

# Vestibular, Cognitive, Oculomotor, and Athletic Performance In Eligible Female Collegiate Soccer and Lacrosse Players

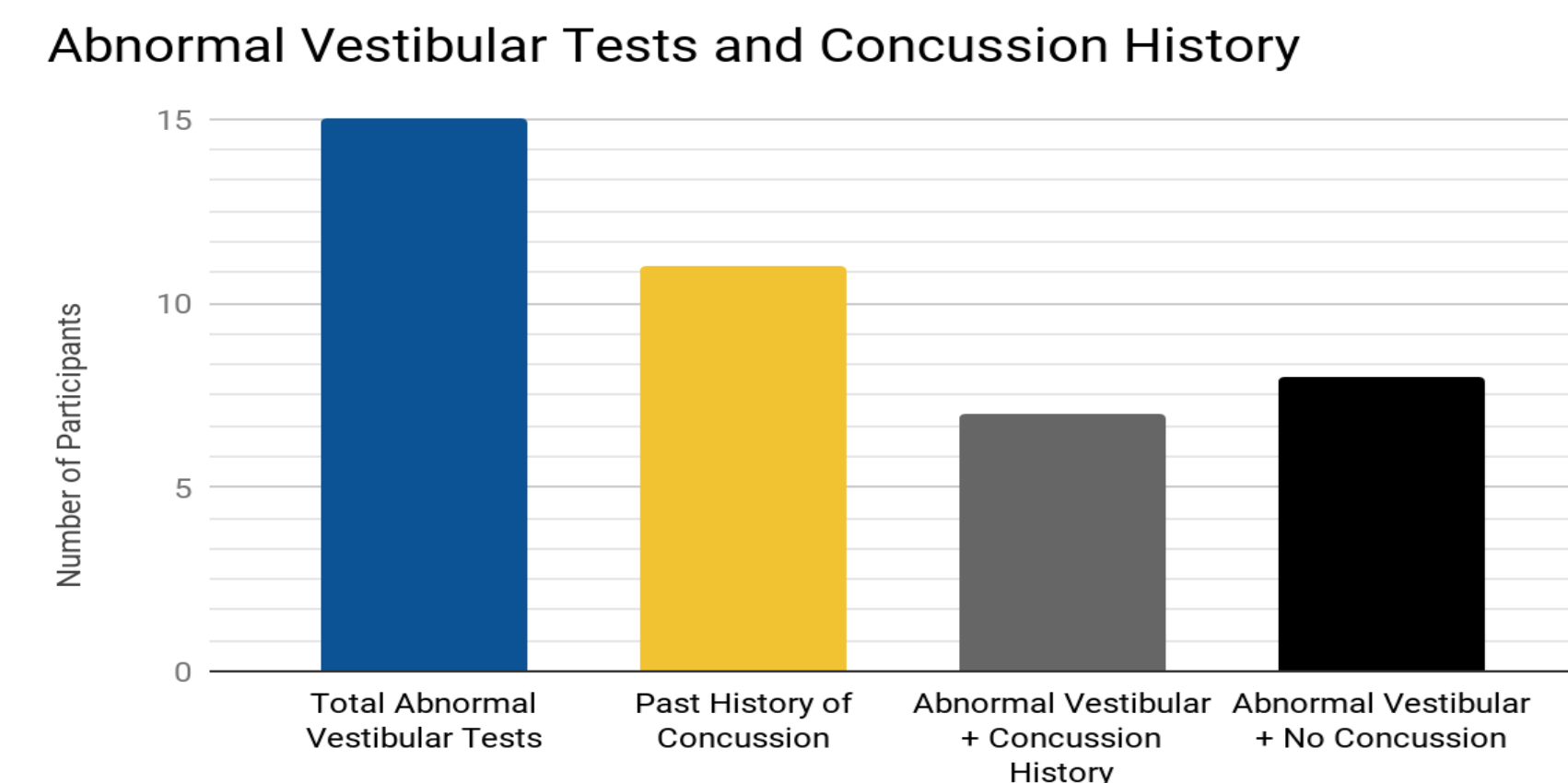
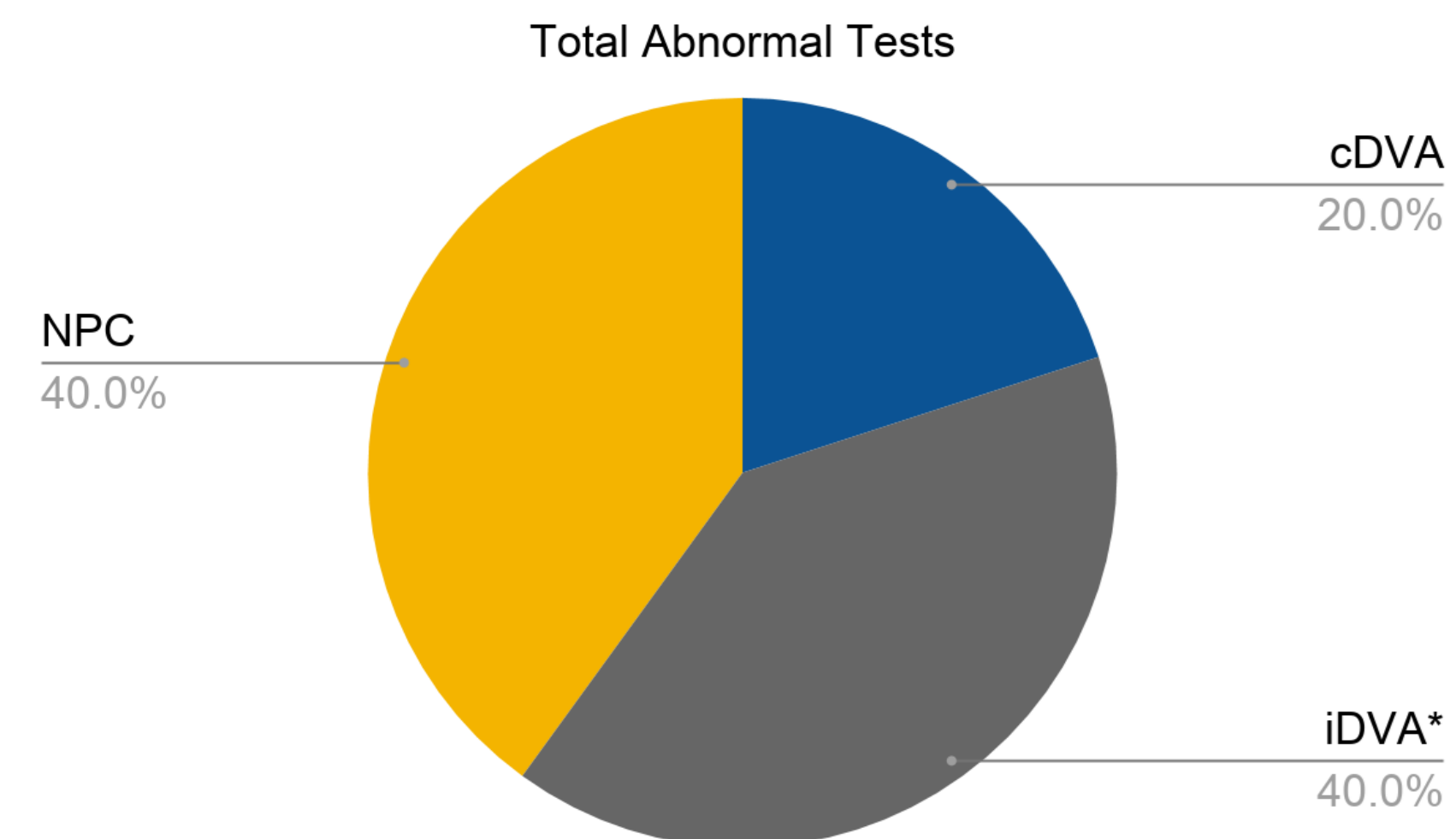
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## Introduction:

