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Concussion History's Impact On Instrumented Bess Scores In Division I Contact-Sport Athletes

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Trait anxiety is the predisposition to perceive situations as threatening and higher levels lead individuals to frequently experience anxiety. Although concussion recovery is individualized, post-injury anxiety is an indicator of prolonged recovery. Therefore, high levels of trait anxiety following concussion may alter recovery trajectories by increasing the likelihood of developing post-injury anxiety.

PURPOSE: To examine the level of trait anxiety in concussed athletes throughout recovery compared to healthy controls.

METHODS: Eighty-five high school and college-aged individuals (concussed [Cx]: age = 18.56 ± 2.55 years; healthy controls [HC]: age = 18.10 ± 2.56 years) were enrolled. The State Trait Anxiety Inventory (STAI) measures trait anxiety using a 20-item inventory scored on a 4-point Likert scale (score range: 20-80), where higher scores indicate a greater level of trait anxiety. All concussed participants were administered the STAI within 72 hours of injury (day 0), 5 days post-injury (day 5), and at the time they received full medical clearance (FMC). Healthy controls were tested at similar time points. A 2 x 3 repeated measures analysis of variance was used to compare the level of trait anxiety between each group across recovery. A prior p value was set at 0.05.

RESULTS: There was no significant group x time interaction ($F_{(1.79, 82)} = 1.20$, $p = 0.31$). Although, significant main effects for time ($F_{(1.79, 82)} = 29.10$, $p < 0.001$, $\eta^2 = 0.26$) and group ($F_{(1, 82)} = 29.10$, $p = 0.02$, $\eta^2 = 0.07$) were observed. Specifically, scores decreased across time (day 0: Cx = 38.81 ± 11.17, HC = 32.74 ± 10.00; day 5: Cx = 36.95 ± 11.83, HC = 31.24 ± 10.23; FMC: Cx = 34.65 ± 11.37, HC = 29.98 ± 9.05), and concussed athletes had higher trait anxiety (Cx = 36.81, SE = 1.61; HC = 31.32, SE = 1.63).

CONCLUSIONS: Concussed participants experienced the highest levels of trait anxiety at day 0 and declined as recovery progressed. This indicates that initial post-injury anxiety may be a result of increased trait anxiety. Healthcare professionals should be aware that concussed individuals may be more susceptible to anxiety immediately following injury which could negatively influence recovery outcomes.

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Concussion History's Impact On Instrumented Bess Scores In Division I Contact-Sport Athletes

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PURPOSE: The purpose of this study was to determine if concussion history has an impact on sway velocity. A concussion injury can disrupt proper functioning of the vestibular system, and chronic disruption of this system can increase the chances of subsequent musculoskeletal or concussive injury. Athletes with a history of concussion injury who present with balance deficits, should be targeted for interventions to decrease the risk of sustaining a musculoskeletal or concussive injury.

METHODS: 175 healthy Division I football & men's lacrosse players (age = 19.8 ± 1.2; ht = 71.9 ± 2.2"; wt = 202.1 ± 33.9 lbs) participated in this study. Players were provided with a brief, 1-on-1, concussion discussion and then answered the questions "have you ever sustained a concussion? If yes, how many?". All players underwent a balance assessment as part of their preseason screening and were medically cleared to participate in sports. Players performed the BESS test (double leg, single leg, & tandem) on firm & foam surfaces while standing on the VSR Sport™ force plate by NeuroCom®.

RESULTS: No difference was found between those with and without a previous concussion injury on any of the instrumented BESS stances (Table 1). To further analyze the data, a Spearman Rho correlation determined there was a smaller than typical correlation between number of concussions sustained and sway velocity measurements; double leg firm ($r_s = 0.02$), single leg firm ($r_s = 0.09$), tandem firm ($r_s = 0.08$), double leg foam ($r_s = 0.01$), single leg foam ($r_s = 0.01$), tandem foam ($r_s = 0.02$), & composite ($r_s = 0.06$).

CONCLUSION: Concussion history does not appear to have an impact on sway velocity measurements in contact sport athletes. The vestibulospinal system may be resilient to long-term deficits associated with concussion injury. In the absence of individualized baseline data, normative data may be used to determine balance deficits in those with a suspected concussion, regardless of previous concussion history.

Stance	Mean ± SD		p Value	Effect Size
	(+) Concussion Hx	(-) Concussion Hx		
Double Leg, Firm	0.69 ± 0.20	0.69 ± 0.18	0.924	0.01
Single Leg, Firm	2.31 ±1.28	2.55 ± 1.45	0.243	0.18
Tandem, Firm	1.67 ± 1.19	1.81 ± 1.35	0.444	0.12
Double Leg, Foam	1.85 ± 0.46	1.86 ± 0.53	0.878	0.02
Single Leg, Foam	5.25 ± 2.02	5.45 ± 1.9	0.495	0.10
Tandem, Foam	5.02 ± 3.42	4.93 ±3.14	0.863	0.03
Composite Score	2.80 ± 0.97	2.86 ± 0.94	0.710	0.05

B-80   Free Communication/Poster - Medical Management of the Athlete

Wednesday, May 27, 2020, 1:30 PM - 4:00 PM
Room: CC-Exhibit Hall

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Injuries And Injury-related Pain Relationships To NSAID Use And Abuse In Collegiate Athletes

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Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used by athletes to treat musculoskeletal pain and injuries. The relationship between NSAID use and current pain and injuries in collegiate athletes in unknown. Understanding this relationship is important due to the potential for athletes to improperly obtain and abuse NSAIDs.

PURPOSE: To investigate how pain and injury effects current collegiate athlete NSAID use during both in and out of season.

METHODS: Athletes from all 3 NCAA Divisions self-reported data on in and out of season NSAID use, purchase, and dosage. The Oslo Sports Trauma Research Center Overuse Injury Questionnaire (OSTRC) was used to evaluate current level of participation and pain. Logistic regressions were used to assess the relationship between current NSAID use and OSTRC total score. Models were adjusted for age, gender, NCAA division, history of orthopaedic surgery, and history of major injury, with unadjusted and adjusted Odds Ratios (OR) with 95% confidence intervals (95% CI). χ^2 and Kruskall Wallis tests assessed the relationship between NSAID use and OSTRC overuse and substantial overuse injuries in and out of season.

RESULTS: 252 athletes (age of 19.43 ± 1.2 years; Male: 28%; D1: 101, D2: 74, D3: 77) completed the survey. 33% currently used NSAIDs, 48% self-purchased, and 53% took two pills per dose. 36% did not answer where NSAIDs were obtained and 34% did not answer what dosage was taken. The OSTRC median score was 0 (IQR: 0-22). 53% had overuse injuries, while 20% had substantial overuse injuries. Current NSAID users had greater odds of having increased OSTRC scores (1.03 (95% CI: 1.02, 1.04), p<0.001). OSTRC overuse and substantial overuse