

# An Evaluation of Physical Activity Methods of College Students with Autism Spectrum Disorder

By Justin Vagnozzi



# Background on Autism Spectrum Disorder (ASD)

- ▶ Autism Spectrum Disorder (ASD) is characterized by challenges with social skills, repetitive behaviors, speech, and nonverbal communication (Autism Speaks, 2017).
- ▶ 1 in 68 children have ASD in the United States (Centers for Disease Control and Prevention, 2016).



# Increasing Physical Activity Levels of Students

- ▶ One of the primary concerns among educators is increasing the physical activity levels of students with ASD.
- ▶ Exercise can be difficult for students with ASD because they often experience diminished motor skills (Stanish et al., 2015).
- ▶ Diminished participation in physical activity can lead to both mental and physical health problems (Salamon, 2014).



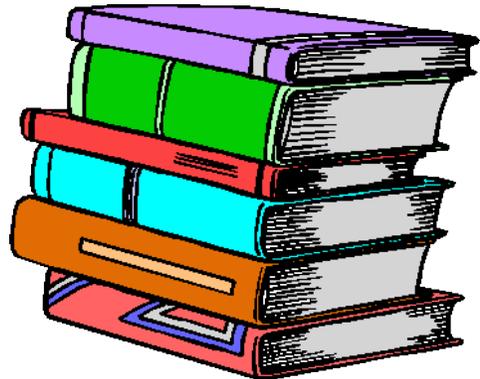
# Research Questions

- ▶ There were three research questions examined by this study:
- ▶ 1. In what types of physical activity do individuals with ASD participate?
- ▶ 2. How often do individuals with ASD participate in physical activity?
- ▶ 3. What beliefs do individuals with ASD have about physical activity?



# Literature Review

- ▶ Literature was reviewed from four different areas of research:
- ▶ 1. Research Instruments
- ▶ 2. Physical Activity Types
- ▶ 3. Physical Education
- ▶ 4. Physical Activity in Adolescents



# Research Instruments

- ▶ Two of the common instruments used in the research of autism and physical activity are fitness trackers and surveys.
- ▶ Fitbits and pedometers were found to be the predominant fitness trackers while surveys included questionnaires and interviews.



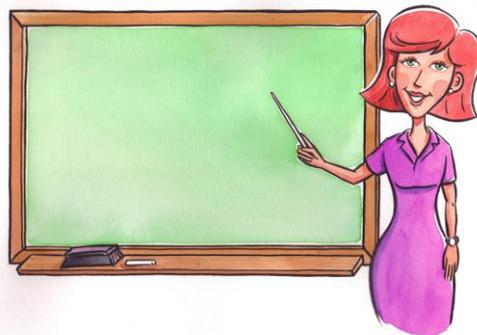
# Physical Activity Types

- ▶ Swimming, horseback riding, and cycling were three activities that benefitted individuals with ASD.
- ▶ Swimming was found to increase sleep in children with decreased autism severity (Lawson & Little, 2017).
- ▶ A simulated horse riding program was found to improve children's motor proficiency and sensory integrative functions (Wuang et al., 2010).
- ▶ Cycling was found to improve leg extension, flexion strength, and balance while also decreasing body mass index (Hauk et al., 2017).



# Physical Education

- ▶ Educators are encouraged to provide explicit and to-the-point rules. Team sports can provide an enjoyable sensory high to students on the autism spectrum (Lamb et al., 2014).
- ▶ Team sports can also help by organizing and structuring the events, space, and time of physical activity (Konukman et al., 2017).
- ▶ It was discovered that finding physical education opportunities that met the needs of both typically developing students and students with ASD was a challenge (Maher, 2016).



# Physical Activity in Adolescents

- ▶ Few studies have examined physical activity in adolescents and young adults.
- ▶ LaLonde conducted research at the Young Adult Program for disabled adults in Kalamazoo, MI. A Fitbit was used to track the number of steps taken by each student until everybody was walking 10,000 steps per day (2015).
- ▶ Adolescents should pursue programs focused on cardio and resistance training (Magnusson et al., 2012).
- ▶ There were few articles on autistic participation in scholastic sports.



# Methods

- ▶ 10 students were surveyed from the WMU Autism Services Center (ASC). All students either had a medical or educational diagnosis of ASD.
- ▶ The survey included 10 multiple choice or Likert scale questions.
- ▶ This survey was designed on Qualtrics. Qualtrics is a web-based survey generator that is utilized to conduct research.
- ▶ This survey was based on the survey of Stanish and Colleagues (2015).



