‘Specialization in ICTs and Special Education: Psychopedagogy of Integration’
Postgraduate Program Studies
DEMOKRITUS UNIVERSITY OF THRACE Department of Hellenic Philology
in collaboration with
NCSR DEMOKRITOS Informatics and Telecommunications Institute

MOTOR EDUCATION AND AUTISM: CASE STUDY

GOUSGOULA ELENI

POSTGRADUATE
THESIS

SUPERVISOR – COMMITTEE

1. Καμπάς Αντώνιος
Καθηγητής ΤΕΦΑΑ ΔΠΘ
2. Βενετσάνου Φωτεινή
Επίκουρη Καθηγήτρια ΤΕΦΑΑ ΕΚΠΑ
3. Καραμπατζάκη Ζωή
Συνεργαζόμενη ερευνήτρια Ι.Π.Τ. Ε.Κ.Ε.Φ.Ε. “ΔΗΜΟΚΡΙΤΟΣ”

KOMOTINI / ATHENS 2018

ABSTRACT

Eleni Gousgoula: Motor Education and Autism: Case Study

(Under the supervision of Antonios Kambas, Associate Professor)

The purpose of the present case study was to investigate the possible impact induced by the application of an individualized program of motor intervention in the motor dexterity of a student diagnosed with Autism Spectrum Disorder. For the purposes of the study a selective sampling process was conducted and a student schooled in the prefecture of Corinthia and supported by a national individualized educational program for students with special educational needs was selected. The measurements were performed with the use of the Democritus - Screening Tool for Preschool Children (DEMOST-PRE©). The student's motor development was evaluated through a pretest prosecution and the design of a monthly individualized program of motor intervention followed. The activities included in the intervention program were adjusted to the student's singular needs aiming at the improvement of his motor performance and overall motor condition. The subject's motor performance was significantly improved at the nine tests of the DEMOST-PRE© screening tool. In conclusion, according to the results of the study, it emerged that the application of an individualized motor intervention program positively affects the motor performance of a student diagnosed with Autism Spectrum Disorder.

Key words: motor development, motor assessment, Autism Spectrum Disorder, motor intervention program

References

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition: DSM-V*. Washington, DC: American Psychiatric Association

Asperger, H. (1991). "Autistic psychopathy" in childhood. In U. Frith, *Autism and Asperger syndrome* (pp.37-92). Cambridge UK: Cambridge University Press.

Bremer, E., & Lloyd, M. (2016). School – Based Fundamental – Motor – Skill Intervention for Children with Autism Like Characteristics: An Exploratory Study. *Adapted Physical Activity Quarterly, 33(1)*, 66-88.

Bremer, E., Balogh, R., & Lloyd, M. (2015). Effectiveness of a fundamental motor skill intervention for 4-year-old children with autism spectrum disorder: a pilot study. *Autism: International Journal of Research and Practice, 19*, 980-991.

Bruininks, R. H. (1978). *Bruininks - Oseretsky Test of Motor Proficiency.* MI, USA: American Guidance Service.

Bruininks, R. H. & Bruininks, D. B. (2005). *BOT-2: Bruininks - Oseretsky Test of Motor Proficiency, 2nd edition.* MN, USA: Pearson Education.

Cai, S., Zhu, G., Wu, Y.-T., Liu, E., & Hu, X. (2018). A case study of gestural- based games in enhancing the fine motor skills and recognition of children with autism. *Interactive Learning Environments.*

doi.org/10.1080/10494820.2018.1437048

Cairney, J., Hay, J., Veldhuizen, S., Missiuna, C., & Faught, B. E. (2009). Comparing probable case identification of developmental coordination disorder using the short form of the Bruininks- Oseretsky Test of Motor Proficiency and the Movement ABC. *Child: care, health and development, 35(3)*, 402-408.

Cheng, H.-C., Chen, H.-Y., Tsai, C.-I., & Cherng, R.-I. (2009). Comorbidity of motor and language impairments in preschool children of Taiwan. *Research in Developmental Disabilities, 30*, 1054-1061.

Colebourn, J. A., Golub – Victor, A. C., & Paez, A. (2017). Developing Overhand Throwing Skills for a Child with Autism with a Collaborative Approach in School-Based Therapy. *Pediatric Physical Therapy*, *29(3)*, 262-269.

