The role of physical activity on postural stability and fitness characteristics in pediatric patients with GH deficiency

Jessica Brusa, Maria Cristina Maggio1, Marianna Bellafiore, Giovanni Corsello1, Antonio Palma, Giuseppe Messina

1Department Promise "G. D'Alessandro", University of Palermo, Italy

Department of Psychology, Educational Science and Human Movement, University of Palermo

Purpose: Patients with growth hormone deficiency (GHD) show low fitness levels before GH treatment is started. Muscular strength, flexibility and postural stability are related to health and quality of life. Since it is widely recognized that physical activity increases GH secretion and GH could ameliorate fitness, if a high adherence to treatment is documented (1), the purpose of this study is to investigate any difference on posturographic parameters and muscular features in physically active children with GHD, treated with GH with a high adherence to the treatment, and compared with sedentary pediatric patients.

Methods: 13 children (7 males, 6 females) with GHD were enrolled at the University Paediatric Unit of Palermo and assigned to either the the physical activity group (PAG) or the sedentary group (SG), comprising 7 (age mean: 13,14±1,35 years; height: 142,14±11,39 cm; weight: 36,57±8,12 kg) and 6 (age mean: 12,67±2,5 years; height: 138,17±12,62 cm; weight: 34,67±15,77 kg) subjects, respectively. All participants were requested to perform a stabilometric test on a platform (freeMed® baropodometric platform, Sensor Medica®) and a fitness test battery including: a) hand grip test through a mechanical dynamometer (Kern Map model 80K1 - Kern®); b) counter movement jump; c) sit-up test; d) backsaver sit and reach test. Statistical analysis was performed using Statistica Software 12 (StatSoft®). The Student's t-test was adopted in order to determine any differences between groups with the *p*-value set at $p<0,05$.

Results: The stabilometric test showed a significant difference between groups on ellipse sway area ($p<0,01$) and sway path length ($p<0,05$) parameters. As concern fitness features, PAG showed higher values statistically significant ($p<0,01$) compared to SG on sit-up test. No significant differences ($p>0,05$) were found on hand grip test, counter movement jump and backsaver sit and reach test between groups.

Conclusions: Our preliminary findings suggest that in GHD children, treated with GH, physical activity ameliorates muscular strength levels and improves postural stability.

References

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Growth and syndromes (to include Turner syndrome)

Jessica Brusa

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