**ENERGY EXPENDITURE OF ADULTS WITH AUTISM SPECTRUM DISORDER AND AN INTELLECTUAL DISABILITY DURING AN ADAPTED PHYSICAL EXERCISE (APEX) PROGRAM**

Lainee Tillich1, Chad A. Sutherland2, Nadia Azar2, Sean Horton2, Kelly Carr2

1Department of Biological Sciences, University of Windsor

2APEX Research Group, Department of Kinesiology, University of Windsor

**Objectives:** While the prevalence of autism spectrum disorder (ASD) continues to rise, research focused on the adult population remains limited. This is troublesome, as current trajectories report poor adult outcomes related to an ASD diagnosis, especially in the presence of an intellectual disability (ID). Though these poor adult outcomes are often attributed to the core symptoms of ASD, health and lifestyle factors should also be considered. For example, during childhood and adolescence, individuals with ASD have lower levels of physical activity compared to typically developing peers, with participation in sedentary behaviours increasing with age. This trend is evidenced by poor measures of fitness, and increased rates of obesity and secondary health conditions related to this diagnosis. A promising strategy to combat these negative health consequences is through participation in an adapted physical exercise (APEX) program. It is thus of interest to understand which activity within the APEX program is providing the greatest energy expenditure, and therefore contributing as the highest intensity exercise, for participants. As such, the objective of this study was to determine differences in energy expenditure in adults with ASD-ID across APEX activities.

**Methods:** Ten males with ASD-ID (*M*age = 37.8 years; age range = 21-65 years) participated in APEX programming twice a week for 5 weeks, with each participant completing 8 to10 APEX sessions. Each APEX session was 90 minutes in length and consisted of three activities: (1) cardiovascular training on a stationary bike, (2) strength training using weight machines, and (3) unstructured sports and games (e.g., basketball, badminton). During each session, all participants wore BodyMedia® SenseWear Armbands to collect energy expenditure data (kJ). Statistical analyses included a repeated-measures one-way ANOVA, and post-hoc Bonferroni tests to examine differences in energy expenditure across activities.

**Results:** There was a significant difference in the average energy expenditure based on the type of activity performed within the APEX program, *F*(2,18) = 7.795, *p* = 0.004. A post-hoc analysis indicated that significantly more energy was expended in the “sports and games” condition than in the “strength” condition (*p* = .002), and significantly more energy was expended in the “cardiovascular” condition than in the “strength” condition (*p* = .047).

**Discussion/Conclusions:** Results suggested that participants expended more energy during unstructured sports and games and cardiovascular training on a stationary bike than during strength training. This finding identifies participation in sports and games as an exercise option that achieves sufficient energy expenditure to elicit health benefits, while being accessible to most individuals, as it requires minimal equipment, facilities, and expertise. In addition, unstructured engagement with sports and games can be a fun and enjoyable social experience that supports free play, autonomy, and choice, which may increase physical activity compliance.

**Correspondence:**

**Kelly Carr, PhD Candidate
University of Windsor
401 Sunset Ave.,
Windsor, ON, N9B 3P4
carrk@uwindsor.ca**