

Keynote Speaker of the 16th ISSP World Congress - Sponsored by Shine Tak Foundation

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- President of International Federation of Adapted Physical Activity (IFAPA)
- Has published more than 140 scientific papers in the areas of adapted physical activity, exercise science and public health



Keynote topic

- Exercise Psychology for Special Populations

Research interests

- Physical activity and sedentary behaviour of children with disabilities or special educational needs (SEN)
- Adapted physical activity and school-based interventions

Experiences

- Fellow of international federations (International Federation of Adapted Physical Activity-IFAPA, Asian Society for Adapted Physical Education and Exercise-ASAPE, and Hong Kong Association of Sports Medicine and Sports Science-HKASMSS) related to adapted physical activity, exercise, and sports science
- Directs research lab focused on physical activity motivation and interventions for children with disabilities or SEN
- Serves in editorial roles for international journals (e.g., Adapted Physical Activity Quarterly, Archives of Public Health, International Journal of Behavioral Nutrition and Physical Activity, Journal of Exercise Science & Fitness) and several academic/government committees related to physical education, sports, and curriculum development in Hong Kong

Title

Physical Activity and Exercise Promote Mental Health Among Neurodiverse Adolescents

Abstract Sections

Framing and Objectives

Adolescent mental health is a global health issue, affecting over 40% of the neurodiverse population. Neurodiverse adolescents tend to be physically inactive and are at high risk of experiencing mental health conditions, including cognitive deficits, psychological ill-being (e.g., anxiety and depression), and reduced psychological well-being (e.g., self-concept and resilience). This presentation examines how physical activity and exercise can serve as evidence-based interventions to promote mental health in this population.

Conceptual or Methodological Insights

A conceptual model by Lubans et al. (2016) indicate that physical activity enhances youth mental health through improved cognitive function and psychological well-being, while reducing psychological ill-being. Key mechanisms include neurobiological changes, such as improved brain structures, psychosocial factors like increased self-efficacy and social support, and behavioral regulation, which encompasses improved sleep and self-regulation. The strongest evidence supports psychosocial mechanisms, particularly enhanced physical self-perceptions that boost self-esteem, while behavioral mechanisms like self-regulation received less support. Their review underscores the need for rigorous mediation analyses and robust study designs. Recently, the multidisciplinary team of researchers has applied this model to examine the association of physical activity and exercise with mental health outcomes in neurodiverse adolescents.

Key Insights or Findings

Researchers in exercise science, public health, behavioral health, and rehabilitation sciences have examined the impact of physical activity and exercise on mental health outcomes in neurodiverse adolescents. Our meta-analysis found that physical activity interventions significantly benefit overall mental health, cognitive function, and psychological well-being, while also reducing internalizing and externalizing problems. Another review identified neurobiological (theta activity and P3 amplitude), psychosocial (social skills and participation), and behavioral (motor skills and sleep) mechanisms as the most commonly studied. Additionally, our associative study revealed that neurodiverse adolescents, particularly those with comorbid ASD and ADHD, are at a higher risk for mental health symptoms. A recent randomized controlled study we conducted on an aerobic exercise-based intervention showed significant reductions in depression, anxiety, and stress, along with improved inhibitory control in ADHD adolescents, with effects lasting up to three months.

Implications and Future Directions

Physical activity and exercise offer a promising, non-pharmacological approach to improving mental health outcomes, such as cognitive function and reduced psychological ill-being in neurodiverse adolescents. Its importance lies in providing an accessible and enjoyable intervention that can complement or act as an alternative to medication. The findings support the inclusion of physical activity and exercise in neurodiverse healthcare plans. To promote mental health among neurodiverse adolescents through physical activity and exercise, a multi-level, cross-sector strategy is essential. This initiative contributes to the United Nations' Sustainable Development Goals, specifically Good Health and Well-Being (SDG 3) and Reduced Inequalities (SDG 10).

Keywords

Adolescent mental health, school-based interventions, sustainable development goals