

OC9: Age effect on kinematic variables of stepping after multidirectional disturbances

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Introduction: Systems with influence on postural control suffer structural and functional changes with aging. Therefore *stepping* strategies against external disturbances, may have different characteristics between individuals of different age groups.

Objectives: To analyze step length, step average speed and step latency on forward-backward disturbances, as well as stepping strategies after lateral disturbances. The relationship between lower limb dominance and response limb was also analyzed.

Materials and Methods: A cross-sectional study was performed in a sample of 9 young, 9 adults and 10 older adults. Participants were subjected to forward-backward and lateral disturbances in order to trigger stepping. All responses were analyzed by a force platform and the kinematic record in 3D. Statistically it were used the Kruskal-Wallis, Bonferroni and the Chi-square tests, both with a 0.05 significance level.

Results and Discussion: Older adults showed shorter steps, being related to aging protective responses' deterioration first signs ($p>0.05$). Young presented faster steps when compared with other groups ($p>0.05$). Latency times were significantly lower in older adults on forward disturbances ($p<0.05$) and minor in young on backward disturbances ($p>0.05$). In all groups, the lateral stepping (78.6%) was more frequent than the crossover stepping (21.4%). On forward-backward disturbances, dominance limb may have predetermined the response limb (74.4%), but not on lateral disturbances.

Conclusion: Older adults presented a decreased step length and average speed, but a lower latency time on forward stepping. As age increases the lateral stepping is more common than crossover stepping. The dominance limb can influence the response limb except on lateral disturbances.

References

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