Analysis of sensory systems that contribute to postural control in people with Down syndrome [Análisis de los sistemas sensoriales que contribuyen al control postural en personas con síndrome de Down]

Guzmán-Muñoz E.

Méndez-Rebolledo G.

Villouta-Gutiérrez O.

Concha-Cisternas Y.

Valdés-Badilla P.

Introduction: The accurate and effective control of posture requires proper integration of the sensory and motor systems. Aim: To identify the contribution of sensory systems in the postural control of people with Down Syndrome (DE). Material and methods: The sample was composed of 104 participants, divided into groups of children, teenagers and adults with DS and typical development (TD). Postural control was measured on a forcé platform with open eyes (OE) and closed eyes (CE). A spectral analysis of the signals was performed and the following frequency bands were obtained: 1/16, 1/8, 1/4, 1/2, 1, 2 and 4 Hz. People with DS and TD were compared. Results: In teenagers, the energy used by people with DS was higher than those with TD for the bands of 2 Hz (P=.015) and 4 Hz (P=.012) with OE and for the bands 1/4 Hz (P=.033), 2 Hz (P=.042) and 4 Hz (P=.047) with CE. In adults, the differences were observed at 1/2 Hz (P=.010), 1 Hz (P<.001), 2 Hz (P<.001) and 4 Hz (P<.001) with OE and 1/4 Hz (P=.027), 1/2 Hz (P=.005), 1 Hz (P=.001), 2 Hz (P<.001) and 4 Hz (P=.003) with CE. In children, no significant differences were reported between both groups. Conclusions: The results of this study show that people with DS are more demanding on the sensory systems to maintain bipedal posture.

Down syndrome

Frecuency analysis

Postural balance