

Special Issue

Postural and Neuromuscular Mechanisms in Balance and Postural Re-Education: Technological and Clinical Advances

Message from the Guest Editors

Alterations in balance and posture are determining factors in the risk of falling in the elderly. Vestibular disorders, peripheral neuropathies, sarcopenia, arthrosis and neurodegenerative diseases such as Parkinson's are among the most frequent causes of postural instability (Shumway-Cook & Woollacott, 2017).

Postural assessment observes symmetry, segmental alignment, trunk control, and balance strategies. Instrumental evaluation uses stabilometry, baropodometry and motion analysis systems to analyze center of pressure oscillations, load distribution and asymmetries. Functional assessment, on the other hand, focuses on the subject's ability to maintain and recover balance under static and dynamic conditions through standardized tests.

Integrated preventive interventions include targeted muscle strengthening exercises, proprioceptive training, vestibular re-education and correction of postural alterations. Nanotechnology-based wearable devices, such as miniaturized inertial sensors, enable continuous monitoring of postural parameters, predictive data processing and the activation of personalized corrective feedback (Patel et al., 2020).

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Editor-in-Chief

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