Mid Atlantic Regional Chapter
of the
American College of Sports Medicine

Annual Scientific Meeting, November 1st – 2nd, 2019
Conference Proceedings
International Journal of Exercise Science, Volume 9, Issue 8

Collegiate Collision Sport Athletes have Slower Trail Making Test Performance than Non-Collision Sport Athletes.

Zarek O. Fasoranti, Alexander L. Enrique, Katherine J. Hunzinger, Kelsey N. Bryk, Thomas W. Kaminski, Thomas A. Buckley, University of Delaware, Newark, Delaware

Considerable concern has been raised regarding the effects of repetitive head impacts (RHI) during collision sports on neurological health. In older symptomatic populations, RHI appears to be associated with cognitive and behavioral deficits; but, in younger college aged athletes there were no deficits noted using commercially available neurocognitive tests designed to assess concussion. However, broader neurocognitive assessments have not been performed in this population. **PURPOSE**: To determine the effects of collision sport participation on the electronic version of the Trail Making Test (TMT) A and TMT-B performance. **METHODS**: This study utilized a cross-sectional design of 1,208 intercollegiate NCAA Division I athletes (53% female, mean age: 19.0 $\pm$ 6.0). Participants completed a tablet-based TMT-A and B test during pre-season prior to competing in intercollegiate athletics. The independent variable was sport type (collision, contact, non-contact) and the dependent variables were the TMT-A and TMT-B time. Dependent variables were compared by a one-way ANOVA, controlling for concussion history, and significant main effects were followed up with Tukey post-hoc test and Cohen's d was calculated for effect size. **RESULTS**: There was no significant main effect in TMT-A for group ($F=0.940$, $p=0.391$) for the collision (20.8 $\pm$ 6.2 sec), contact (20.9 $\pm$ 4.9 sec), and non-contact (20.4 $\pm$ 5.4 sec) athletes. However, there was a significant main effect for TMT-B ($F=10.956$, $p<0.001$). Post hoc tests identified a difference ($p<0.001$, $d=0.29$) between the collision (40.8 $\pm$ 11.7 sec) and non-contact group (37.7 $\pm$ 10.0 sec). There were no significant post-hoc differences for the contact group (39.2 $\pm$ 10.4 sec). **CONCLUSION:** The results of this study suggest that college athletes participating in collision sports have slower TMT-B times than those participating in non-contact sports, but the effect size was small ($d=0.29$). While this study was not designed to ascertain the underlying mechanisms, these results raise additional concerns regarding the effects of RHI on neurological health in collision sport athletes.
Supported by the NCAA/DoD CARE Grand Alliance: W81XWH-14-2-0151