Southwest Athletic Trainers' Association Free Communications Abstract Presentations

The following abstracts were accepted and presented at the 68th Southwest Athletic Trainers' Association (SWATA) Symposium, 2023.

The Association of Vitamin D, Bone Mineral Density, and Injuries among Acrobatics and Tumbling Athletes

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Introduction: Acrobatics and Tumbling (A&T) is an emerging sport incorporating various elements of gymnastics and competitive cheerleading. Anecdotal evidence suggests that the sport presents with high injury rates potentially due to the high impact nature of the activity. Due to the potential aesthetic sport related concerns, bone mineral density and risk of injury presents a concern for patients, athletic trainers and stakeholders. Increased understanding of the relationship between bone mineral density, serum vitamin D status, and injury incidence in A&T may be useful to athletic trainers, registered dietitians, and others working with these athletes. The objective of this study was to evaluate the relationship between bone mineral density, serum vitamin D, and injury among A&T student athletes. Methods: Cohort Study at a NCAA Division I University Sponsored Athletic Department. Forty-two participants on the active A&T roster consented to participate. Average age was 19.69 $\pm$ 1.199 years. Positional composition: 19 tops, 23 bases. Serum vitamin D was analyzed at two timepoints 8 weeks apart. Injury history data was collected between timepoints by team athletic trainer. Routine DXAs performed as standard of care. Outcome measures included serum vitamin D (ng/ml), injury incidence, and bone mineral density (femur, lumbar spine). Descriptive statistics were utilized in addition to t tests and ANOVAs to determine if significant differences existed in injuries based on bone mineral density, or athletic position (i.e., top, base). Poisson regressions were completed to analyze the relationship between bone mineral density and injuries. Results: Between week 1 and week 8, participants experienced a significant loss of vitamin D (6.093 $\pm$ 10.973, $p<.001$). Average bone mineral density Z score for the femur was 1.836 $\pm$ 0.842, and of the spine was 1.952 $\pm$ 0.999. Bone mineral density of the spine was significantly greater in bases than tops, but no difference existed in the femur. There was no significant difference in injuries sustained based on bone mineral density of the femur or spine. Clinical Application: No significant differences were found in injuries related to differences in bone mineral density of the femur or lumbar spine. However, differences were found among bone mineral density by position group, with bases having higher bone mineral density in their spine than tops. This may be important due to the requirements of the base position compared to tops. Although a direct relationship between serum vitamin D and high average bone mineral density was not identified, significant decreases in serum vitamin D and high average bone mineral density in the sample may provide interesting insight for healthcare providers working with A&T. Athletic trainers, strength staff, and dietitians working with A&T should consider the impact of changes in serum vitamin D and activity when monitoring for factors related to injury.

 ISSN Online 2577-8188

Attitudes Toward Implicit Bias Among NCAA Medical Support Staff

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Introduction: Implicit biases are unconscious attitudes, emotions, or stereotypes that have the potential to negatively affect behaviors, actions, and decisions. Recent research has shown that healthcare workers do not provide equitable care to patients from different demographics. When patients are receiving different levels of care, there is a potential for different patient-related outcomes. One of their first steps in many implicit bias interventions for healthcare professionals is identifying one's implicit bias. The purpose of this study was to describe the attitudes toward implicit bias among non-athletic training healthcare professionals who provide care to collegiate student-athletes. Methods: An electronic survey was sent to every National Collegiate Athletic Association (NCAA) team physician, mental health care professional, and nutrition and dietetics professional whose email address was publicly available on their institution's website (n = 623). A total of 116 (age = 40 ± 13 years, experience = 12 ± 11 years, 71 females, 45 males, 33 team physicians, 27 mental healthcare professionals, 56 nutrition and dietetics professionals) participants opened and completed the survey for a response rate of 18.6%. Participants were asked to provide demographic information, including age, years of experience, gender identity, and race. Following the demographics section, participants completed questions taken from the Attitudes Toward Implicit Bias Instrument. Pearson's correlations were used to determine relationships between age, years of experience, and attitudes toward implicit bias. Independent samples t-tests were performed to determine differences in attitudes toward implicit bias between races, gender identities, and professions with significance set at $p < .05$. Results: The majority of participants (n = 109, 94.0%) agreed that implicit biases have the potential to impact patient care, and need to be addressed during education and professional development. There were no significant correlations between age or years of experience with attitudes toward implicit bias. Females were significantly more likely to believe that implicit bias could impact patient care and needed to be addressed than males ($t(114) = -3.068$, $p = .003$). Participants from racial minorities were significantly more likely to believe that implicit bias could impact patient care and needed to be addressed than white participants ($t(114) = -2.131$, $p = .035$). Mental healthcare professionals were significantly more likely to believe that implicit bias could impact patient care and need to be addressed than team physicians ($t(114) = -3.222$, $p = .002$) or nutrition and dietetics professionals ($t(114) = 3.017$, $p = .003$). Clinical Application: Despite some differences between groups, the overwhelming majority of healthcare professionals agreed that implicit bias has the potential to impact patient care and needs to be addressed. These findings suggest that NCAA healthcare professionals may be receptive to interventions designed to identify and address implicit biases.

 ISSN Online 2577-8188

Does Pressure from Coaches Affect the Eating Habits of Male Collegiate Athletes?

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Introduction: Research has shown that eating disorders tend to be most seen in females and athletes. The research on the prevalence of eating disorders in males is low compared to the research on females. This study examined male athletes at Abilene Christian University and determine if the pressure about weight from coaches and teammates could influence the eating habits of these athletes. The purpose of this study is to determine if pressure about weight from coaches or teammates affected eating habits of male collegiate athletes at a NCAA Division 1 institution. Methods: This study employed a cross-sectional survey design. Participants included NCAA division I male student-athletes. The survey was sent out electronically to the participants via school email. The survey includes informed consent, demographic information (age, school classification, and ethnicity), and the questions from the Weight Pressures in Sports Scale in Male Athletes survey. A higher score for a question indicated that there are more weight-related pressures for that topic. This scale had instructions for how to calculate the total score for the different subscales. There was a total score, the coach/teammates subscale, and the appearance subscale. Results: The score for the coach/teammate pressures subscale was 4.09 out of 6, the score for the appearance pressure subscale was 2.55 out of 6, and the total score with all the questions was a 3.32 out of 6. It was found that over half of the total score came from the coach/teammate pressure on the players. It was also shown that there was a higher score from the coach/teammate pressures compared to the appearance pressures. In each of the subscales, the coach /teammate subscale (α =0.87) and the appearance subscale (α = 0.84) included seven questions, so the total scale was made up of all 14 questions (α = 0.90). Each question was scored on a six-point Likert scale that ranges from 1 (Never) to 6 (Always). The total score was determined by adding up the scores for each question and then averaging that number by dividing it by 14. Each subscale was totaled and divided by seven. The dependent variables were the coach/teammate subscale and the appearance subscale. Translation to Practice: The results indicate that the pressure from coaches can have an influence on their athletes' eating habits. While this can be an awkward topic, it is an important topic, especially for athletic trainers to keep in mind when working with athletes. When working with athletes on the daily, athletic trainers should make sure to check in with athletes who could possibly be struggling with disordered eating. Knowing the signs and symptoms of disordered eating can lead to earlier interventions for student-athletes.

