

Development of innovative training solutions in the field of functional evaluation aimed at updating of the curricula of health sciences schools



Module Biomechanics of Gait

Didactic Unit C: How do I assess gait?

C.1: What methods may I apply to assess gait appropriately?



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1. Objectives

The objectives of this Didactic Unit are:

1. To know the methods available for evaluating human gait.
2. To define the general procedure used in each methods and tools of human gait assessment.
3. To review the main results from the different methods and tools of human gait assessment.

6. Key ideas

- The gait movements require integrating information from the proprioceptive, vestibular, and visual systems of the human body into the peripheral and central nervous system.
- The gait evaluation is essential in patients with movement disorders and is used to quantify the degree of alteration, locate its cause, plan future interventions, evaluate the efficacy of a treatment and inform the patient of its state of development.
- The gait analysis requires to obtain and record the characteristics of a gait to identify its deviations, then to understand these deviations and finally choose the best treatment path for a specific condition.
- There are qualitative and quantitative methods to evaluate human gait. The first will focus on subjective methodology subject to an evaluator's interpretation, such as observational scales; the second will require the use of analytical instruments to obtain objective outcomes with defined magnitudes; such as pressure platforms assessment.
- The Assessment of gait by clinical observation requires registration by the evaluator for abnormalities in the patient's movement pattern. It requires a systematic work procedure and an extensive and precise knowledge of the gait cycle by the evaluator.
- During the analysis of the human gait the evaluator can use an item checklist or a video recording to facilitate and increase the precision in the gait evaluation process.
- The questionnaire-based scales aim to rate a series of items of the human gait within a list. These types of scales are affected by the subjectivity of this tool. Items can be directly related to the different domains of the International classification of functioning, disability and health (ICF).
- The observational scales focus on the evaluation of gait patterns or abilities through direct or indirect observation. They usually evaluate specific characteristics within the gait cycle.
- The assessment using instrumental techniques requires the use of clinical analysis devices, such as pressure insoles or photogrammetry systems, obtaining more precise, defined results with specific magnitudes suitable for carrying out statistical studies.
- The analysis methodology using instrumental techniques can be divided into: based on image processing, based on sensors located on the ground or based on sensors on the human body. In the same way, they can be divided according to the type of outcomes to be obtained: spatiotemporal outcomes, kinematic outcomes, kinetic outcomes, electromiographic outcomes, plantar pressure or energy expenditure outcomes.

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