# Results

- ▶ Examining the first research question, there were four students who selected “weightlifting,” “running,” and “sports” while three selected “other.”
- ▶ Examining the second research question, there was a variation in time spent participating in vigorous exercise. Seven out of ten students selected “under 20 minutes” or “over 60 minutes” of exercise.
- ▶ Examining the third research question, students had varying beliefs about physical activity. One consensus on the topic came in question five. Eight students said that exercise was sometimes hard to learn.



# Limitations

- ▶ There were several limitations to this study's success.
- ▶ First, the number of participants for this study were quite small. The WMU ASC program includes 16 students and only 10 responded to the survey.
- ▶ Second, this study failed to capture the thoughts and beliefs of autistic WMU students outside of the ASC program.
- ▶ Finally, this study only used multiple choice and Likert scale questions in the survey which rendered descriptive tests impossible.



# Suggestions of Future Studies

- ▶ Future studies should expand on the results of this survey and explore the issue through experiments and focus groups.
- ▶ It is suggested that future studies institute a program using Fitbits and pedometers to track steps in real time.



# References

- Autism Speaks. (2017). What is autism? Retrieved September 12, 2017 from <https://www.autismspeaks.org/what-autism>
- Centers for Disease Control and Prevention. (2016, July 11). Autism spectrum disorder (ASD). Retrieved September 12, 2017 from <https://www.cdc.gov/ncbddd/autism/data.html>
- Hauck, J., Jeong, I., Esposito, P., MacDonald, M., Hornyak, J., Argento, A., & Alrich, D. A. (2017). Benefits of learning to ride a two-wheeled bicycle for adolescents with down syndrome and autism spectrum disorder. *Palaestra*, 31(2), 35-42. Retrieved from <http://libproxy.library.wmich.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=trh&AN=123800232&site=ehost-live>

# References

- Konukman, F., Yilmaz, I., Yanardag, M., & Yu, J. (2017, January 5). Teaching sport skills to children with autism. *Journal of Physical Education, Recreation, & Dance, 88(1)*, 65-66. Retrieved from <http://libproxy.library.wmich.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sph&AN=120566335&site=ehost-live>
- LaLonde, Katherine. (2015, May). Increasing physical activity in young adults with autism spectrum disorder. *Dissertations*. Retrieved from <http://scholarworks.wmich.edu/dissertations/529>
- Lamb, P., Firbank, D., & Aldous, D. (2014, August 6). Capturing the world of physical education through the eyes of children with autism spectrum disorders. *Sport, Education, and Society, 21(5)*, 698-722. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/13573322.2014.941794>

# References

- Lawson, L. M., & Little, L. (2017, June 1). Feasibility of a swimming\_intervention to improve sleep behaviors of children with autism spectrum disorder. *Therapeutic Recreation Journal*, 51(2), 97-108. Retrieved from <http://libproxy.library.wmich.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sph&AN=123800160&site=ehost-live>
- Magnusson, J. E., Cobham, C., & McLeod, R. (2012, April). Beneficial effects of clinical exercise rehabilitation for children and adolescents with autism spectrum disorder (ASD). *Journal of Exercise Physiology*, 15(2). Retrieved from [https://www.researchgate.net/publication/286374095\\_Beneficial\\_effects\\_of\\_clinical\\_exercise\\_rehabilitation\\_for\\_children\\_and\\_adolescents\\_with\\_autism\\_spectrum\\_disorder\\_AS](https://www.researchgate.net/publication/286374095_Beneficial_effects_of_clinical_exercise_rehabilitation_for_children_and_adolescents_with_autism_spectrum_disorder_AS)

# References

- Maher, J. (2016, May 20). 'We've got a few who don't go to PE': Learning support assistant and special educational needs coordinator views on inclusion in physical education in England. *European Physical Education Review*, 23(2), 257-270. Retrieved from <http://journals.sagepub.com/doi/abs/10.1177/1356336X16649938>
- Salamon, Maureen. (2014, May 14). Adults with autism at risk for many health problems. *HealthDay*. Retrieved from <https://consumer.healthday.com/mental-health-information-25/anxiety-news-33/adults-with-autism-at-risk-for-many-health-problems-study-687631.html>

# References

- Stanish, H. I., Curtin, C., Must, A., Phillips, S., Maslin, M., & Bandini, L. G. (2015, October). Enjoyment, barriers, and beliefs about physical activity among adolescents with and without autism spectrum disorder. *Adapted Physical Activity Quarterly*, 32(4), 302-317. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4766586/>
- Wuang, Y.P., Wang, C.C., Huang, M.H., & Su, C.Y. (2010, April). The effectiveness of simulated developmental horse-riding program in children with autism. *Adapted Physical Activity Quarterly*, 27(2), 113-126. Retrieved from <http://libproxy.library.wmich.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sph&AN=48538080&site=ehost-live>

Any Questions?

