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The Association Between Y-Balance and the Delos Postural Proprioceptive System in Professional Basketball Players

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Background

Lower extremity injury is common in professional basketball. The Y-Balance Test (YBT) and the Delos Postural Proprioceptive System (DPPS) have been purported to assess dynamic postural control and balance, which has been associated with injury in elite athletics. It has been reported that performance on balance assessments is influenced by many factors that include mobility, strength, and proprioception.

Purpose

The purpose of this exploratory study was to investigate the relationship between DPPS and YBT performance in professional basketball players.

Hypothesis

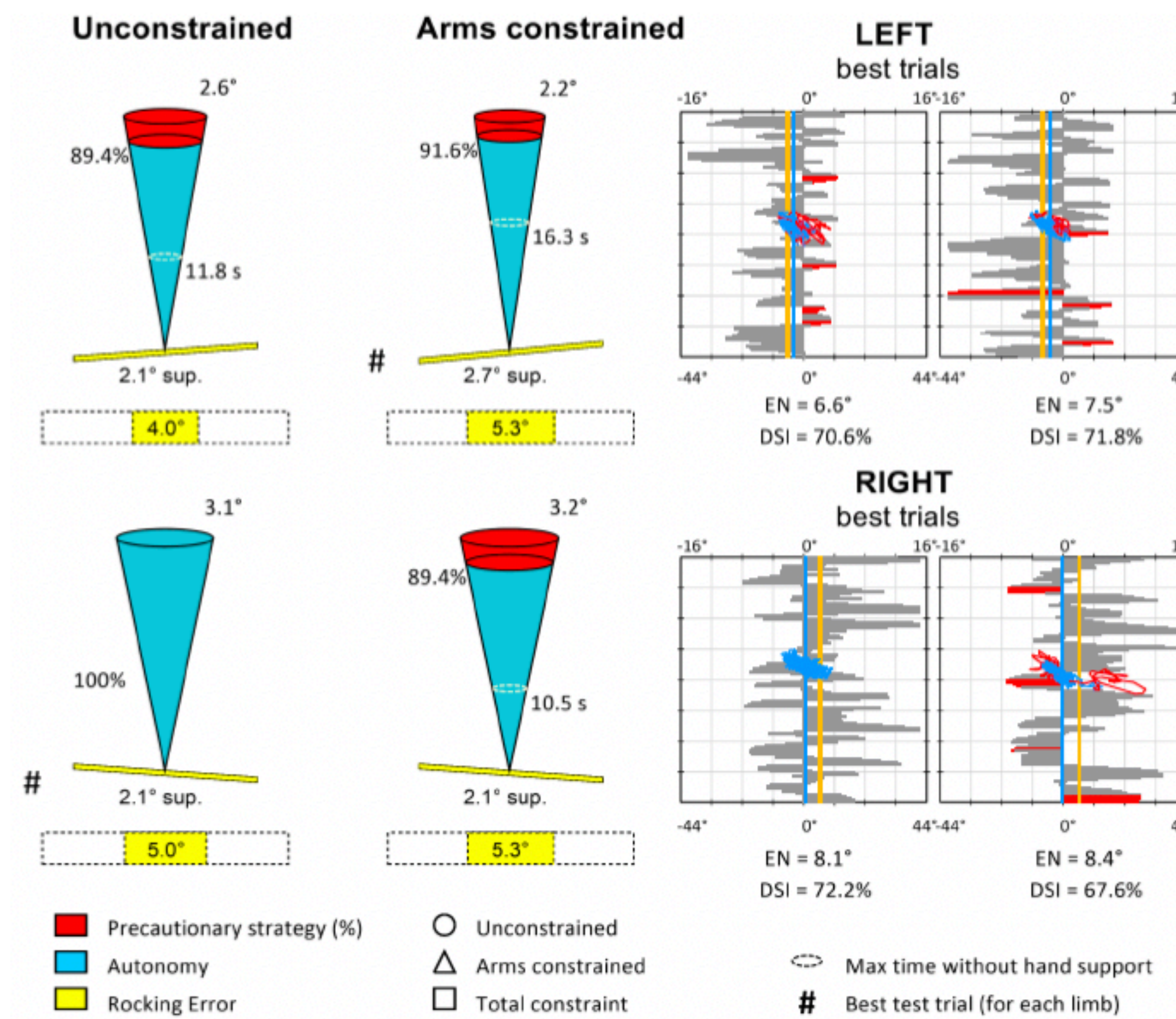
We hypothesize that performance on the YBT is associated with performance on the Delos.

Subjects

13 professional basketball players (age=25.5 yrs +/- 3.9, height= 2.00 m +/- .079 weight = 99.89 kg +/- 12.38, BMI = 24.66 +/- 1.89).

Methods

YBT and Delos Measurements were completed as part of preseason mobility screening prior to the 2018-19 NBA season. The YBT is a low tech system that is based on the Star Balance Excursion Test. The DPPS is a hi tech proprioceptive training system that includes dynamic and static testing capabilities. A Friedman's ANOVA was used to investigate the differences between the Delos system and Y-balance test, using individuals scoring below 1SD on both the static and dynamic Delos cutoff score (90) for both left and right lower extremities. The ICC was used to investigate the relationship between (right or left) dynamic and static Delos scores to scores on the respective y-balance test.



Results

Results: The Delos Static and Dynamic tests for the right side were statistically different than the YBT composite scores. The ICC for the Delos static (right) score was -.910 and the Delos dynamic (right) score was -.999 with a 95% confidence interval from -7.127 to .962 ($F(2,10)=.671, p<.001$). The Delos static and dynamic tests for the left side were statistically similar to the YBT Composite scores. The ICC Delos static (left) score was .800 and the Delos dynamic (left) score was .471 with 95% confidence interval from -9.227 to .976 ($F(2,4)=.1.041, p<.001$).

Conclusion

This exploratory study suggests that the direct correlation between the YBT and the DPPS should be further investigated. The YBT may be an assessment that is more sensitive to factors related to strength and mobility while the DPPS may be more representative of proprioceptive function.

Clinical Relevance

Balance and mobility is influenced by many factors. Understanding the association between the Delos and Y-Balance can give clinicians a better understanding of the utility and value these assessments when working with elite athletes.

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