

Effects of taekwondo on postural system: comparison of posturographic parameters between young tennis athletes and young taekwondo athlete

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Aim: Apart from maturation of the sensory systems, the development of postural control is influenced by activity and experience. The training in dynamic sports has been reported to improve postural control of the young athletes (Herpin et al. 2010; Sahin et al. 2015). This study aimed to identify the different status of balance and sensory functions in young taekwondo athletes compared to young tennis athletes.

Methods: Twenty-nine young athletes voluntarily participated to the study (age 10.75 ± 3.56 years; height 138.62 ± 22.58 cm; weight 38.83 ± 19.19 kg). Eleven subjects belonged to the group Taekwondo (G-TKD) and eighteen subjects belonged to the group Tennis (G-Tennis). Each subject underwent to a postural analysis. The analysis were measured through the FreeMed posturography system (by Sensor Medica). STATISTICA software was adopted to perform an unpaired t test. A P value lower than 0.05 was considered to be statistically relevant.

Results: The groups showed significant differences in the center of pressure (G-TKD: 600.4 ± 202.9 mm; G-Tennis: 751 ± 145.8 mm; $p < 0.05$) and in ellipse surface area (G-TKD: 318.1 ± 242 mm²; G-Tennis: 585.3 ± 385.4 mm²; $p < 0.05$). There were not significant differences in coordinates along the frontal (x-mean) and sagittal (y-mean) planes. However, although the analysis did not show significant differences in mean X parameter, there are of the adaptations in the oscillations on the frontal plane, probably caused by the practice of Taekwondo.

Conclusions: The study showed that G-TKD has better stability compared to G-Tennis, in posturography analysis. The ellipse surface area of the G-TKD was significantly smaller than the G-Tennis. Similarly, even in the center of pressure was significantly reduced compared to the G-Tennis. Further studies are needed to support these conclusions.

References:

Herpin G et al (2010) Sensorimotor specificities in balance control of expert fencers and pistol shooters. J Electromyogr Kinesiol 20(1):162–169.

Sahin N et al (2015) Evaluation of knee joint proprioception and balance of young female volleyball players: a pilot study. J Phys Ther Sci 27(2):437–440.