Cools, W., De Martelaer, K., Samacy, C., & Andries, C. (2009). Movement skill of typically developing preschool children: A review of seven movement skill assessment tools. *Journal of Sports and Medicine*, *8*, 154-168.

Deconinck, F. J., Savelsbergh, G. J., De Clercq, D., & Lenoir, M. (2010). Balance problems during obstacle crossing in children with Developmental Coordination Disorder. *Gait Posture*, *32(3)*, 327-331.

Dewey, D., Cantell, M., & Crawford, S., (2007). Motor and gestural performance in children with autism spectrum disorders, developmental coordination disorder, and/or attention deficit hyperactivity disorder. *Journal of international Neuropsychological Society*, *13*, 246-256.

Dowd, A. M., McGinley, J. L., Tafee, J. R., & Rinehart, N. J. (2012). Do planning and visual integration difficulties underpin motor dysfunction in Autism, a kinematic study of young children with Autism. *Journal of Autism and Developmental Disorders*, *42*, 1539-1548.

ElGarhy, S. & Liu, T. (2016). Effects of Psychomotor Intervention Program on Students with Autism Spectrum Disorder. *School Psychology Quarterly*, *31(4)*, 491-506.

Emerson, A., & Dearden, J. (2013). Accommodating to motor difficulties and communication impairments in people with autism: the MORE intervention model. *Frontiers in Integrative* Neuroscience, 7,1-5.

Green, D., Charman, T., Picles, A., Chandler, S., Loucas, T., Simonoff, E., et al. (2009). Impairment in movement skills of children with autistic spectrum disorders. *Developmental Medicine and Neurology*, *51*, 311-316.

Gkotzia, E., Venetsanou, F., Kambas, A., & Pollatou, E. (2016). Construct validity of The Democritos Movement Screening Tool for preschool children: an

examination of the known groups' criterion. *Eyropean Psychomotricity Journal*, *8(1)*, 17-28.

Gotham, K., Pickles, A., & Lord, C. (2009). Standardizing ADOS scores for a measure of severity of autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *39*, 693-705.

Gowen, E., Stanley, J., & Miall, R. C. (2008). Movement interference in Autism – Spectrum Disorder. *Neuropsychologia*, *46*, 1060-1068.

Hands, B., Licari, M., & Piek, J. (2015). A review of five tests to identify motor coordination difficulties in young adults. *Research in Developmental Disabilities*, *41-42*, 40-51.

Hannant, P., Cassidy, S., Van de Weyer, R., & Mooncey, S. (2018). Sensory and motor differences in Autism Spectrum Conditions and developmental coordination disorder in children: A cross – syndrome study. *Human Movement Science*, *58*, 109-118.

Hannant, P., Cassidy, S., Tavassoli, T., & Mann, F. (2016). Sensorimotor Difficulties are associated with the Severity of Autism Spectrum Conditions. *Frontiers in Integrative Neuroscience*, *10(28)*, 1-14.

Hedgecock, J. B., Dannemiller, L. A., Shui, A. M., Rapport M. J., & Katz, T. (2018). Associations of Gross Motor Delay, Bahavior, and Quality of Life in Young Children with Autism Spectrum Disorder. *Physical Therapy*, *98(4)*, 251-259.

Henderson, W., & Sugden, D., (1992). *Movement assessment battery for children.* London: The Psychological Corporation.

Henderson, S., Sugden, D., & Barnett A. L. (2007). *The movement assessment battery for children (2nd edition)*. London: The Psychological Corporation.

Ho, A. K., & Wilmut, K. (2010). Speech and oro-motor function in children with Developmental Coordination Disorder: A pilot study. *Human Movement Science*, *29(4)*, 605-614.

Καμπάς, Α., Βενετσάνου Φ., & Γαβριηλίδου, Ζ. (2018). *Δημόκριτος – Εργαλείο Ανίχνευσης για παιδιά Προσχολικής Ηλικίας (Δ.Ε.Κ.Α.–ΠΡΟ): Εγχειρίδιο Οδηγιών.* Κομοτηνή.

