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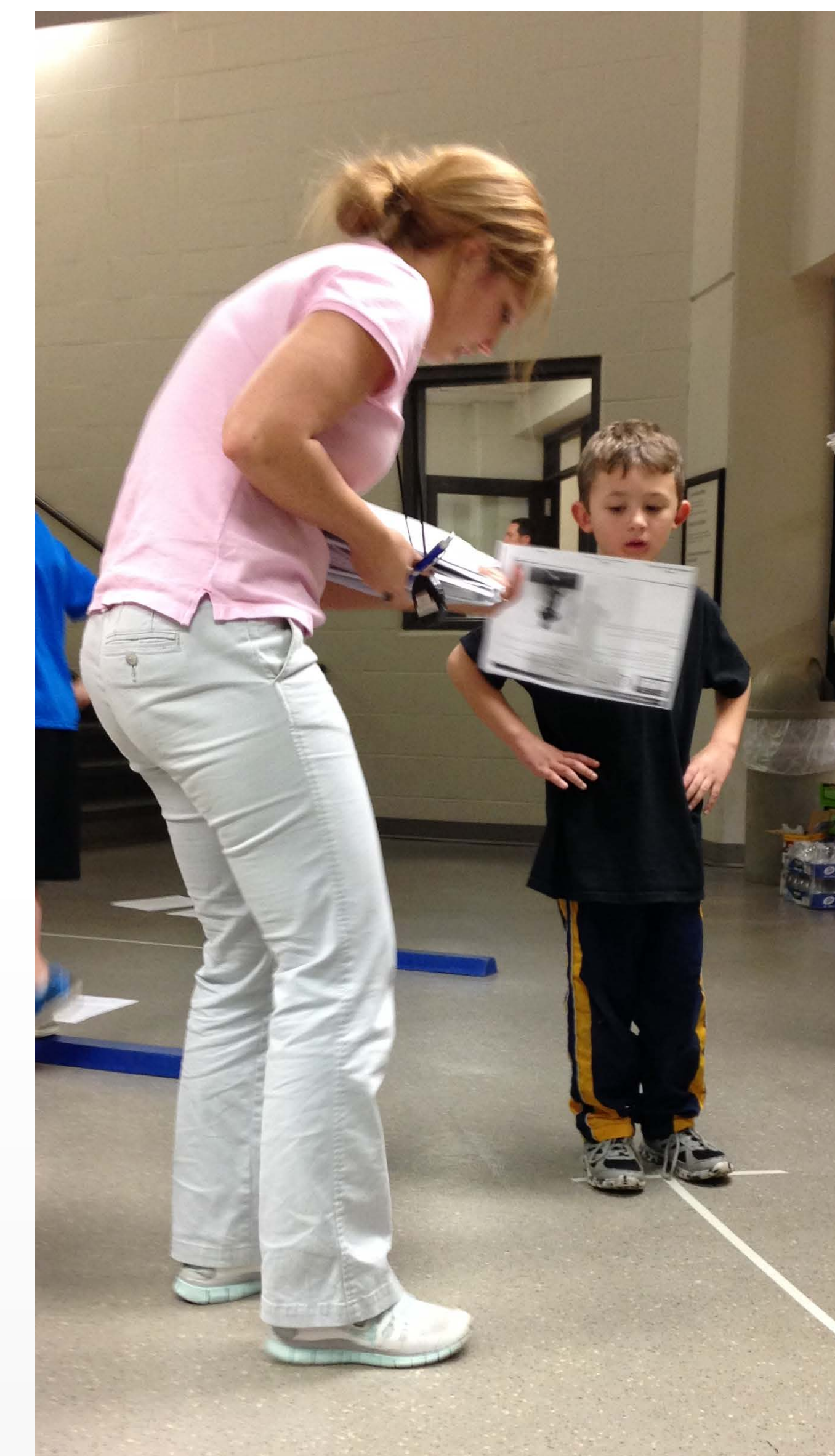
Sarah Collier, Kendra Lucas, Leah Meyer, Amanda Watamaniuk, Kelsey Waterman, and Ashely Zappia

The Use of the Four Square Step Test and the Y Balance Test to Assess Balance in Typical Children Ages 6-10 Years

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Introduction

- The Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition (BOT-2) is a widely used standardized tool to assess gross motor function, including balance, in children ages 4-21.
- The Four Square Step Test (FSST) was developed as a reliable assessment tool to assess fall risk in the geriatric population, however there is limited research on it's use in the pediatric population.
- The Y-Balance Test (YBT) was developed to detect functional deficits in the athletic population, it is unknown if this is a reliable test in the pediatric population.