Knowledge of and Attitudes Toward Native American and First Nations People Among NCAA Division I Athletic Trainers

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Introduction: Current literature shows that Native Americans people experience more health care disparities relative to other ethnic and racial groups. Previous research has also shown that these healthcare disparities are present in pediatric and young adult Native American populations. As healthcare professionals who will potentially treat these populations, it is important to understand the knowledge of and attitudes toward Native Americans people among athletic trainers. The purpose of this pilot study was to describe the knowledge of, and attitudes and opinions of National Collegiate Athletics Association (NCAA) Division I athletic trainers toward Native Americans. Methods: An electronic survey (Table 1) was sent to every NCAA Division I athletic trainer whose email address was publicly available on their institution's website (n = 3,016). A total of 253 (age = 34 ± 11 years, experience = 11 ± 10 years, 61 females, 42 males, 1 non-binary) athletic trainers opened and completed the survey. Questions asked participants to provide demographic information, including age, years of experience, gender identity, race, and ethnicity. Participants also completed questions related to comfort providing equitable care for Native American patients, attitudes toward Native Americans and knowledge of contemporary, historical, and sports medicine issues specific to Native Americans. Pearson's correlations were used to determine relationships between age, years of experience, attitudes toward Native Americans, and knowledge of contemporary, historical, and sports medicine issues specific to Native Americans with significance set at $p < .05$. Results: The majority of participants reported generally favorable attitudes toward Native Americans. There were significant, very weak negative correlations found between attitudes toward Native Americans and age ($r(251) = -.258$, $p < .001$) and years of experience ($r(251) = -.223$, $p < .001$). There were also significant, very weak positive correlations found between knowledge of Native American sports medicine issues and age ($r(251) = .275$, $p < .001$) and years of experience ($r(251) = .277$, $p < .001$). When asked about providing equitable care for Native American patients, 94.4% (n = 239) participants expressed some level of comfort with providing equitable care. However, participants had mean scores of 26.4% for knowledge of contemporary Native American issues, 33.4% for knowledge of historical Native American issues, and 64.6% for knowledge of sports medicine Native American issues. Clinical Applications: While the majority of participants expressed generally favorable attitudes toward Native Americans people, there appears to be a gap between attitudes and knowledge of issues facing Native American patients. Professional masters in athletic training curricula and continuing education offerings should provide information about providing equitable healthcare for Native American patients.

Table 1: Knowledge of and Attitudes Toward Native Americans Scale

Attitudes

Prompt	Answer Choices
1. Native Americans tend to live in a way that is in tune with nature (e.g., live off the land, hunt for food, etc.) more than other Americans* 2. Native Americans hold on to their traditions more than they should in this day and age.* 3. Native Americans tend to treat others with kindness. 4. Native Americans tend to work harder than most other racial groups. 5. Native Americans tend to be more spiritual than other social groups.	a) Strongly Disagree b) Disagree c) Somewhat Disagree d) Somewhat Agree e) Agree f) Strongly Agree

 ISSN Online 2577-8188

6. Native Americans tend to be more cliquey than other minority groups.* 7. Native Americans have been treated poorly given their inherent worth as humans. 8. Native Americans should have more rights than they currently do given their status as the original Americans. 9. Using a Native American as a mascot is acceptable with permission from the associated tribe. 10. Using a Native American as a mascot is acceptable without permission from the associated tribe.*	
Contemporary Issues (Correct Answers bolded)	
What percentage of the United States population is Native American?	a) 0.5% **b) 0.9%** c) 1.2% d) 1.5%
How many Federally recognized Native American Tribes are in the United States?	**a) 574** b) 484 c) 267 d) 654
Which of the following tribes does NOT have a federally recognized reservation in the state of Texas?	**a) Apache** b) Tigua c) Kickapoo d) Alabama-Coushatta
How many Native Americans/Native Hawaiians were elected to the United States House of Representatives in 2020?	a) 1 b) 8 **c) 6** d) 4
How many Native American Tribes have treaty rights to send non-voting delegates to the United States Congress?	**a) 2** b) 4 c) 6 d) 7
Historical Issues (Correct answers bolded)	
Which of the following tribes is not part of the Plains culture?	a) Crow b) Blackfeet **c) Hopi** d) Comanche
Which of the following was not a primary crop grown by sedentary farming tribes in the Southwest culture?	a) Corn **b) Carrots** c) Beans d) Squash
What housing structure was primarily used by the Navajo tribe?	a) Teepee b) Wigwam c) Pueblo **d) Hogan**
Before European contact, which region of the United States had the largest population?	**a) Modern-Day California** b) Modern-Day Texas c) Modern-Day Florida d) Modern-Day New York

The ancestors of Native Americans are thought to have arrived in North America over _____ years ago.	a) 6,000 b) 1,000 **c) 12,000** d) 10,000
Sports Medicine Issues (Correct answers bolded)	
True or False: All Native American tribes require consent from a medicine man for a sports medicine professional to provide care.	a) True **b) False**
Which of the following Native American tribes generally does not allow blood transfusions?	**a) Navajo** b) Hopi c) Mohawk d) Seminole
What percentage of Native Americans people use peyote for spiritual and medicinal purposes in modern society?	**a) 10%** b) 20% c) 30% d) 40%
Which of these sports was invented by Native American?	a) Football **b) Lacrosse** c) Golf d) Tennis
Which Native American Olympian won the decathlon and pentathlon in 1912?	a) Billy Mills b) Jesse Rinick **c) Jim Thorpe** d) Andrew Sockalexis

The Effects of Dry Cupping Therapy on Touch Pressure Threshold in Collegiate Baseball Players.