Καμπάς, Α., Αγγελούσης, Ν., & Γαβριηλίδου, Ζ. (2012). *«Δημόκριτος – Τεστ Προ»: Εργαλείο Αξιολόγησης της Ψυχοκινητικής Ικανότητας για παιδιά προσχολικής ηλικίας.* Στο: Α. Σταλίκας, Σ., Τ., Τριλίβα & Π. Ρούσση (Εκδ.). *Τα ψυχομετρικά εργαλεία στην Ελλάδα, μια συλλογή και παρουσίαση των ερωτηματολογίων, δοκιμασιών και καταλόγων καταγραφής χαρακτηριστικών στον ελληνικό χώρο*, (σελ. 358-359). Αθήνα: Εκδόσεις Πεδίο.

Kambas, A., & Venetsanou, F. (2016). Construct and Concurrent Validity of the Democritos Movement Screening Tool for Preschoolers. *Pediatric Physical* Therapy, 28*(1).* 94-99.

Kambas, A., & Venetsanou, F. (2014). The Democritos Movement Screening Tool for children (DEMOST-PRE©): Development and factorial validity. *Research in Developmental Disabilities*, *35*, 1528-1533.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, *2*, 217-250.

Καραμπατζάκη, Ζ. (2010). Τεστ Ανίχνευσης Αναπτυξιακής Διαταραχής Ψυχοκινητικού Συντονισμού. Αθήνα: Πάραλος.

Katartzi, E., Gantiraga, E., Arabatzi, F., & Papadopoulos, C. (2006). Evaluation of biomechanical characteristics of bilateral landing in children with different levels of coordination. *Inquiries in Sport & Physical* Education, 4*(3)*, 351-362.

Ketcheson, L., Hauck, J., & Ulrich, D. (2017). The effects of an early motor skill intervention on motor skills, levels of physical activity, and socialization in young children with autism spectrum disorder: A pilot study. *Autism*, *21(4)*, 481-492.

Κοκαρίδας Δ. (2010). *Άσκηση και αναπηρία: εξατομίκευση, προσαρμογές και προοπτικές ένταξης.* Θεσσαλονίκη: Χριστοδουλίδης.

Lane, A. Harpster, K., & Heathcock. (2012). Motor characteristics of young children with autism spectrum disorder. *Pediatric Physical Therapy*, *24*, 21-29.

Liu, T. (2012). Motor milestone development in young children with autism spectrum disorders: An explanatory study. *Educational Psychology in* Practice, 28*(3)*, 315-326.

Liu, T. (2013). Sensory Processing and Motor Skill Performance in Elementary School Children with Autism Spectrum Disorder. *Perpetual and Motor Skills: Psychical Development and* Measurement, 116*(1)*, 197-209.

Liu, T., Hamilton, M., Davis, L., & ElGarhy, S. (2014). Gross Motor Performance by Children with Autism Spectrum Disorder and Typically Developing Children on TGMD – 2. *Child and Adolescent* Behavior, 2*(1)*. doi: 10.4172/2375-4494.1000123

Liu, T. & Breslin, C. M. (2013). Fine and gross motor performance of the MABC – 2 by children with autism spectrum disorder and typically developing children. *Research in Developmental* Disabilities, 7, 12440 1249.

Liu, T. & Breslin, C. M. (2013). The effect of a picture activity schedule on performance of the MABC – 2 for children with autism spectrum disorder. *Research Quarterly for Exercise and Sport*, *84(2)*, 206-212.

Logan, S. W., Robinson, L. E., Wilson, A. E., & Lucas, W. A. (2011). Getting the fundamentals of movement: a meta-analysis of the effectiveness of motor skill interventions in children. *Child: care, health and development*, *38(3)*. 305-315.

Lopez, J. M., Moreno – Rodriguez, R., Alcover, C. M., Garrote, I., & Sanchez, S. (2017). Effects of a Program of Sport Schools on Development of Social and Psychomotor Skills of People with Autistic Spectrum Disorders: A Pilot Project. *Journal of Education and Training Studies*, *5(8)*, 167-177.

MacDonald, M., Esposito, P., Hauck, J., Jeong, I., Hornyak, J., Argento, A., et al. (2012). Bicycle Trianing for Youth with Down Syndrome and Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, *27(1)*, 12-21.

MacDonald, M., Lord, C., & Ulrich, D. (2013). The relationship of motor skills and adaptive behavior skills in young children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, *1(7)*, 1383-1390.