Purpose & Hypothesis

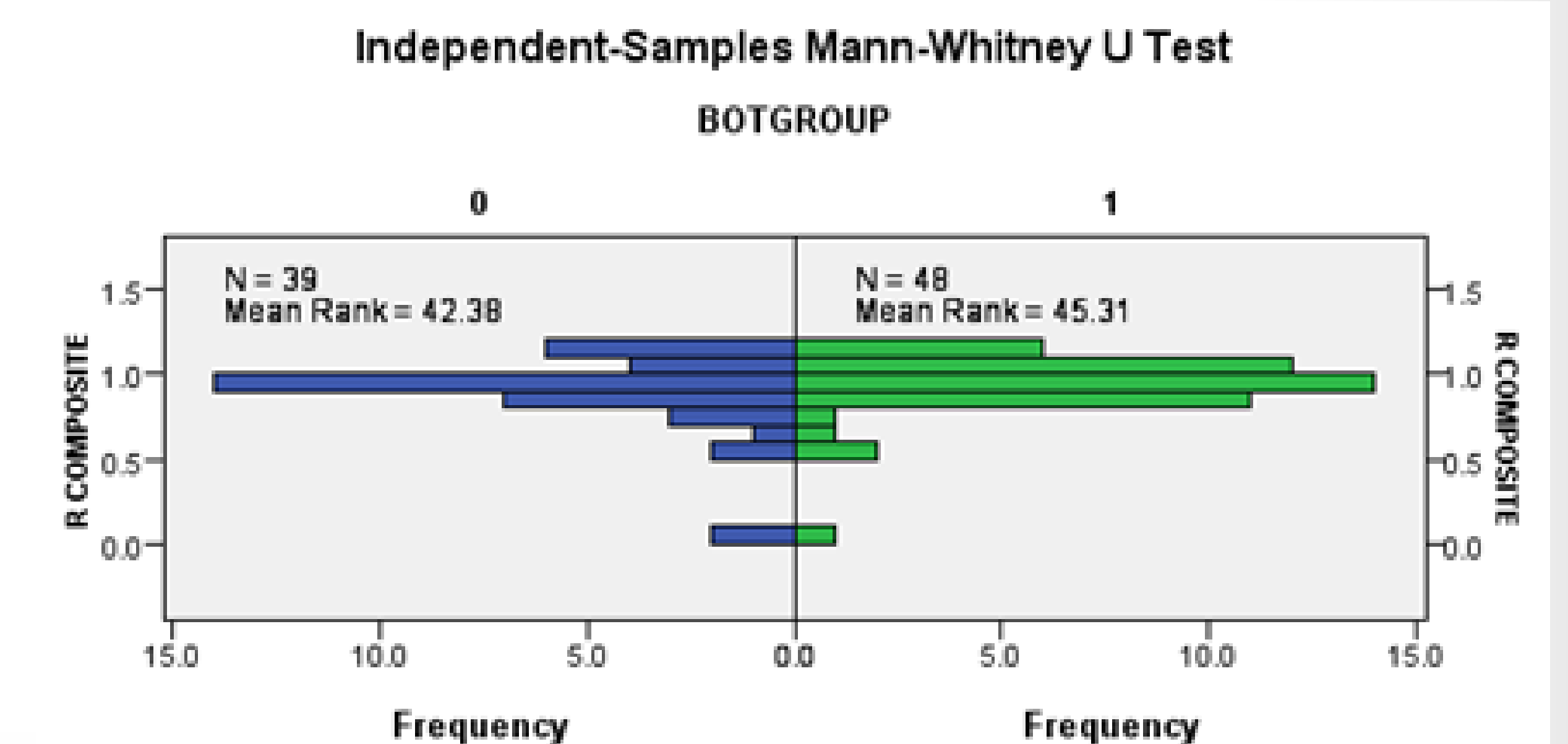
To establish if the FSST and/or the YBT are reliable alternative methods to assess balance in children 6-10 years of age. It is hypothesized that there will be a strong correlation between BOT-2 scores and the YBT or FSST.

Methods

- A convenience sample of 87 typically developing children (mean age 7.34 years) participated.
- Baseline measures included weight, height, and leg length.
- The BOT-2 balance subtest, the FSST and the YBT were administered to subjects.
- Subjects progressed through the subtests in random order and each subtest was graded and administered by the same evaluator to ensure consistent scoring.
- Descriptive statistics were calculated for all test scores. The participants were split into two groups (≥ 32 and < 32) based on their BOT-2 performance scores.
- A Mann Whitney U was used to compare means between groups.
- The strength of the association between each assessment tool was analyzed using the Spearman's rho correlation test.

Results

Mann Whitney U revealed no significant differences between genders in BOT-2 scores. Poor correlations were found between the YBT right ($r_s = 0.137$) and left composite ($r_s = 0.021$) with the BOT-2 balance subtest. The FSST had a poor correlation ($r_s = -0.063$) with the BOT-2 balance subtest. A significant difference was seen between BOT-2 Groups and BOT-2 total scores, confirming appropriate grouping.



Discussion

The YBT and FSST show weak potential as balance tools for the pediatric population, with poor correlation to the BOT-2 balance subtest. Participants who met the maximum score on the BOT-2 balance subtest did not necessarily have improved YBT or FSST scores than their peers. It is concluded that there is failure to reject the null hypothesis. Future research is needed to establish another age appropriate balance tool.

References

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