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Introduction: Cupping therapy is a therapeutic modality that uses negative pressures to achieve therapeutic benefits. Various published studies report that cupping therapy decreases pain, increases range of motion, and improves blood flow. Previous studies also report an effect on tissue tenderness. However, there do not appear to be any studies assessing the effects of cupping therapy on touch pressure threshold, which measures skin sensitivity. Changes in touch pressure threshold may provide more information on the neurological effect cupping therapy has on treated tissues. The purpose of this study was to compare the effects of cupping therapy on touch pressure threshold with a control condition in collegiate baseball players. Methods: We recruited and consented ten apparently healthy college baseball players (21.50 ± 1.18 yrs, 185.93 ± 6.21 cm, 89.16 ± 7.23 kg). Subjects received treatment on the left side of their lower back while the right side of their lower back served as the control and received no treatment. Touch pressure threshold, in grams of force measured by Semmes-Weinstein Monofilaments, was the primary outcome measure. Measurements were taken three times on the left side followed by three times on the right. The treatment site was prepared by applying coconut oil to the skin. One plastic pneumatic cup was applied to the left side, placed 5-cm lateral to the spinous process of the L4 vertebra. Two pumps of air were withdrawn from the cup, and the cup was left in place for 20 minutes. Following removal of the cup, touch pressure thresholds were taken for both sides again. A paired samples t-test was performed to determine if cupping therapy had a significant effect on touch pressure threshold, and an independent samples t-test was performed to determine differences in changes between the treatment site and control site, with significance set at $p < .05$. Results: Within group measures for touch pressure threshold produced significant increases post cupping therapy treatment (3.06 ± 0.50 to 3.73 ± 0.58 , $p < .01$). When compared with the control, cupping therapy resulted in a significant increase in touch pressure threshold ($F(1,19)=10.902$, $p < .01$). Clinical Application: Cupping therapy applied for 20 minutes to the lower back appears to increase touch pressure threshold. This suggests that cupping therapy may influence cutaneous sensory nerves, in addition to the previously reported effects on treated tissues. Further studies should be conducted to confirm the effect of cupping therapy touch pressure threshold. Clinicians should use discretion when selecting a therapeutic modality if attempting to increase skin sensitivity.

 ISSN Online 2577-8188

Acute Management of an Abdominal Cavity Perforation in a Collegiate Baseball Pitcher: A Case Report.

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Background: A 21-year-old male collegiate baseball player was performing warm up exercises when he tripped backwards onto one of the team's pitching machines that had been laid on its side. Upon falling backward, the patient sustained a puncture wound through the left buttock from one of the machine's handles. Unaware of the injury, the patient's teammates lifted him off of the machine and retrieved the athletic trainer. Evaluation revealed a deep wound with visible adipose tissue and musculature. At this time, the patient was immediately transported to the emergency department of the local hospital, and team physicians were informed to alert the hospital of the patient's impending arrival. Differential Diagnosis: Puncture wound of the left buttock, abdominal organ injury, anal laceration. Treatment: Upon arrival at the hospital the patient was admitted for evaluation. Initial inspection of the wound revealed the anal sphincter was intact. A CT scan was ordered due to the possibility of perforation of the abdominal cavity. The CT scan revealed that the handle of the pitching machine had perforated the patient's abdominal cavity to a depth of 14 cm. The handle traveled through the sciatic notch of the pelvis, anterior to the bowel and posterior to the bladder. During the penetration and subsequent removal, the handle did not come in contact with any blood vessels or nerves. While the CT scan showed evidence of the handle making contact with the bladder, the bladder was intact. The wound was then flushed and debrided, and closed with eight sutures. The patient was administered intravenous antibiotics while in the hospital. After performing a bowel movement and urinating, the patient was discharged the same day of admittance with a prescription for oral amoxicillin and hydrocodone. Two days following the injury, the patient was evaluated by the team physician in clinic. Evaluation found the wound to be healing well with no signs of infection. The team physician and athletic trainer reiterated the need to monitor for signs of infection, and reinforced the need to report any blood with bowel movements or urination. Seven days post injury, the patient was re-evaluated by the trauma surgeon who had treated him in the hospital. The wound was continuing to heal well, and the patient was instructed to return at 14 days for suture removal. After the sutures were removed, the patient was allowed to begin progressing into light physical activity consisting of resistance band training and light throwing. 28 days post injury, the patient returned to full team activities, including full intensity practice and weight lifting. Throughout the healing process, the patient experienced constipation no complications in the form of infection or issues with urination. Uniqueness: The nature in which the patient was injured does not fit with a typical mechanism of injury found in sport. Additionally, given the location of the injury the lack of neurovascular or organ damage is noteworthy. Lastly, the patient did not require pelvic floor therapy to return to activity even though the handle of the pitching machine damaged the muscle wall of the abdomen. Conclusions: When caring for an acute traumatic injury, timely and appropriate referral is paramount to ensuring optimal patient outcomes. Emergency action plans should incorporate a chain of communication that includes the team physician in order to make sure that proper healthcare professionals are informed prior to the arrival of a patient. Evaluation and reevaluation of healing injuries is critical to ensuring timely referral to therapy specialists if needed.

 ISSN Online 2577-8188

The Impact of Bracing on Kinesiophobia and Recovery in ACL Reconstruction Patients: A Case Study

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Introduction: With 100,000 to 200,000 cases reported in the U.S. yearly, the anterior cruciate ligament (ACL) is a commonly torn structure in the knee among contact and non-contact sports. As medical research on ACL injuries grows, ACL reconstruction (ACLR) continues to be the preferred surgical intervention. Due to extensive rehabilitation timeline requirements, ACLR patients may face physical and psychosocial circumstances affecting their overall recovery. At any point in rehabilitation the patient may experience kinesiophobia, or an irrational fear relating to further injury from participation in physical movement, especially with return to running, jumping, and sports-specific programs. Functional bracing has been an option for intervention to decrease fears of buckling and instability. However, they are argued to foster reliance, creating muscle atrophy and decreased knee extension velocity. As best evidence based practice develops on ACLR patients and effective interventions, functional bracing is currently challenged as an assistance or hindrance to overall recovery. Patient Information: Athlete is a 16-year-old softball catcher who underwent isolated bone patellar tendon bone ACL reconstruction in June 2022. She not only experienced the physical complications of recovery, but also faced ongoing psychosocial factors from early to late stages of her rehabilitation. From fears of engaging in physical activity without her brace to the financial burdens of the equipment, the athlete poses a significant case regarding bracing use and kinesiophobia levels. Interventions: Post-surgery, the athlete was taken through a standard rehabilitation protocol focusing initially on extension mobilization and quadriceps activation with progressions. She received clearance from her physician to run and jump at 4 months and to begin softball-specific activity at 6 months. Her physician instructed her to use the functional brace for running, jumping, and softball activity during the first season of play. At months 4, 6, and 10, the athlete completed hop testing and ACL-RSI measurements to track her progress in return to sport. To gradually prepare the athlete for softball catching, a deep knee flexion squat was also used to gauge her symptoms and abilities with therapeutic interventions. Outcomes: While the athlete successfully returned to sport for softball hitting and as first baseman after 6-7 months, she continued to report psychosocial uncertainties that affected her performance. At 4 months, her baseline ACL-RSI was 44.2%. With each re-evaluation, this score slowly progressed to 64.2% at 6 months and 82.5% at 10 months. Additionally, her overall hop test outcome that allowed return to sport at 6 months was 91.6%. However, this score was achieved with her brace. The athletic trainer noted the athlete's kinesiophobia with non-braced activity, so she was slowly weaned from functional brace outside of softball participation. At 10 months, hop testing was performed again without her brace with an overall score of 80%. Clinical Bottom Line: Functional bracing usage has been highly debated in ACL reconstruction patients. While clinical practice has shifted away from using them, some clinicians and patients may prefer to use them in reintroduction of sports activity. Although functional braces have shown to be disadvantageous in patient's progressive tissue loading, comfortability, finances, and self-efficacy with long-term use, it is appreciable to consider the proprioceptive effects the external support may give patients with higher kinesiophobia levels when reintroducing running, jumping, and other sports activity. In doing so, the patients may address psychological hesitancies and build confidence in physical movements. However, it is crucial that if a functional brace is incorporated into therapeutic intervention, the rehabilitation team must work to wean the patient out of the brace to aid appropriate strength, neuromuscular control, and self-confidence in his or her abilities apart from the brace.

