

# Motor Skills and Young Children with Autism

Olivia Paradis & Megan MacDonald, PhD  
Oregon State University, Corvallis, OR

## Abstract

The purpose of this study was to compare the fine and gross motor skills of young children with and without autism. Within the Children and Youth with Disabilities Lab, the Movement Intervention for Young Children with Autism project seeks to create effective interventions to improve the fine and gross motor skills of young children with autism spectrum disorder (ASD). While current data indicate a marked difference in motor skills between children with ASD and typically developed children, further research can be applied to improve these important skills at a young age, hopefully leading to positive changes in other areas like social interaction. The larger project consists of a randomized control trial exploring the effects of a movement-based early intervention. The purpose of my study was to compare the motor skills of children with and without autism using the Peabody Developmental Motor Scales-Second Edition (PDMS-2). The PDMS-2 assesses gross motor skills through the Reflexes, Stationary, Locomotion and Object Manipulation subtests and fine motor skills are assessed through Grasping and Visual-Motor Integration subtests. The comparison of these subtest scores using an independent samples t-test demonstrates a significant difference between the children with autism (n = 7) and without autism (n = 9) on the stationary and grasping scales (p < 0.05).

## Methods

### Participants

- 16 young children (ages 2-7 years) with autism (n= 7) and without autism (n=9)

### Procedures

- The PDMS-2 was administered to all participants
- Participants were grouped based on a diagnosis of autism or non-autism
- The standard scores for motor skills including stationary, locomotion, object manipulation, grasping, and visual-motor integration subtests were analyzed using an independent samples t-test

## Peabody Developmental Motor Scales - Second Edition (PDMS-2)

The PDMS-2 is an early childhood motor development assessment for gross and fine motor skills inclusive of six subtests.

### •Gross Motor subtests include:

- Reflexes: not administered as this subtest is designed for an age range outside that of the study
- Stationary: measures abilities to retain equilibrium
- Locomotion: measure abilities in moving from one place to another by crawling, walking, running, hopping and jumping
- Object Manipulation: measures abilities to manipulate balls with catching, throwing, and kicking

### •Fine Motor subtests

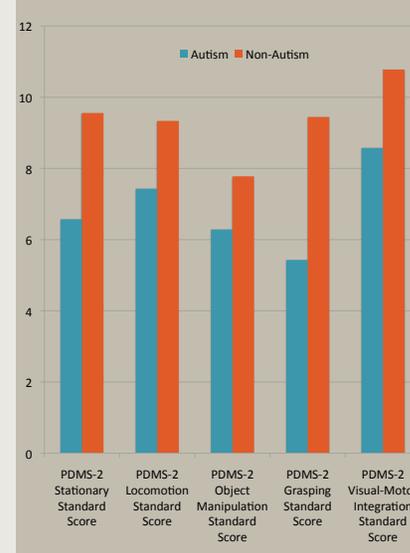
- Grasping: measures abilities to use his/her hands, progressing from whole hand movements to the controlled use of fingers
- Visual-Motor Integration: measures abilities to apply visual perceptual skills in performing eye-hand coordination tasks



## Results

The independent samples t-test indicates statistically significant differences in the scores for the stationary subtest (p < 0.01) and the grasping subtest (p < 0.05) between the two groups.

A Comparison of Motor Abilities Across the Five PDMS-2 Subtests



## Summary and Conclusions

The significant findings of this project align with current data on the motor abilities of children with and without autism. The independent samples t-test highlights two areas with significant differences in the standard scores of the two groups (ASD & non-ASD) for the stationary and grasping subtests, which respectively contribute to the gross and fine motor scores. The high level of significance in the comparison of the stationary standard scores (p < 0.01), based on the subtest's assessment of equilibrium, may have an effect on the other gross motor abilities. While these findings show significant differences in two of five subtests, the distribution of significant results in one gross motor and one fine motor subtest points to the established differences in both gross and fine motor abilities between the groups. As the study continues, a larger sample size will allow for further analysis with potentially significant results for additional subtests of the PDMS-2, contributing to a better understanding of the differences in motor abilities for these two groups and important information for creating effective interventions to improve these skills in young children with autism.

## Acknowledgement

•Dr. Megan MacDonald, PhD for the opportunity to work within the Children and Youth with Disabilities Lab on the Movement Intervention for Young Children with Autism project.

## References

1. Western Psychological Services (WPS). Peabody Developmental Motor Scales, Second Edition (PDMS-2). [http://portal.wpspublish.com/portal/page?\\_pageid=53,699198\\_dad=portal&\\_schema=PORTAL](http://portal.wpspublish.com/portal/page?_pageid=53,699198_dad=portal&_schema=PORTAL)
2. How Many Children Have Autism?. (2012, August 14). National Center on Birth Defects and Developmental Disabilities. Retrieved May 17, 2013, from <http://www.cdc.gov/ncbddd/features/counting-autism.html>

