

VESTIBULO-OCULOMOTOR FUNCTION, COGNITIVE ABILITIES, AND SYMPTOMS OF DEPRESSION IN MALE COLLEGIATE FOOTBALL PLAYERS

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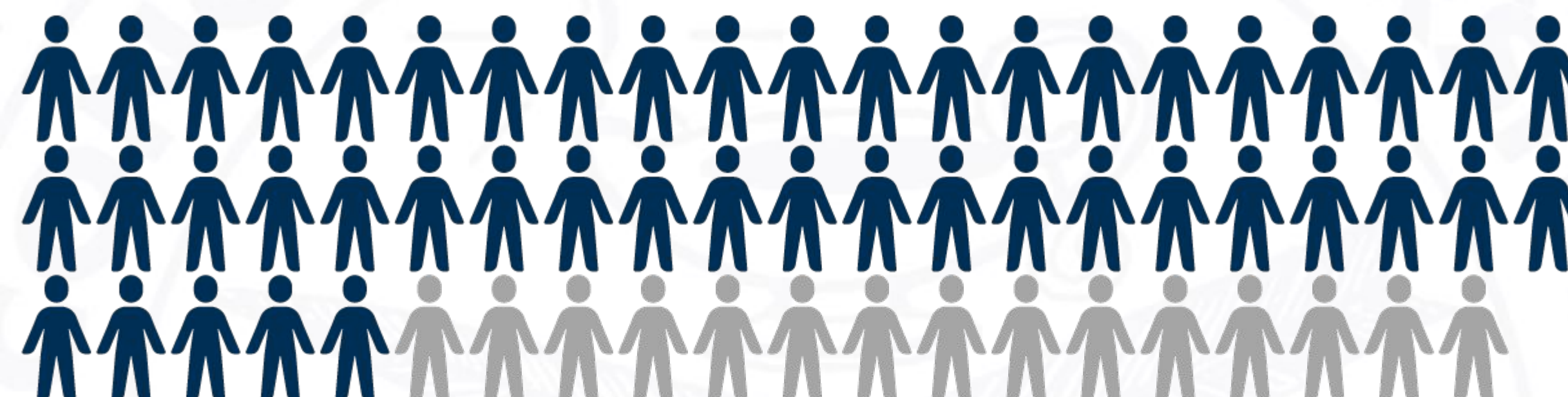
Concordia
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Introduction

- **Background:** Collegiate football players experience increased exposure to repetitive head impacts. These subconcussive head impacts can cause vestibulo-oculomotor (VOM) dysfunction, cognitive impairment, and depressive symptomatology¹⁻⁴
- **Purpose:** To determine the prevalence of VOM dysfunction, cognitive impairment, and depressive symptomatology in cleared to play football players

Methods

- **Participants:** 62 male Division II Football players from Concordia University, Saint Paul
- **Tests and Measures:**
 - Dynamic Visual Acuity (DVA)
 - Paced Auditory Serial Addition Test (PASAT)
 - Near Point Convergence (NPC)
 - Centers for Epidemiologic Studies Depression Scale (CES-D)