Use of Blood Flow Restriction Training with a Collegiate Baseball Player Following Hook of the Hamate Excision

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Background: A 21-year-old male collegiate baseball player underwent successful excision of the hook of hamate of the left hand. Following two weeks in a padded splint to allow for appropriate scar healing, the patient's sutures were removed and rehabilitation was initiated. Initial rehabilitation consisted of passive range of motion exercises progressing to active range of motion exercises. After one week of range of motion exercises and improvement of range of motion, resistance training with blood flow restriction was initiated. Differential Diagnosis: Hook of the hamate excision. Treatment: Week 3: Prior to beginning resistance training with blood flow restriction, grip strength was assessed using a handheld dynamometer. The average of the patient's three trials for his surgery hand was 60.6 pounds. The average for the non-surgery hand was 145.8 pounds. The average Resistance exercised consisted of theraputty gripping, resisted pronation and supination, and resisted wrist flexion and extension. All exercises were performed with 50% blood flow restriction for one set of 30 repetitions followed by three sets of 15 repetitions with 30 second breaks between repetitions and 60 second breaks between exercises. Exercises were performed five days during the week. Week 4: The average of the patient's grip strength trials for his surgery hand was 82.4 pounds, and 144.5 pounds for his non-surgery hand. Level of resistance for exercises was increased to tolerance with sets, repetitions and frequency remaining the same. Week 5: The average of the patient's grip strength trials for his surgery hand was 121.4 pounds, and 145.6 pounds for his non-surgery hand. Level of resistance for exercises was increased again, and the patient began sport specific activities including hitting and catching. Given the increase in sport specific activity, resistance training frequency was decreased to three times during the week. Week 6: The average of the patient's grip strength trials for his surgery hand was 130.8 pounds, and 145.2 pounds for his non-surgery hand. The patient returned to full participation in team activities, with a plan to continue therapeutic exercises three times a week. Uniqueness: While the patient's return to play following hamate excision was consistent with current literature, recent data has suggested that patients undergoing hook of the hamate excision experience a reduction in grip strength post-surgery. In this case, the patient improved his grip strength by 115.8% within four weeks of splint and suture removal. This case provides an example of a successful therapeutic exercise protocol for increasing grip strength using blood flow restriction following hook of the hamate excision. Conclusions: When developing a therapeutic exercise protocol for a patient after injury or surgery, it is important to explore all possible options to ensure optimal patient outcomes. As this report describes only one hook of the hamate excision patient's outcomes following therapeutic exercise with blood flow restriction, larger scale studies are necessary to provide more generalizable recommendations.

Hook of the Hamate Fracture in a Collegiate Baseball Player Preceded by a Hamate Stress Fracture

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Background: A 21-year-old male collegiate baseball player reported to the athletic training staff complaining of pain along the hypothenar eminence of the left hand. The patient's pain was intensified when swinging a bat but remained constant even at rest. The patient reported symptoms beginning approximately three weeks prior to being evaluated by the athletic training staff, but delaying reporting symptoms in order to continue playing. Physical exam revealed tenderness over the hook of the hamate and hypothenar eminence, decreased active wrist extension, decreased grip strength, and pain with resisted pronation and supination. At this time, the patient was removed from activities involving gripping or putting axial force on the wrist and referred to the team physicians. Differential Diagnosis: Hook of the hamate fracture, triangular fibrocartilage complex injury, wrist flexor tendinopathy. Treatment: Day 2: Initial exam by the team physician furthered the suspicion that the patient may have experienced a hook of the hamate fracture. X-rays were ordered for further evaluation, including a carpal tunnel view to evaluate the hook of the hamate. X-rays did not reveal a fracture, leading to the physician placing the patient in a volar wrist brace for two-weeks based on the tentative diagnosis of a hook of the hamate stress reaction. Day 16: Upon discontinuing the volar wrist brace, the patient attempted to return to activities, but experienced a similar magnitude of symptoms. At this time, the decision was made to obtain an MRI to evaluate the patient's hand further. Day 18: Upon receiving the results of the patient's MRI, it was determined that the patient had suffered a hook of the hamate fracture. The MRI also revealed that the patient was suffering from a stress fracture of the hamate bone. The patient was then referred to an orthopedic hand surgeon for consultation. Due to the nature of the patient's health insurance, he was forced to return to his home state for his consultation. Day 28: Upon physical exam and review of the MRI findings, the orthopedic surgeon suspected the patient had been predisposed to the hook of the hamate fracture due to the stress fracture in the hamate. The patient was consented for surgery, with the goal of excising the fractured portion of the hamate. Day 29: The patient underwent successful surgery to excise the fractured portion of the hook of the hamate, and was discharged with instructions to follow up with the athletic training staff and team physician upon returning to his institution. Uniqueness: The nature in which the patient was injured is typical of hook of the hamate fractures in baseball players. However, the presence of a stress fracture of the body of the hamate bone is an uncommon predisposition to a hook of the hamate fracture. Stress fractures of the body of the hamate are not well described in the literature, making it an unlikely consideration when forming a differential diagnosis. Furthermore, the patient's health insurance status made timely diagnosis and treatment difficult. Conclusions: When caring for a traumatic injury, early diagnosis is often critical to optimal patient outcomes. In the event a clinician is caring for a patient with restrictive health insurance, patient education on the potential ramifications of maintaining such an insurance plan is crucial. Should a patient with a restrictive insurance plan suffer an injury warranting advanced diagnostic testing and therapeutics, clinicians must work to expedite access to care as quickly as possible.

