

Analyse de la marche à partir d'un accéléromètre triaxial : mise au point d'une épreuve de détection de la fatigue

Gait analysis during an original walking test

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Background and aims

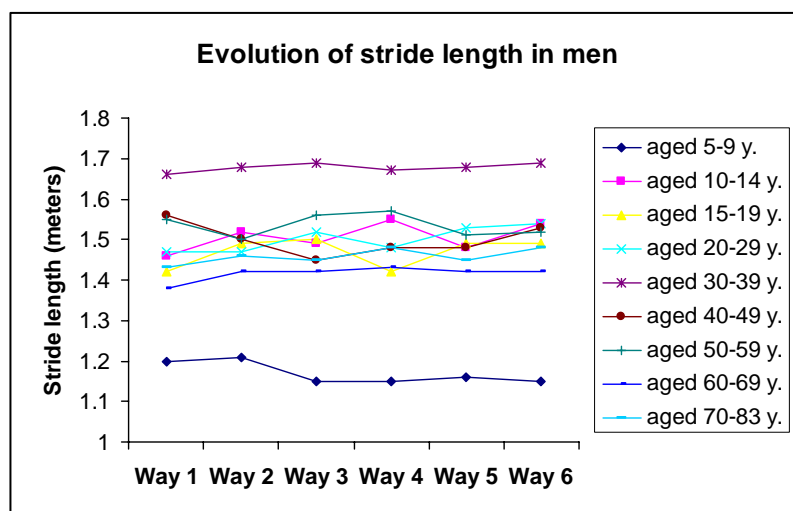
Walking is one of the most universal of all human activities and the primary exercise recommended by public health authorities. Gait analysis represents a relevant method to detect walking disorders and to appreciate the effectiveness of treatments. The purpose of this study was to develop an original walking test likely to show abnormal gait. This test could be relevant particularly in patients with pathologies associated to symptoms of physical or mental fatigue and psychomotor slowdown.

Methods

Gait analysis data of 265 healthy volunteers (144 women and 121 men aged 5-83 years), included in nine age groups, were established. The subjects walked at their comfortable speed down and back along a 40 meters straight corridor. Subjects repeated the way three times corresponding to a total distance of 240 meters. Gait analysis system included two accelerometers (Locometrix®). A 20-second period of stabilized walking was selected for each of the 6 ways to calculate stride frequency, stride length, stride regularity, step symmetry and medio-lateral, cranio-caudal and antero-posterior activities. The walking speed was measured with electrical photocells.

Results

Good reproducibility (intra-examinator, inter-corridor and inter-analysis) was observed for the majority of parameters. Normative data and patterns during the 6 ways were established for all variables, age groups and sex. Speed began to decrease during the sixth decade in men and the seventh decade in women.



Conclusion

Patterns of parameters measured during an original walking test offer relevant perspectives to gait analysis and to track the evolution of gait after treatments in several pathologies.