

Intersegmentar orientation between trunk and lower limbs in individuals after stroke: a pilot study

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Introduction: Postural control, which involves stability and intersegmental orientation against gravity, is considered a pre-requisite for movement to occur efficiently and in different contexts [1]. After central nervous system damage, individuals tend to demonstrate motor impairments, which can affect their functional ability in different activities, such as standing and walking [2]. These altered motor behaviours restrict voluntary, well-coordinated and effective movements, which in turn limit a person's ability to perform everyday tasks [2]. Therefore, this study aimed at analysing the correlation between the orientation of the trunk and lower limbs of individuals after stroke during standing.

Materials and methods: This was a pilot cross-sectional study. Were included individuals at the chronic stage post-stroke, who had a single unilateral ischemic event involving the medial cerebral artery; as exclusion criteria were considered inability of autonomous standing, presence of other pathologies that could interfere with postural control, and cognitive impairment. Trunk linear extension and lower limb segmental orientation were assessed using the postural assessment software SAPo. The correlation between the variables was analysed through the Pearson correlation coefficient, with a significance of 0.05. This project was approved by an Ethics Committee and an informed consent was signed by each participant.

Results: From 236 individuals that were contacted, only 11 fulfilled the criteria to participate, 5 female and 6 male, aged between 45 and 84 years old. The lesion was located at the right hemisphere in 5 individuals and in 6 individuals at the left. All participants were overweight, nevertheless none had morbid obesity. Results showed a significant moderate correlation ($r = 0.642$; $p = 0.03$) between the trunk orientation and the knee angle of contralesional side. Other correlations were almost null or weak, and with no statistical significance.

Discussion and conclusions: These preliminary results suggest that the vertical trunk orientation and the knee angle of contralesional side might present a positive moderate correlation in post-stroke individuals, which might be of interest for the physiotherapy clinical reasoning. This finding deserves, however, further analysis.

KEYWORDS Stroke; postural control; intersegmental orientation; photogrammetry

References

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