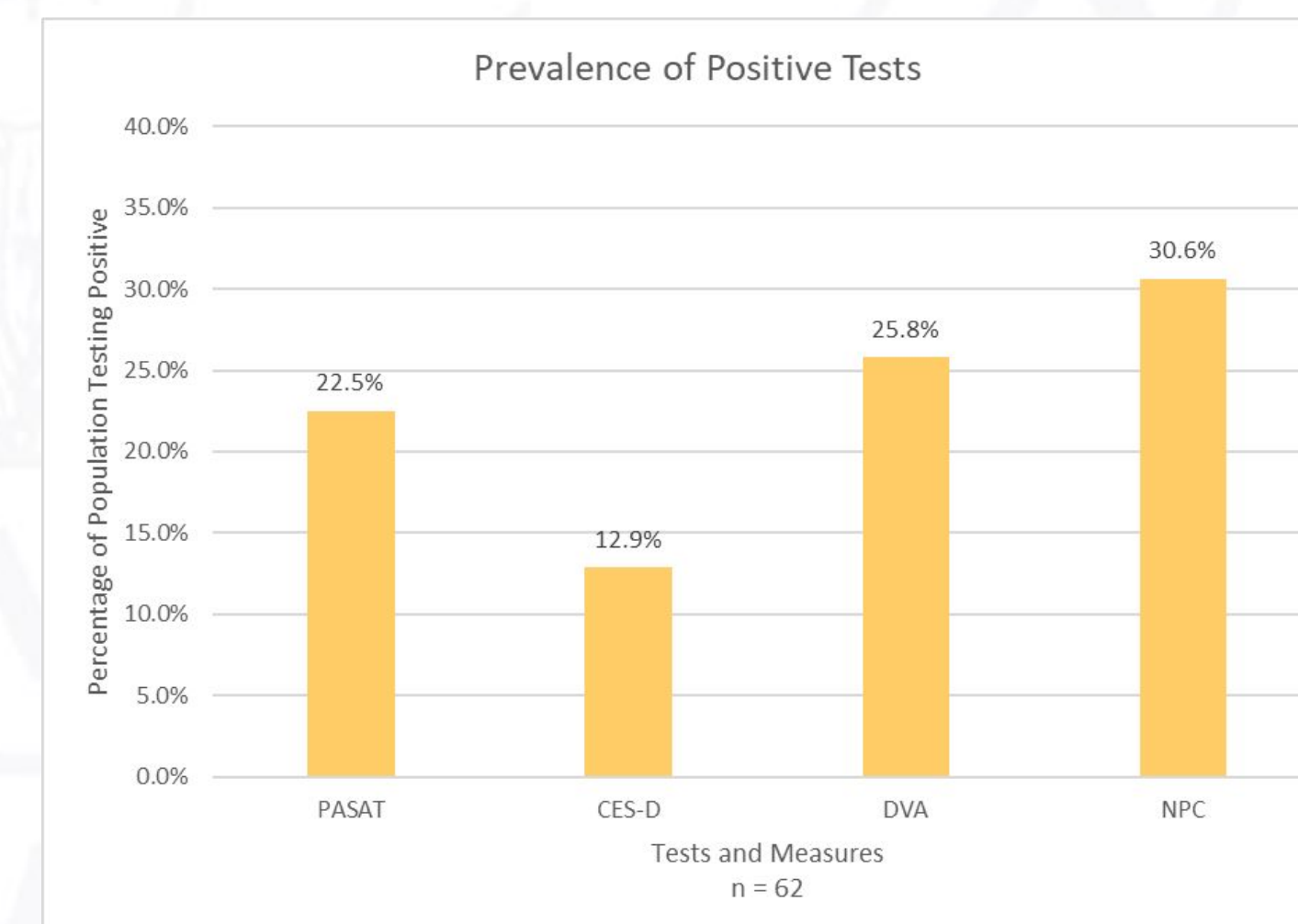


76%

OF ATHLETES HAD AT LEAST ONE POSITIVE TEST

Results

- Over half (51.6%) of cleared-to-play athletes presented with at least one positive VOM test
- Eight participants (12.9%) scored >16 points on the CES-D indicating clinically significant symptoms of depression
- Twenty participants (22.5%) scored one or two standard deviations below the group-mean PASAT score suggesting impaired cognitive functioning



Conclusion

- Testing revealed a high number of abnormal results in cleared-to-play football players suggesting referral to health services may be appropriate
- Results are especially informative given the reduced-contact season due to COVID-19 protocols

Clinical Relevance

- Many cleared to play athletes may be playing in the presence of V-O dysfunction
- Cognitive impairment and depression symptomatology should be monitored for long term health and wellness
- A more holistic approach is necessary to objectively assess athletes exposed to frequent subconcussive head impacts

References

1. Tsushima WT, Ahn HJ, Siu AM, Yoshinaga K, Choi SY, Murata NM. Effects of repetitive subconcussive head trauma on the neuropsychological test performance of high school athletes: A comparison of high, moderate, and low contact sports. *Appl Neuropsychol Child.* 2019;8(3):223-230.
2. Slobounov SM, Walter A, Breiter HC, et al. The effect of repetitive subconcussive collisions on brain integrity in collegiate football players over a single football season: A multi-modal neuroimaging study. *NeuroImage Clin.* 2017;14(January):708-718.
3. Montenigro PH, Alosco ML, Martin BM, et al. Cumulative Head Impact Exposure Predicts Later-Life Depression, Apathy, Executive Dysfunction, and Cognitive Impairment in Former High School and College Football Players. *J Neurotrauma.* 2017;34(2):328-340.
4. Santo AL, Race ML, Teel EF. Near point of convergence deficits and treatment following concussion: A systematic review. *J Sport Rehabil.* 2020;29(8):1179-1193