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Cardiovascular Fitness Testing in Students Diagnosed with Autism Spectrum Disorder

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Exercise and physical activity has been shown to decrease stereotypical or self-stimulating behaviors in children with Autism Spectrum Disorder (ASD), in addition to increasing social skills and decreasing the risk for obesity in children diagnosed with ASD. However, few studies exist that examine what physical activity assessments are most appropriate and can be used with children with ASD. **PURPOSE**: The purpose of this study was to determine the most reliable and appropriate assessment of cardiovascular fitness in individuals with varying degrees of ASD. **METHODS**: Eight participants (11-20 years) who were diagnosed with a mild to moderate form of ASD volunteered to participate in this study. The three fitness assessments that were utilized were: the Pacer Test, the Cooper 12 Minute Run Test, and the Rockport One Mile Walk Test. The participants performed each assessment 3 times over the course of the 4 months. A Cronbach's Alpha was used to test reliability on each assessment. Three independent *t*- tests were also run to compare the participant's estimated VO_2 max levels achieved during the three fitness assessments to the optimal VO_2 max level according to the Fitnessgram Performance standards healthy fitness zone. Finally, a one-Way ANOVA was used to test the differences between VO_2 max levels among the three tests. **RESULTS**: All three assessments were found to be significantly reliable ($p < 0.05$). Estimated VO_2 max levels for all three tests were significantly lower than optimal VO_2 max levels (20^{th} percentile), $F(2,21) = 4.873$, $p = 0.018$, though performance on the Rockport One Mile produced estimated VO_2 max values closest to optimal levels. Performance on the Rockport One Mile Walk test significantly differed from the Cooper 12 minute run test ($p = 0.022$); no other significant differences between tests were found. **CONCLUSION**: It can be concluded by this study that all three fitness assessments can be reliably used when testing individuals with ASD. However, of the three tests, the Rockport One Mile Walk Test is considered the most appropriate cardiovascular fitness assessment to use on individuals diagnosed with ASD, due to the simplicity of the test and mild level of exertion that is required to complete the assessment.