Organization of postural equilibrium in several planes in ballet dancers

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Am– This study analyzed the balance strategies of ballet dancers during postural equilibrium in three single leg balance conditions with and without vision and regard to age.

Material and method– Dancers participating formed two groups of 20 dancers each, one aged between 8 and 16 years (young group) and the other aged between 17 and 30 years (adult group). Ground reaction forces-GRF (mediolateral [ML], anteroposterior [AP] components, vertical [V]) were recorded. Results analysis enabled us to extract some spatiotemporal data for each component of the GRF (number of GRF oscillations, variability and impulses). Three trials were tested for each condition. The significance level was set at P < 0.05 for all tests.

Results– Young dancers are characterized, compared to adult dancers, by an instability combined with an increase of oscillations number and a decrease variability mainly visible on the ML component. In the two groups, the absence of vision implies an increase of AP, ML and V impulsions and GRF variability. Balance with the gesturing limb to the rear increases the age and vision effect compared to balances with the limb forward or to the side.

Discussion– Young dancers are less efficient at controlling their balance than adult dancers. This observation may be related to the number of hours practicing dance, which differs between groups. The dancers have a visual dependence to control the postural balance.

Further reading

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