounds experience higher rates of anxiety, depression, and stress due to the pandemic. Secondly, adolescents also have a higher frequency of using alcohol and cannabis during the COVID-19 pandemic.

Implications for Practice, Education, and Future Research

When the lockdown first began, and events were quickly being put on hold, I recall immediately feeling panic set in. As an athlete myself, a whole season was suddenly paused for the unforeseeable future. I felt my mental health decline each day, for I did not know who I was without athletics. The sudden loss of identity, rigid scheduling, and teammates to exercise with left me alone and insecure. Adolescents, already experiencing a time of significant change, were extremely vulnerable when the COVID-19 pandemic drastically shifted living situations and daily routines; mental health was not safeguarded. Athletes, especially those who strongly identify as an "athlete," were especially susceptible to a mental health decline during the pandemic.[6] Further, depression in females is often demonstrated to be higher than their male counterparts,[2,3,4,5,7] and Knowles et al. found that males may have greater resilience than females. Understanding mental health and the affect it can have on a specific individual is essential to providing optimal care.

According to Meherali et al., pandemics cause stress, worry, helplessness, and risky behavioral issues, such as substance abuse, suicide, and academic issues, among adolescents. Additionally, these studies suggest that severance to physical activity is a dominant risk factor for depression during the pandemic.[1,7] To be able to recognize a mental health decline in a future patient and refer as needed is essential to preventing this risky behavior and potential harm. Education on mental health and the potential effects of an unstable environment, such as pandemic life, is essential in order to express empathy towards each patient. The majority of publications featured in this study found that depressive symptoms were heightened or worsened during the

pandemic as compared to pre-lockdown times; the US Center for Disease Control and Prevention estimates that nearly 60% of US adults had depressive or anxious symptoms by June of 2020.[3] In particular, physical activity emerged as a risk factor for depression during this global pandemic. This sudden loss of structured physical activity once stay at home orders were put in place threatened the 55% of US high school students participating in interscholastic athletics.[7] It is an athletic trainer's role to recognize the signs and symptoms of mental distress and aid in healthy coping mechanisms. To not only notice a decline in mental health, but also understand what feelings your athlete may be experiencing to refer to the correct health care professional will greatly aid in the care of your athletes.

With more research, the prolonged effects of isolation and pandemic behavior can be determined. Consistent, long term surveys of mental health within an adolescent athletic population will give a more clearly defined look into the effect of this separation. Each of these studies have been published within four years of the pandemic starting; research on the effects must continue farther into the future to have a more precise comprehension of the subsequent changes. It would also be significant to compare the feelings experienced during the COVID-19 lockdown to athletes who end their sport. When individuals who have been athletes for the majority of their life finish their career, there may be a similar experience to loss of identity. As Knowles et. al. discusses, a loss in access to the sport may prove difficult for athletes with a strong athletic identity. To discover and incorporate methods to easing the transition out of sport would be useful in continuing care for athletes with a mental health decline.

Conclusion

Athletes may be experiencing greater adverse effects than their non-athletic counterparts with demonstrated increases in depression and anxiety responses as a reaction to the COVID-19 pandemic. When treating an adolescent, athletic population, mental health is an important consideration to execute a more complete care plan, now more than ever.

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Saint Louis University
Athletic Training Program

Athletic Training Student Performance By Evaluation Type

Evaluation Type: Student Evaluation of Self - Professionalism
Time Period: 01/01/2022 to 06/01/2022
Time Period Type: Request Date
Report Date: 08/27/2022

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles	Dem profe pron profe patie Gen diss knov effe insti profe othe

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients, caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy	Dem profe pron profe patie men inter and Gen diss knov effe profe patie

	respect for patient privacy and autonomy	team and incorporates that input into plan of care as appropriate	men inter and

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.
(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of knowledge and asks for assistance	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	Mod conc nee abo Dem degr conc acc seek

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.
(Question 4)

Level 3

Not Observed	Critical Deficiencies	Level 1	Level 2	(Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hone and in al profe Dem profe pron ethic profe Gen diss know integ beha cond

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles	Dem profe pron profe patie Gen diss know effe insti profe othe

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%

1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients, caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards respect for patient privacy and autonomy	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy	Dem profi pron profi patie men inter and Gen diss knov effe profi patie men inter and

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.
(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of knowledge and asks for assistance	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	Mod cond need abov Dem degr cond acco seek

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.
(Question 4)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hone and in al profe Dem profe pron ethic profe Gen diss know integ beha cond

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised	Level 4 (Ready for Advanced Practice)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients, caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards respect for patient privacy and autonomy	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%

4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.
(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of knowledge and asks for assistance	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	Mod conc nee abo Dem deg conc acc seek

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.
(Question 4)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hon and in al prof Dem prof pron ethic prof Gen diss kno inte beh cond

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles	Dem profe pron profe patie Gen diss knov effe insti profe othe

