Original research papers

POSTURAL CONTROL IN FEMALE RHYTHMIC GYMNASTS IN SELECTED BALANCE EXERCISES: A STUDY OF TWO CASES

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Abstract

Introduction. The aim of the study was to determine the differences in the quality of postural control between two female rhythmic gymnasts with different training experience during the performance of balance exercises. In rhythmic gymnastics, the same balance exercises are performed by novice and elite gymnasts. Balance exercises involving standing on the toes of one leg with the free leg raised in different positions are considered to be extreme forms of exercise in terms of the postural balance abilities required. In coaching practice, it is important to have tools which facilitate the objective assessment of the process of maintaining balance in such exercises. ***Material and methods.*** The study involved two female rhythmic gymnasts: a younger one (age = 8 years and training experience = 4 years) and an older one (age = 21 years and training experience = 14 years). The athletes performed three balance exercises standing on a Kistler platform: the split with hand support (lateral balance), the ring with hand support, and the back split without hand support (balance on the whole foot). The parameters describing the quality of postural control used in the current analysis were the range and velocity of COP displacements in the anterior-posterior and medial-lateral directions. ***Results.*** Postural control in the balance exercises in the younger rhythmic gymnast was characterised by almost two times greater COP displacements in the anterior-posterior direction and more rapid than that of the older gymnast. COP displacements in the medial-lateral direction in all the exercises described did not differentiate the subjects. In the back split without hand support, the older athlete showed greater variability of postural control with smaller COP displacement and velocity than the younger gymnast. ***Conclusion.*** Gymnastics training should include exercises strengthening the muscles acting on the ankle and hip joints, which could improve the stability of these joints during the performance of difficult balance exercises. Improving the stabilising function of these muscles helps to minimise anterior-posterior movements in these joints.

Key words: single-leg stance, COP trajectory, training experience