World Academy of Science, Engineering and Technology
International Journal of Sport and Health Sciences
Vol:9, No:01, 2015

Deprivation of Visual Information Affects Differently the Gait Cycle in Children with Different Level of Motor Competence

Authors : Miriam Palomo-Nieto, Adrian Agricola, Rudolf Psotta, Reza Abdollahipour, Ludvik Valtr

Abstract : The importance of vision and the visual control of movement have been labeled in the literature related to motor control and many studies have demonstrated that children with low motor competence may rely more heavily on vision to perform movements than their typically developing peers. The aim of the study was to highlight the effects of different visual conditions on motor performance during walking in children with different levels of motor coordination. Participants (n = 32, mean age = 8.5 years sd. ± 0.5) were divided into two groups: typical development (TD) and low motor coordination (LMC) based on the scores of the Movement Assessment Battery for Children (MABC-2). They were asked to walk along a 10 meters walkway where the Optojump-Next instrument was installed in a portable laboratory (15 x 3 m), which allows that all participants had the same visual information. They walked in self-selected speed under four visual conditions: full vision (FV), limited vision 100 ms (LV-100), limited vision 150 ms (LV-150) and non-vision (NV). For visual occlusion participants were equipped with Plato Goggles that shut for 100 and 150 ms, respectively, within each 2 sec. Data were analyzed in a two-way mixed-effect ANOVA including 2 (TD vs. LMC) x 4 (FV, LV-100, LV-150 & NV) with repeated-measures on the last factor ($p \leq .05$). Results indicated that TD children walked faster and with longer normalized steps length and strides than LMC children. For TD children the percentage of the single support and swing time were higher than for low motor competence children. However, the percentage of load response and pre swing was higher in the low motor competence children rather than the TD children. These findings indicated that through walking we could be able to identify different levels of motor coordination in children. Likewise, LMC children showed shorter percentages in those parameters regarding only one leg support, supporting the idea of balance problems.

Keywords : visual information, motor performance, walking pattern, optojump
Conference Title : ICKES 2015 : International Conference on Kinesiology and Exercise Sciences
Conference Location : Istanbul, Türkiye
Conference Dates : January 26-27, 2015