

Impact of motor skill training on eye-hand-subject coordination and reaction time in 6 - 16 years old children with Autism Spectrum Disorder (ASD) and Down Syndrome (DS)”

¹MSc. Denis Nuriu: ¹PhD. Genti Pano.

¹*Sports University of Tirana, Institute of Sport Research, Department of Research in Applied Movement. Tirana, Albania.*

Contact address: dnuriu@ust.edu.al ; gpano@ust.edu.al

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Abstract

DS is a genetic disorder caused when abnormal cell division results in an extra full or partial copy of chromosome 21. This extra genetic material causes the developmental changes and physical features of DS. ASD is becoming one of the most common paediatric cases in the world and it is reported that prevalence is increasing (*Matson & Kovzlowski., 2011*). Meanwhile in Albania the prevalence of ASD and DS ranges from 0.7 to 21.1 per 10,000 children (*PHI., 2015*). The main purpose of this study was to improve eye and hand coordination in subjects with autism and disabilities (DS). 21 children with ASD from the “Luigj Gurakuqi” Special School and 20 children with DS from "Jonathan Centre" in Tirana. 3 tests were used to evaluate the motor condition:

1. Grooved Pegboard Test (mod 7446).
2. Box and Blocks Test (*Mathiowetz et al, 1985*).
3. Ruler Drop Test (*Mackenzie B., 2004; Davis, B et al., 2000*).

Children were involved in a 12 weeks exercise training program twice a week, for 12 weeks. Cardiovascular exercise, short and fast jogging, flexibility exercises and gross motor control exercises make up a 10-minute warm-up. Each group was assigned to an exercise station (total 5 stations), with a total of 20 min. Results show an improvement in overall performance and in hand coordination tasks after exercise intervention. (Box & Block Test (60 sec/piece) T1; 23.01 - T2; 24.93. Also exercise interventions resulted in an improvement on visual control of these children Ruler drop test (cm) T1; 31.25 - T2; 26.75) Grooved Pegboard Test (min: sec) T1; 5:07 – T2; 4:11. On the other side, children with ASD compared with those with DS often faced difficulties maintaining balance due to muscular hypotony and muscle imbalances problems. Nevertheless, study results show an improvement on overall physical ability due to engagement in a variety of different exercises. These data can be used by physical and rehabilitation specialists of these field by better individually adapting rehabilitative exercise programs aiming the improvement of quality of life of these specific group category.

Keywords: ASD, DS, motor skills, coordination and reaction time