- **Background:** Due to the nature of their sports, soccer and lacrosse athletes are at risk for repeated head impacts.
- Repeated head impacts may influence the athletes' vestibular function, cognitive function, or athletic performance.<sup>1-4</sup>
- **Purpose:** Determine if athletes are fully participating in practices and games with vestibular, cognitive, or athletic performance abnormalities.

## Methods:

- **Participants:** 30 student athletes from Concordia University in St. Paul, MN
- **Tests Performed:**
  - Instrumented Dynamic Visual Acuity (iDVA)
  - Clinical Dynamic Visual Acuity (cDVA)
  - Trail Making Test A & B (TMT A/B)
  - Near Point Convergence (NPC)
  - Performance Tests
    - T-Test Agility Drill
    - 40 yard dash (with and without head turns)



## References

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## Results:

- 15/30 participants tested abnormally on an administered test.
  - cDVA = 3/15
  - iDVA = 6/15\*
  - NPC = 6/15
- The TMT A/B and T-test agility drill showed no significant difference compared to published norms and between groups (athletes with normal vs. abnormal vestibular tests)
- The 40 yard dash results showed no significant differences between athletes with normal vs. abnormal vestibular tests.

\* Only 15 of the total participants were subjected to the iDVA due to technical difficulties with the equipment.

## Conclusion:

- Half of the participants demonstrated abnormal vestibular tests yet are still fully participating in their sport.
- Despite high numbers of abnormal vestibular tests, the presumed dysfunctions did not impact physical performance as measured in this study.
- Absence of concussion diagnosis does not discount abnormal vestibular, cognitive, or athletic performance.

## Clinical Relevance to Physical Therapy Profession and Practice:

- More research is necessary to find a method to properly stress the vestibular system during athletically simulated activities in high-level athletes.
- Our results may influence screening and return to play guidelines
- Standardized norms for certain vestibular, oculomotor, and cognitive tests need to be adjusted to reflect the ability of high-level athletes.