 ISSN Online 2577-8188

Twelfth Rib Avulsion Fracture in a Collegiate Baseball Pitcher: a Case Report.

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Background: A 21-year-old male collegiate baseball player reported to the athletic training staff after experiencing acute pain in his left side following throwing a pitch. The patient experienced immediate difficulty with active lateral flexion and trunk rotation. Palpation revealed spasm and tenderness along the internal and external oblique muscle. The patient reported having subluxed a rib on a previous occasion. While the pain experienced was similar, the patient stated that there was more pain along the muscle bellies of the internal and external oblique muscles compared to the previous injury. No difficulties with breathing, bowel movements, or urination were reported. Differential Diagnosis: Oblique strain, subluxated rib, intercostal cartilage irritation. Treatment: At the time of the initial evaluation, the patient was diagnosed with a strained oblique. The patient was instructed to avoid vigorous physical activity, throwing, deep stretching, and any other painful activities until symptoms began to improve. The patient began a rehabilitation program centered around core and hip strengthening. Treatment was initiated using cupping therapy and electrical stimulation Following a week of relative rest and rehabilitation, the patient reported no improvement in pain or range of motion. At this time, the patient was referred to the team physician for diagnostic ultrasound. Musculoskeletal ultrasound revealed edema consistent with a high-grade external oblique strain. Given the amount of edema the patient had, the physician opted to postpone an MRI until edema had begun to resolve. Ten days after the previous evaluation, the patient was seen again in clinic to be consented for an MRI. A second musculoskeletal ultrasound was performed, revealing a cortical disruption at the 12th rib. Given the new finding, the physician ordered a CT scan for further evaluation. The CT scan confirmed an avulsion fracture of the distal aspect of the 12th rib as a result of the previous oblique strain. These findings provided context for the patient's delay in decreased symptoms and healing. The patient continued relative rest and combined with treatment and rehabilitation for the following four weeks, at which point the fracture was confirmed to have healed. At this time, the patient began a return to throwing protocol, and was able to return to full activity with no complications. Uniqueness: While avulsion fractures of the ribs have been previously reported in athletic populations, there appear to be no documented cases of an avulsion of the 12th rib. Additionally, previous documented injuries have primarily involved the serratus anterior avulsing seventh through ninth ribs. Conclusions: When providing care, clinicians must consider all patient reported signs and symptoms. In the event that a patient's symptoms do not follow an anticipated progression, clinicians should use all available resources to obtain a diagnosis. Evaluation and re-evaluation of patient progress is critical to ensure optimal outcomes following injury.

Slowing it Down: The Impact of a Core Stabilization Program of Hypermobile Sprinters

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Background: Low back pain (LBP) is a common complaint in sprinters, and it can present itself in many ways. One study published in 2019 surveyed 2539 runners; 22.6% of them reported LBP of some kind at least once within that year.5 LBP can occur in sprinters for many reasons. One study noted that muscle weakness, imbalance, and improper recruitment of hip and/or core musculature are a few sources of LBP in athletes.4 The aim of this study is to examine the effectiveness of a core stabilization program on athletes suffering from lumbar facet hypermobility. Differential Diagnosis: Conditions that are typically prevalent in sprinters include but are not limited to: hypomobility, hypermobility, disc herniations, and spondylosis. Treatment: Lumbar hypermobility was the final diagnosis based on the patient's presentation and characteristics. For the plan of care, stabilization exercises while incorporating sport-specific activities, manual therapy and patient education were initiated. Evidence suggests that this program along with proper manual therapy techniques should begin to improve the patient's symptoms over time.2 The manual therapy techniques included and were L3 segment gapping maneuver, paraspinal stripping, and a psoas release. Manual therapy was to continue as needed throughout the patients' rehab. Uniqueness: Patient is a 17-year-old male, 200-meter sprinter who showed up in the athletic training room with complaints of LBP that began after doing squats in the weight room at 165 lbs the previous day. Patient complained of unilateral pain (7/10) left lower back that had gotten worse after sitting in class all day and reported being unable to participate in sprinting/jumping activities. Patient demonstrated reproduction of symptoms with end range extension, left posterior quadrant test, palpation of L4 segment, and with prolonged static postures. He also showed hinge point at L4 with back extension and positive aberrant motion which leads to a high probability of having lumbar hypermobility. Conclusion: Following 5 treatment sessions over 10 days, the patient returned to his usual sport-like activities. Upon discharge, the patient was pain-free with daily activities as well as with range of motion. This patient was instructed to continue with his home exercise program and was actively monitored for the following 2 weeks to ensure no relapses or setbacks to occur after treatment sessions concluded. This case demonstrated the positive effects of a core stabilization program, coupled with a manual therapy approach on sprinters who are suffering from a hypermobility issue of the lumbar spine. The patient was issued a personalized rehabilitation protocol that was followed carefully for two weeks, this program allowed us to see major improvements. The patient was able to recognize symptoms early enough for us to start making quick progress, and consistency allowed us to maintain progression over time.

 ISSN Online 2577-8188

The Diagnosis, Rehabilitation, and Treatment of Posterior Impingement in a High School Baseball Pitcher