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	3	3.5	>> 4.00 <<	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 4.00 **Std Deviation:** 0.00 **Min:** 4.00 **Max:** 4.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	0	0.00%
4	Level 4	1	100.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients,	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for	Dem profe pron profe patie men

	caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards respect for patient privacy and autonomy	responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate	patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy	inter and Gen diss know effe prof patie men inter and

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	3	3.5	>> 4.50 <<	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 4.50 **Std Deviation:** 0.00 **Min:** 4.50 **Max:** 4.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	1	100.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.
(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of knowledge and asks for assistance	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	Mod cond need abov Dem degr cond acco seek

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	3	3.5	>> 4.50 <<	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 4.50 **Std Deviation:** 0.00 **Min:** 4.50 **Max:** 4.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	1	100.00%

5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.
(Question 4)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hone and in al profe Dem profe pron ethic profe Gen diss know integ beha cond

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	3	3.5	>> 4.50 <<	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 4.50 **Std Deviation:** 0.00 **Min:** 4.50 **Max:** 4.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	1	100.00%
5	Level 5	0	0.00%

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles	Dem profe pron profe patie Gen diss know effe insti profe othe

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients, caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards respect for patient privacy and autonomy	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy	Dem profe pron profe patie men inter and Gen diss know effec profe patie men inter and

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.
(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-	Mod conc need abov Dem degr conc acco seek

	knowledge and asks for assistance	professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.

(Question 4)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hone and in al profe Dem profe pron ethic profe Gen diss know integ beha cond

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Student Evaluation of Self - Professionalism: [redacted]

Professionalism (PROF-1): Completes a process of professionalization.
(Question 1)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Demonstrates lack of professionalism Places personal values ahead of professional values Fails to exhibit appropriate honesty, integrity, and respect to patients and team members	Defines professionalism Knows the basic principles of medical ethics Recognizes that conflicting personal and professional values exist Demonstrates honesty, integrity, and respect to patients and team members	Recognizes own conflicting personal and professional values Knows institutional and governmental regulations for the practice of athletic training	Recognizes that athletic trainers have an obligation to self-discipline and to self- regulate Engages in self- initiated pursuit of excellence Embraces the professional responsibilities of being an athletic trainer Practices to the full scope of education and training and formal privileging within a health system	Demonstrates leadership and mentorship in applying shared standards and ethical principles, including the priority of responsiveness to patient needs above self-interest across the health care team Develops institutional and organizational strategies to protect and maintain these principles	Dem profe pron profe patie Gen diss knov effe insti profe othe

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-2): Has professional and respectful interactions with patients, caregivers, members of the interprofessional team, and stakeholders.
(Question 2)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Lacks empathy and compassion for patients and caregivers Disrespectful in interactions with patients, caregivers, members of the interprofessional team, and stakeholders Sacrifices patient needs in favor of own self-interest Blatantly disregards respect for patient privacy and autonomy	Inconsistently demonstrates empathy, compassion and respect for patients and caregivers Inconsistently demonstrates responsiveness to patients' and caregivers' needs in an appropriate fashion Inconsistently considers patient privacy and autonomy	Consistently respectful in interactions with patients, caregivers and members of the interprofessional team, even in challenging situations Is available and responsive to needs and concerns of patients, caregivers and members of the interprofessional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions	Demonstrates empathy, compassion and respect to patients and caregivers in all situations Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers Demonstrates a responsiveness to patient needs that supersedes self-interest Positively acknowledges input of members of the interprofessional team and incorporates that input into plan of care as appropriate	Role models compassion, empathy and respect for patients and caregivers Role models appropriate anticipation and advocacy for patient and caregiver needs Fosters collegiality that promotes a high-functioning interprofessional team Teaches others regarding maintaining patient privacy and respecting patient autonomy	Dem profe pron profe patie men inter and Gen diss knov effe profe patie men inter and

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.00 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.00 **Std Deviation:** 0.00 **Min:** 3.00 **Max:** 3.00

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%

1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	1	100.00%
3.5	3.5	0	0.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-3): Demonstrates professional conduct and accountability.

(Question 3)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Is unreliable in completing patient care responsibilities or assigned administrative tasks Shuns responsibilities expected of an athletic training professional	Completes most assigned tasks in a timely manner but may need multiple reminders or other support Accepts professional responsibility only when assigned or mandatory Documents and reports clinical and administrative information truthfully Maintains patient confidentiality	Attends to responsibilities and completes duties as required Identifies appropriate channels to report unprofessional behavior Recognizes professionalism lapses in self and others Completes assigned professional responsibilities without the need for reminders Consistently recognizes limits of knowledge and asks for assistance	Presents themselves in a respectful and professional manner Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy Reports professionalism lapses using appropriate reporting procedures Willingness to assume professional responsibility regardless of the situation or consequences Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner	Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner Assists others to improve their ability to prioritize multiple, competing tasks Negotiates professional lapses of the athletic health care team Exhibits self-awareness, self-management, social awareness, and relationship management Helps implement organizational policies to sustain athletic training as a profession	Mod conc nee abo Dem deg conc acc see

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Professionalism (PROF-4): Exhibits integrity and ethical behavior in professional conduct.

