

Associations Between Grip Capacity, Perceived Fatigue, and Prone Medicine Ball Drop Test Performance in Swimmers and Divers

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Background

- Posterior shoulder return to sport test
- Limited evidence base
- Some authors report hand fatigue or grip size may be potential influencers of performance

Purpose

1. Explore relationship between grip capacity and PMBDT performance
2. Investigate impact of self-perceived hand fatigue on PMBDT performance

Methods

Grip Strength:

- 90° Elbow Flexion and Neutral Wrist
- Average of 3 Maximal Effort Trials



Grip Endurance:

- 90% of 50% of maximal trials set as target goal
- Held above 90% for as long as possible
- 5 Seconds below 90% terminates test

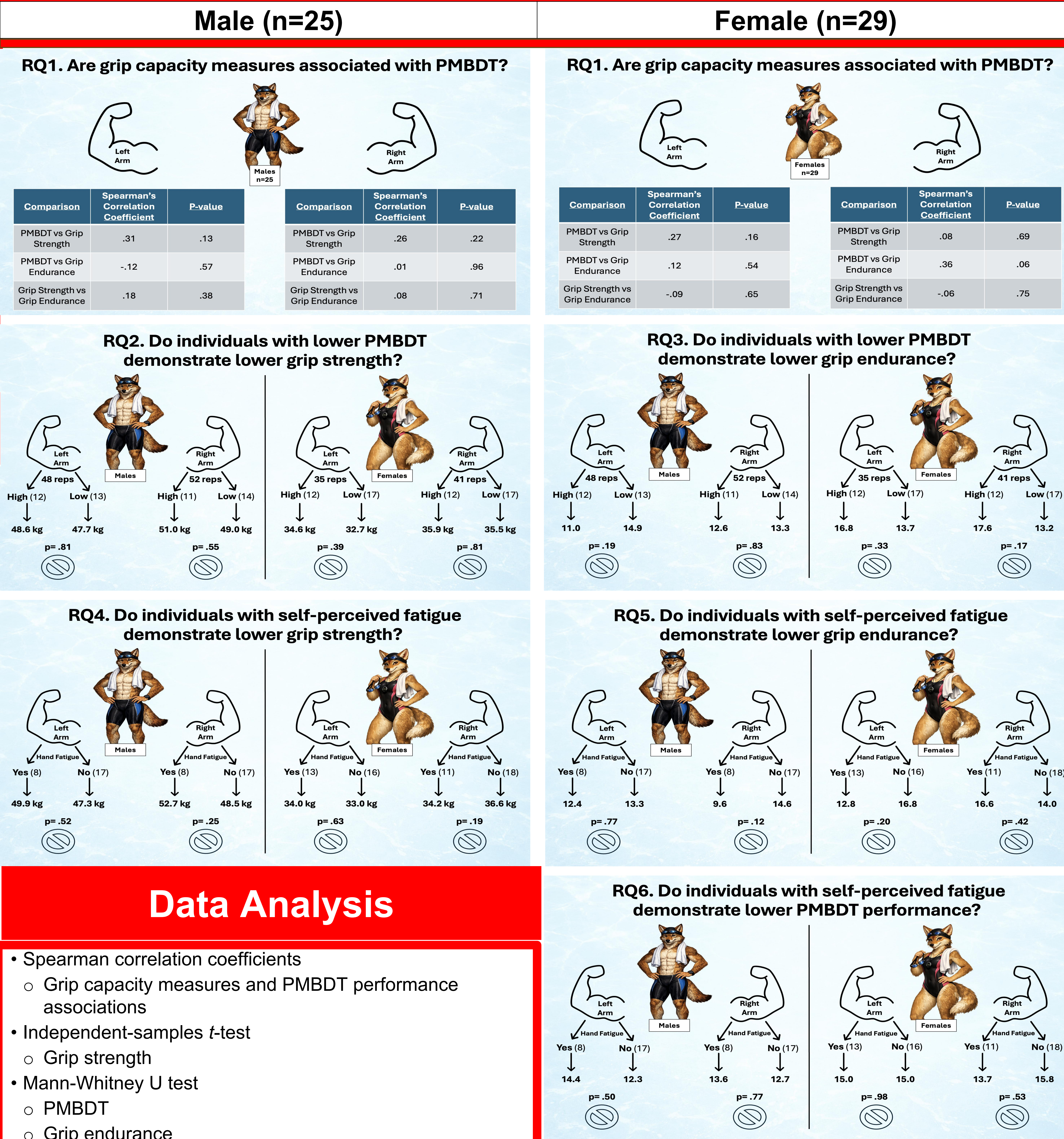


PMBDT:

- Drop and catch as many times as possible in 30 seconds
- Asked "Did hand fatigue limit your performance in this test?"
- Repeated bilaterally



Results



Data Analysis

- Spearman correlation coefficients
 - Grip capacity measures and PMBDT performance associations
- Independent-samples *t*-test
 - Grip strength
- Mann-Whitney U test
 - PMBDT
 - Grip endurance

Conclusion

- Regardless of PMBDT performance level (high or low), participants demonstrated similar grip strength and endurance
- Participants who perceived hand fatigue as a limiting factor during PMBDT did not differ in grip strength, grip endurance, or test performance compared to those who did not

Discussion

- Grip capacity showed only weak, non-significant associations with PMBDT performance in both sexes, suggesting that PMBDT is likely multifactorial
- A common trend among low performers was their inability to either grip the ball or control the ball
- The sample size of this research was likely underpowered (n=54)
- The results of this research are only applicable to our test population of collegiate swimmers

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