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A study on balance ability levels among youths with different physical activity background

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Background: Balance is one of the primary abilities developed during the motor and skeletal evolution. Regular and specific training throughout life-span could improve the balance and, in turn

the execution of complex motor patterns as well as of the normal daily activities (Ricotti, 2011).

Aim: In this study we investigate the relation between the balance abilities and different types of physical activities (PA) in youths.

Method: Thirty-six subjects (age: 24±17 years; male/female:18/18) were enrolled and grouped into two PA categories: the **exergame** group includes subjects who use Nintendo Wii Balance Board gaming at least twice a week (n=12), and the **sport** group includes subjects who practice sport at least twice a week (n=12). Subjects who do not practice sports or physical activity were enrolled as **control** (n=12). The postural control was assessed by means of normal standing balance tests (for 30s) with open eyes (OE) and closed eyes (CE), respectively; a force plate (AMTI Model OR6-7) was used to acquire data of the centre of pressure (CoP) sway. According to previous study [2], we were able to select two variables from CoP sway: the total displacement of sway (DOT) and the mean velocity. The mean velocity was estimated for antero-posterior (MV_{AP}) and lateral-lateral (MV_{LL}) directions, respectively. Statistical analysis was carried out with SPSS (SPSS Inc, Ver. 20). Significance of differences was assessed by one-way ANOVA followed by Bonferroni post-hoc test (95% confidence level).

Result: ANOVA revealed significant differences among groups for the three variables. We found that the mean of DOT and MV_{AP} was significantly decreased in the exergame's group compared with the others study groups. Of note, the differences were higher for CE than OE test.

Conclusion: Our findings suggest that the balance ability reaches a mastery level during the youth age-period. However, a specific program of balance training using the exergaming approach could improve the proficiency level of the aforementioned ability more than conventional sport training.

References

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[2] Duarte, M., & Freitas, S. M. (2010). Revision of posturography based on force plate for balance evaluation. *Brazilian Journal of physical therapy*, *14*(3), 183-192.

Keywords

Balance Ability; Exergaming; CoP Assessment.