(Question 4)

Not Observed	Critical Deficiencies	Level 1	Level 2	Level 3 (Ready for Unsupervised Practice)	Level 4 (Ready for Advanced Practice)	
	Dishonest in clinical interactions, documentation, research, or scholarly activity Refuses to be accountable for personal actions Does not adhere to basic ethical principles Blatantly disregards formal policies or procedures	Honest in clinical interactions, documentation, research, and scholarly activity. Requires oversight for professional actions Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them	Demonstrates accountability for the care of patients Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity Begins to reflect on personal professional conduct	Honest and forthright in clinical interactions, documentation, research, and scholarly activity Demonstrates integrity, honesty, and accountability to patients, society and the profession Identifies and responds appropriately to lapses of professional conduct among peer group	Actively manages challenging ethical dilemmas and conflicts of interest Regularly reflects on personal professional conduct Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility	Role hon and in al prof Dem prof pron ethi prof Gen diss kno inte beh con

Not Observed	Critical Deficiencies	0.5	Level 1	1.5	Level 2	2.5	Level 3	3.5	Level 4	4.5
0	0.0001	0.5	1	1.5	2	2.5	>> 3.50 <<	3.5	4	4.5

Count: 1 **Non-Zero Count:** 1 **Average:** 3.50 **Std Deviation:** 0.00 **Min:** 3.50 **Max:** 3.50

Answer Value	Answer Choices	Answer Count	Percent of All Answers
0	Not Observed	0	0.00%
0.0001	Critical Deficiencies	0	0.00%
0.5	0.5	0	0.00%
1	Level 1	0	0.00%
1.5	1.5	0	0.00%
2	Level 2	0	0.00%
2.5	2.5	0	0.00%
3	Level 3	0	0.00%
3.5	3.5	1	100.00%
4	Level 4	0	0.00%
4.5	4.5	0	0.00%
5	Level 5	0	0.00%

Program Assessment Rubrics[1]

IMPORTANT NOTE: The rankings, identified by the column headings below, are of increasing complexity moving across the table from left to right. A student ranked as "reinforce" must be able to perform at the "introduce" level to be successful. Likewise, a student who ranks at the "mastery" level must be able to perform at both the "introduce" and "reinforce" levels to be successful.

MASTER OF ATHLETIC TRAINING (MAT) – Program Assessment Rubrics			
PLO #1 - Demonstrate respect for patient diversity as it relates to the in the practice of athletic training.			
Unsatisfactory	**Introduce**	**Reinforce**	**Acheive**
• Unable to identify the importance of respect for diversity.	• Identifies importance of respect for patient diversity.	• Describes projected outcomes associated with respect for patient diversity.	• Proposes strategies for improving respect for patient diversity.
PLO #2 - Demonstrate effective communication strategies necessary for patient-centered care.			
Unsatifactory	**Introduce**	**Reinforce**	**Acheive**
• Unable to perform assignment using appropriate terminology.	• Performs assignment using the appropriate terminology.	• Performs assignment using appropriate format and terminology.	• Performs assignment addressing the health literacy level of the patient.
PLO #3 – Demonstrate Interprofessional collaboration skills that advance holistic patient-centered care.			
Unsatisfactory	**Introduce**	**Reinforce**	**Acheive**
• Unable to identify the importance of Interprofessional	• Identifies importance of interprofessional collaboration in patient-centered care.	• Describes outcomes associated with interprofessional	• Proposes strategies for improving interprofessional

MASTER OF ATHLETIC TRAINING (MAT) – Program Assessment Rubrics			
collaboration in patient-centered care.		collaboration in patient-centered care.	collaboration in patient-centered care.
PLO #4 - Employ evidence-based clinical reasoning in the practice of athletic training.			
Unsatisfactory	**Introduce**	**Reinforce**	**Acheive**
• Unable to perform assignment using appropriate terminology regarding evidence-based practice.	• Performs assignment using the appropriate terminology regarding evidence-based practice.	• Performs assignment differentiating between levels of evidence in clinical reasoning.	• Appraises best evidence and applies it to evidence-based clinical reasoning.
PLO #5 - Demonstrate the ability to translate didactic athletic training concepts into effective clinical practice.			
Unsatisfactory	**Introduce**	**Reinforce**	**Acheive**
• Unable to perform assigned activity satisfactorily with assistance using appropriate methodology.	• Performs assigned activity with assistance using appropriate methodology.	• Performs assigned activity autonomously at using appropriate methodology.	• Leads assigned activity competently using appropriate methodology.

[1]The PLOs and ranking descriptions are currently in draft form. These assessment components will be evaluated after each assessment cycle of data are collected and analyzed. Adjustments will be made as appropriate for clarification and to provide additional discipline context.