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The upper body segmental movements during walking by young females.

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OBJECTIVES: To characterise the physiological pattern of trunk and shoulders movements during walking and provide a reference for further studies on spine deformities. DESIGN: Implementation of a model for measuring spine and shoulder girdle movements during gait. Data collection on a population of eighteen, young, healthy, female subjects. BACKGROUND: The analysis of gait modifications in subjects with idiopathic scoliosis could offer an insight to better understand the functional relationship with the pathology. METHODS: Retroreflective markers were positioned on the main spine processes and acromions to be detected by a TV-based motion analysis system. A model of kinematic computation was implemented and integrated in a previously developed protocol for multifactorial gait analysis. Movements in the main reference planes and in relation to pelvis were analysed. RESULTS: The trunk was on average bent forward by 3.4 degrees with respect to standing; of the two physiological curves in the sagittal plane only lordosis changed during walking; in the frontal plane, a dynamic spine deformation appeared, that was maximum at heel strike-early stance; the trunk was bent controlaterally of the foot on the ground, while the shoulders remained stable; in the horizontal plane, the shoulders rotated contralaterally to the pelvis. CONCLUSIONS: In our population all the segmental movements analysed were smaller than 5 degrees during gait, except the angle of proximal curvature in the frontal plane, shoulder rotation, and angle between shoulders and pelvis; all the measured angles were far below their possible ranges of motion. RELEVANCE: Quantitative data on upper body kinematics as a complement to gait analysis can help understanding movement disorders and compensation strategies in several pathologies.

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