McPhillips, M., Finlay, J., Bejerot, S., & Hanley, M. (2014). Motor Deficits in Children with Autism Spectrum Disorder: A Cross – Syndrome Study. *Autism* Research, 7, 664-676.

Ming, X., Brimacombe, M., & Wagner, G. (2007). Prevalence of motor impairment in autsism spectrum disorders. *Brain and Development*, *29(9)*, 565-570.

Mulligan, S. & Prudhomme White, B. (2012). Sensory and motor behaviors of infant siblings of children with and without autism. *The American Journal of Occupational Therapy*, *66*, 556-566.

Pan, C.-Y., Chu, C.-H., Tsai, C.-L., Sung, M.-C., Huang, C.-Y., & Ma, W.-Y. (2016). The impacts of physical activity intervention on physical and cognitive outcomes in children with autism spectrum disorder. *Autism*. doi: 10.1177/1362361316633562

Pan, C.-Y., Tsai, C.-L., & Chu, C.-H. (2009). Fundamental movement skills in children diagnosed with autism spectrum disorders and attention hyperactivity disorder. *Journal of Autism and Developmental Disorders*, *39(12)*, 1694-1705.

Papadopoulos, N., McGinley, J., Tonge B., Bradshaw, J., Saunders K., Murphy, A., et al. (2012). Motor proficiency and emotional/behavioral disturbance in autism and Asperger disorder: Another piece of the neurological puzzle? *Autism*, *16*, 6267-640.

Pedersen, A. V., Sigmnudsson, H., Whiting, H. T. A., & Ingvaldsen, R. P. (2003). Sex differences in lateralization of fine manual skills in children. *Experimental Brain Research*, *149*, 249-251.

Reid, G., O' Connor, J., & Lloyd, M. (2003). The autism spectrum disorders: Physical activity instruction. *Palaestra*, 19(2), 20-16, 47-48.

Sacrey, L. A., Bennett, J. A., & Zwaigenbaum, L. (2015). Early Infant Development and Intervention for Autism Spectrum Disorder. *Journal of Child Neurology, 30(14)*, 1921-1929.

Staples, K. & Reid, G. (2010). Fundamental Movement Skills and Autism Spectrum Disorders. *Journal of Autism and Developmental Disabilities*, *40*, 209-217.

Staples, K., Todd, T., & Reid, G. (2006). Physical activity instruction and autism spectrum disorders. *ACHPER Healthy Lifestyles Journal*, *53(3-4)*, 17-23.

Sutera, S., Pndley, J., Esser, E., Rosental, M. A., Wilson, L. B., Barton, M., et al. (2007). Predictors of optimal outcome in toddlers diagnosed with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *37(1)*, 98-107.

Tse, A. CY. (2017). Effects of attentional focus on motor learning in children with autism spectrum disorder. *Autism*. doi: 10.1177/1362361317738393

Ulrich, D. A. (2000). *Test of gross motor development (2nd edition)*. Austin, TX: Pro-Ed.

Venetsanou, F., Kambas, A., Ellinoudis, T., Fatouros, I., Giannakidou, D., & Kourtessis, I. (2011). Can the Movement Assessment Battery for Children – Test be the "gold standard" for the motor assessment of children with Developmental Coordination Disorder? *Research in Developmental Disabilities*, *32*, 1-10.

Venetsanou, F., Kambas, A., Aggelousis, N., Serbezis, V., & Taxildaris, K. (2007). Use of the Bruininks - Oseretsky Test of Motor Proficiency for identifying children with motor impairment. *Developmental Medicine & Child Neurology*, *49*. 846-848.

Whyatt, C. & Craig, C. M. (2013). Sensory – motor problems in Autism. *Frontiers in Integrative* Neuroscience, 7, *1-12.*

Whyatt, C. & Craig, C. M. (2012). Motor Skills in Children Aged 7-10 Years, Diagnosed with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, *42*, 1799-1809.

Zamani Jam, A., Hemayat Talab, R., Sheikh, M., Torabi, & Farouzan R. (2018). The effect of 16 weeks gymnastic training on social skills and neyropsychiatric functions of autistic children. *Sport Sciences for Health*, *14(1),* 209-214.