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Introduction: Posterior impingement, also known as internal impingement, is a type of secondary impingement that is caused by overuse and repetitive movements of the shoulder overhead during motions such as throwing, spiking, etc. A combination of shoulder abduction and external rotation produces impingement of the infraspinatus and/or of the supraspinatus against the posterior-superior glenoid. Posterior impingement is common in overhead athletes, and this mechanism is usually seen during the cocking phase of throwing. Someone suffering from posterior impingement may complain of posterior shoulder pain, posterior stiffness and decline in performance. Patient Information: In this case study, a 15-year-old male high school baseball pitcher seeks medical help after dealing with posterior shoulder pain, elbow pain, and tingling in his elbow to 4th and 5th fingers for 3 weeks. The athlete complained of feeling weak while throwing. He states that does not recall doing anything specific to his shoulder, such as falling on it or subluxing/dislocating it. The pain is the highest during throwing and after throwing but eventually would cease as he rested. The symptoms he is experiencing are not isolated just from pitching but arise when throwing any ball. He also has pain from reaching overhead to grab things from shelves or stretching with his hands overhead. Differential diagnoses include posterior impingement, SLAP tear, rotator cuff tendonitis, UCL tear, and cervical radiculopathy. These diagnoses have similar signs and symptoms, so the objective examination was important in determining the diagnosis. Cervical radiculopathy was tested to rule in or out the paresthesia symptoms he was experiencing. Posterior impingement was ruled in through location of pain and when he was getting pain. Additionally, I tested multiple tests for the same condition to aid in ruling. Intervention: The athlete was removed from participation to prevent further damage to structures and decrease pain and tingling symptoms. Rehabilitation focused on shoulder stability, rotator cuff strength, serratus anterior strength, and proper scapulohumeral rhythm and throwing mechanics. Posterior mobilizations, scapular framing, and scapular upward rotation mobilizations were utilized before exercises to help decrease pain and improve shoulder and scapular joint mobility, and soft tissue massages were done on the biceps, upper traps, forearm, rhomboids, and lats to help release tension. Return to Play protocol is broken up into phases. Phase 1 is general stabilization and strengthening, phase II is advanced stabilization and strengthening, phase III is plyometrics, and phase IV is sport specific activities (return to throw). The athlete progressed through the program based off location of pain, type of pain, and change in symptoms. The throwing motion was also utilized to gauge progress. The goal for the athlete was to be able to return to strength and conditioning camp in 6 weeks. Outcomes: The patient made progress through his program. He was re-tested on MMTs for IR, ER, flexion, and protraction, specifically the serratus anterior. He reported no pain through the first two weeks with any of the exercises. General muscles soreness is expected as he continued to increase strength gains. He has not been cleared to participate at this time, and he is currently continuing in phase II. Clinical Bottom Line: This case report demonstrates how posterior impingement goes beyond the shoulder musculature and glenohumeral joint. There are many impairments that can arise due to the impingement. Muscle imbalances and improper scapulohumeral rhythm are expected in overhead athletes. One may note scapular dyskinesis as a sign of muscle imbalances often presented with posterior impingement. The current research harps on evaluation of the glenohumeral joint, scapulohumeral joint, and humeroulnar joint, including the cervical spine, and how to rule in and out their involvement.

 ISSN Online 2577-8188

A Case Study on Treatment Of Subcoracoid Impingement in an Overhead Athlete With Manual Therapy

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Introduction: Subcoracoid impingement of the shoulder is a condition that occurs when the tendons or soft tissues in the shoulder are compressed or pinched between the coracoid process and the humeral head. It is also suspected that subcoracoid impingement can occur when the humerus translates anteriorly, decreasing the subcoracoid space. This impingement can cause pain, inflammation, and limited mobility in the shoulder joint. All kinds of impingement are typically multifactorial, and have several areas that need to be addressed. The purpose of this case report is to examine the effects of therapeutic exercise as well as manual therapy on subcoracoid impingement in an overhead athlete. Patient Information: Patient is a 16-year-old third baseman who began seeking treatment for increased shoulder pain toward the end of a baseball game. Patient reported sharp pain in the anterior aspect of his shoulder when throwing during the cocking phase. He reported pain during warm ups that gradually got worse throughout the game when throwing, and was unable to continue by the bottom of the 5th inning. He reports no neurological symptoms such as numbness or tingling. He reports no history of shoulder pain. Differential diagnoses included subcoracoid impingement or rotator cuff strain. Rotator cuff strain was ruled out as the rotator cuff muscles were strong and not painful, but subscapularis manual muscle testing was weak and painful along with positive impingement tests such as Hawkins-Kennedy test, O'Brians test, and Bear hug test. Interventions: Treatment options for subcoracoid impingement may include rest, physical therapy, anti-inflammatory medications, and in severe cases, surgery. The treatment for this patient included manual techniques along with therapeutic exercise over the course of about 6 weeks, followed by a return to throwing progression. Manual techniques included soft tissue mobilization of the pecs as well as a poster glide of the shoulder. Following manual therapy the patient would stretch internal and external rotation, and then complete a series of exercises targeting the subscapularis as well as overall rotator cuff strength. Outcomes: Once the patient was pain free and internal and external range of motion was normalized, he was cleared to begin a return to throwing progression with his coach. Patient felt strength and range of motion improved and reported being ready to return to play. Following the completion of the throwing progression the patient will be cleared to return to play as tolerated. Patient discussed and agreed to continuing a maintenance program to be done 2-3 times a week either in the athletic training room or at home to maintain the strength needed to play baseball. Clinical Bottom Line: Overall this case met expectations of implementing a good posterior cuff strengthening therapeutic exercise plan along with introducing manual therapy to address subcoracoid impingement in an overhead athlete. Based on the positive results of this treatment for this athlete, who had no shoulder injury prior, it would be interesting to see if introducing a posterior cuff strengthening program to overhead athletes as a warm up would prevent similar injuries in the future.

 ISSN Online 2577-8188

A Case Report of the Evaluation and Management of Low Back Pain in a High School Basketball Player

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Background: Low back pain can be a tough injury to endure, especially in the growing high school athlete.3 LBP in a high school athlete can be caused by various factors, such as structural deformities, mobility deficits, and so much more. The majority of LBP in adolescents is nonspecific LBP, which is defined as LBP that does not cause systemic or structural changes.5 Nonspecific LBP is often a result of other etiologies such as hypermobile or hypomobile segments of the spine, hip mobility deficits, gait, sleeping positions, or improper weightlifting form. Differential Diagnoses: Other possible diagnoses of LBP in adolescents could be spondylolysis, spondylolisthesis, slipped vertebral apophysis, or fractures of the thoracolumbar spine.1 High school athletes who are diagnosed with hypermobilty of the lumbar spine can be treated conservatively by being prescribed stability exercises and manual techniques. Treatment: A 17-year-old male basketball player came to the athletic training room complaining of left lower back pain of 3 weeks. He reported pain with prolonged sitting, pain while getting dressed, and pain while lifting weights. The patient reported feeling this same type of pain during previous basketball seasons as well. The athlete did not seek treatment for his low back pain in the previous seasons as he reported it was intermittent. During examination, it was discovered that the patient had limited lumbar range of motion in left side bending and left rotation at end range. The patient also had an upslip of the left innominate and the left quadratus lumborum had increased muscle tone. A combination of manual techniques and strengthening of the hip and lower back muscles were used to improve the patient's pain and stabilize the patient's hypermobility at L4-L5. 6 After completing 12 rehab sessions over 4 weeks, the athlete was able to perform at his maximal level with no pain. The athlete's asterisk signs, a squat and full court sprints, had significantly improved and no longer caused the athlete any pain. Uniqueness: The athlete presented with LBP that was a result of a hyper mobile L4-L5 segment. The athlete's age and activity levels were large factors in the athlete's diagnoses. The athlete responded well to stability exercises, as well as manual techniques performed by the clinician. Conclusion: This case shows that a combination of manual therapy and stabilization exercises are best to manage non-specific LBP.6 The patient responded well to attending rehab 3 times a week for 4 weeks and was able to perform at his maximum level with no pain.

 ISSN Online 2577-8188

Low Ferritin Count in Female Collegiate Soccer Player Presents as Concussion

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Background: Women's soccer leads the National Collegiate Athletic Association for having the highest number of concussions in female sports. Common symptoms of concussion can include light headedness, headaches, and dizziness, but these symptoms are not exclusive to concussions. Female athletes may experience nutritional deficits that can lead to a wide range of symptoms mimicking those commonly experienced with a concussion such as headaches, dizziness, and fatigue. The patient in this case is a 21-year-old female soccer athlete who presented with sensitivity to light, light headedness, nausea, and fatigue after experiencing repeated 'headers' as well as a collision during a match. Upon evaluation, she reported a long-standing history of hyperhidrosis, eating disorders, and migraines. The athletic trainer evaluated the patient for a concussion, but all results were within normal limits. As a precaution, the patient was removed from play and any further activity pending evaluation from the team physician. Two days later, the patient was seen by the team physician who also ruled out a concussion and was cleared to return to play. Nine days after the initial injury, the patient collided with an opponent while participating in a match. During halftime the patient complained of feeling 'off' but assumed it was due to dehydration. The athletic trainer treated the patient with water, a salt tablet, and electrolytes which relieved symptoms prior to the start of the second half of the competition. Two minutes into the second half of the match the patient was removed from play due to dizziness, lightheadedness, headache, and nausea. The team physician referred the patient to the team's concussion specialist. Differential Diagnosis: Initial suspicions were centered around a concussion due to the collision sustained nine days prior. Treatment: After examination, the concussion specialist ordered bloodwork. The blood panel revealed a low ferritin count, a protein responsible for iron storage. Based on her blood panel, it was determined the low ferritin count secondary to hyperhidrosis was contributing to headaches, nausea, lightheadedness, and dizziness. The physician prescribed ferrous sulfate tablets to treat low levels of iron. The physician also recommended meetings with both the athletic trainer and registered dietitian for neck strengthening and meal planning. The registered dietician provided several food adjustments to incorporate higher levels of iron into the diet such as adding more leafy greens, proteins, and potatoes. She also advised the patient to keep a daily food and symptom log. The athlete was allowed to fully participate but was instructed to check in with the athletic trainer before and after any physical activity. After following the recommendations, the patient noted an immediate decrease in the severity and frequency of symptoms. She completed the season without any further incidents. Uniqueness: Nutritional deficits in female athletes are often missed due to high hormone intricacy and the lack of research on women. In this case symptoms caused by a low ferritin count mimicked those of a concussion. Conclusion: The patient presented with a mechanism and symptoms that align with a concussion diagnosis. After ruling out a concussion, bloodwork confirmed a nutritional deficit which commonly presents with symptoms similar to a concussion. After changing her diet, the patient was able to resolve her symptoms. By collaborating with experts such as registered dieticians, athletic trainers can further their knowledge in the unique components of food and how important of a role it plays

Athletic Trainers in Physician Practice Society Free Communications Abstract Presentations

The following abstracts were accepted and presented at the 6th Athletic Trainers in the Physician Practice Society Annual Conference in 2023.

Figure-8-Reconstruction of Posterior Sternoclavicular Joint Dislocation 18 Days Post Initial Injury

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Introduction: Traumatic sternoclavicular joint injuries account for less than 3% of all traumatic joint injuries1. Although rare, posterior dislocation of the sternoclavicular joint has the potential to be life-threatening due to the proximity of vital structures posterior to the manubrium. This injury typically requires a high-energy force applied through the joint2. SC dislocations become increasingly difficult to reduce after 24 hours, so timely diagnosis and treatment are important. Glass et al. found mediastinal compression occurred 30% of the time with posterior dislocations. If left untreated, prolonged pressure on the superior mediastinum can cause erosion of the great vessels, tracheoesophageal fistula, brachial plexopathy and thoracic outlet syndrome1. An open reduction is indicated once a closed reduction has failed. Case Presentation: 74-year-old, Caucasian male, who had a possible syncopal episode and fell onto a metal table from ground level sustaining a left posterior sternoclavicular dislocation. He was initially seen at the ER at the region's level 1 trauma center on 8/5/2022. His chief complaint was left clavicle pain with 10/10 pain on VAS. Xray were negative for left clavicle fracture and patient was released with a sling. He was referred from his primary care provider to a local Orthopedist, who ordered a CT scan which showed a posterior sternoclavicular joint dislocation with the sternal end of clavicle imbedded in mediastinum. Thirteen days post-injury closed reduction was attempted by an Orthopedic trauma team at a local trauma hospital. Follow up imaging showed persistent posterior dislocation. Due to failed closed reduction. Subsequently, an open reduction of the sternoclavicular joint was indicated. Eighteen days post-injury, the patient underwent an open reduction of the left sternoclavicular joint with figure-of-8 reconstruction utilizing a semitendinosus allograft. A cardiovascular consult was obtained to assist with retro-manubrium dissection. A successful reconstruction of the sternoclavicular joint was achieved without adverse incident. Discussion: This case illustrates the importance of accurate diagnosis and prompt treatment. Posterior dislocations accompanied with symptoms of mediastinal compression can achieve satisfactory results with both closed and open procedures if the dislocation is reduced as close to the time of injury as possible. Clinical Practice Recommendations: Symptoms of mediastinal compression accompanied posterior dislocations 30% of the time although patients still achieve excellent to good results regardless in the choice of treatment. For patients treated by open reduction, the failure of an initial closed reduction resulted in the in functional outcomes no worse than for patients treated without an attempted closed reduction. Based on the low number of reported open reduction cases in the literature, tenodesis, suture fixation and ORIF have the largest proportion of excellent/good results without frequently associated high-risk complications. K wire and pin fixation is associated with dangerous complications including wire and pin migration or breakage.

Second Victim Syndrome and Organizational Support for Healthcare Providers: A Scoping Review

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Introduction: Healthcare providers may experience critical incident, medical error, or other adverse patient events in their clinical practice. Those that do encounter such events, may experience second victim syndrome (SVS), a condition in which providers feel psychological, cognitive, or physical reactions rendering care in these instances. Those with SVS may experience symptoms such as anxiety, depression, or burnout. Organizational support may mediate the impacts of SVS after an adverse patient event. We conducted a scoping review to explore and synthesize the literature on the support strategies implemented by healthcare organizations in the United States, for healthcare providers, after adverse patient events. Methods: The initial search strategy yielded 244 articles, 84 of which were removed for duplication. The 3-person review team completed title and abstract screening, reference screening, and full-text review, reaching 2-person consensus for article inclusion at each phase. To be included in analysis, studies had to have taken place in the United States, and had to include real or perceived outcomes of organizational support strategies for healthcare providers related to adverse patient events. During title and abstract screening, 144 articles did not meet inclusion criteria. The references of the remaining articles (n = 16) were screened and 6 articles were added to the review pool. Twenty-two articles were included in the full text analysis, during which 16 articles were removed for not meeting the inclusion criteria. Six articles were included in the final extraction and analysis. Results: The studies included in the final analysis, assessed SVS and organizational support across a variety of healthcare work settings and professions, using several strategies, both quantitative and qualitative, to measure provider experiences. The Second Victim Experience and Support Tool (SVEST) (n = 2/6, 33.3%) and the Medically Induced Trauma Support Services Staff Support Survey (n = 2/6, 33.3%) were the most commonly used tools to measure SVS experiences. Our findings indicate that healthcare providers believe organizational support after adverse patient events was or would be beneficial for minimizing SVS. Despite the perception of its value, the frequency of perceived organizational support given to healthcare providers differed across studies, ranging from 43 – 94% of the participants believing they received some form of support. Our findings also demonstrated a discrepancy in the types of support strategies healthcare providers preferred or desired after an adverse event, as the level of agreement differed between sampled populations. Conclusion: Healthcare providers believe support from their organization is important after experiencing an adverse patient event, but support strategies may not be universal. Certain support strategies may be contextual, with potentially different preferences for support based on organization or profession. Organizations should establish provider support systems for adverse events, but first need to assess provider preferences to implement the strategies most desired. That being said, little is known about the effectiveness of the discussed organizational support strategies, outside of their perceived value. Athletic trainers in physician practice are situated among a variety of healthcare providers, all of whom are susceptible to SVS. As organizations develop their support systems, they should consider the interprofessional nature of their staffs to aid in collective support following a crucial incident.

 ISSN Online 2577-8188

The Impact of Video-Assisted Education on Knowledge and Retention Compared to Paper Education Material

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Context: When educating patients, clinicians must be effective to assure patients understand their treatment plan and abide by such to achieve optimal outcomes. Teaching methods that stimulate more than one sense more positively impact learning outcomes. The purpose of this study is to compare paper and video-assisted education at the point-of-care with the aim of changing patient education and local practice in a system for individuals undergoing total hip arthroplasties (THAs). **Methods:** We used a randomized cohort design to explore patient knowledge and retention and educational method at the point-of-care. We compared the current education method (paper) to video-assisted materials using pre and post-education surveys. Both surveys included three demographic questions and a 10-item survey that covered the protocol for THA pre and post-operative care. The post-education survey included an additional three items regarding how often they referred to the material, perceived effectiveness, and accessibility. These questions were ranked on a Likert Scale (1 = strongly disagree to 5 = strongly agree) for perceived effectiveness and accessibility, and (1 = never to 5 = very often) for frequency of material referencing. The protocol items were graded on correctness, receiving one point for each correct answer or a zero an incorrect answer with a maximum score of 10. The tool was content validated by physicians in the clinic to ensure questions were accurate and aligned with the patient population. Pre and post-surveys were collected approximately 1 month apart. Patients were randomly assigned to their education group. In total, 12 participants (age = 70+11 years) were included in the analysis, 6 received paper education, and 6 video-assisted. The majority of patients identified as men (58%, n = 7), and achieved an annual salary of $35,100+26,163. Demographic data and pre- and post-education surveys were analyzed using descriptive statistics. A Wilcoxson Signed rank test was used to compare pre and post-knowledge scores and education group. Chi-squared analysis was calculated to determine the correlation of frequency of access, effectiveness, and accessibility and education group. **Results**: The average pre- and post-survey scores were 7+1/10 and 7+1/10, respectively. There no significant difference between education group and post-survey scores ($p > 0.05$). There were no significant correlations between education group and frequency of use ($p = .39$), perceived effectiveness ($p = .29$), and accessibility ($p = .55$). **Conclusions**: There was no differences in knowledge and retention between education materials. However, beyond the similar knowledge and retention scores, video-assisted material was found to be more accessible. Due to this finding, the paper education material will be revised to assure patients are able to access these as well, as they are just as effective at sharing and retaining patient knowledge. Other healthcare facilities should consider exploring various modes of education to determine which is most preferred and accessible to their patient population.

Clinical Athletic Trainers Decrease Orthopedic Physician Clinical Burden

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Introduction/Context: More than half of physicians in the United States are reporting symptoms of burnout. These symptoms lead to increased risk to patient safety and overall physician health. The use of Certified Athletic Trainers (ATCs) is increasing in popularity, especially in Orthopedic clinics. ATCs in the clinical setting have been shown to allow physicians to focus on patient care and less on clerical and documentation tasks. The goal of this study is to assess if ATCs in the physician practice setting influence physician work-life integration, burnout, and work engagement. Methods/Intervention: Approval obtained by IRB at University of Iowa. An observational, nonrandomized study with data collected from physicians at two time points, 6 months apart. This information included: overall quality of life question, two item burnout survey, work-life balance scale, and physician job satisfaction survey. In addition to data collected from physicians, monthly EPIC ™ signal data was collected and blinded by a research team member. Each provider was divided by use of ATC or no ATC in clinic. These two groups were compared using independent, two-sample t-tests. Analyses were performed using RStudio statistical software. Results: Clinics with ATCs have decreased order contribution for providers as well as decreased portion of notes authored by provider. The average "In Basket" time is significantly lower with ATCs. Additionally, providers who utilize ATCs have significantly less time working in EPIC™ outside of clinical hours per person than those who do not. No significant difference was found between ATC and no-ATC groups in physician work-life balance, job satisfaction, or overall quality of life at time of initial survey and 6-month survey. There was noted to be decreased work engagement scores for those who use ATCs. Discussion: The use of ATCs in physician practice is increasing in popularity with studies demonstrating decreased provider need for clerical and documentation tasks and increased time for providers to focus on patient care. It demonstrated lower amounts of time spent in EPIC ™ outside of clinical hours for those providers who utilize an ATC. In addition to time outside clinical hours, our study found providers have decreased order input and documentation proportions with ATCs. Our study did not show any statistically significant differences in physician work-life balance, job satisfaction, or overall quality of life with use of ATC or no ATCs. Clinical Bottom Line: In this study, the use of ATCs in the orthopedic clinical setting demonstrated decreased amounts of time spent in EMR software outside of clinical hours, decreased order input for physicians, and decreased documentation burden for physicians.

 ISSN Online 2577-8188