

Publication

Repeatability of spatiotemporal, plantar pressure and force parameters during treadmill walking and running

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4508180**Author(s)** Nüesch, Corina; Overberg, Jan-Arie; Schwameder, Hermann; Pagenstert, Geert; Mündermann, Annegret**Author(s) at UniBasel** [Nüesch, Corina](#) ; [Pagenstert, Geert](#) ; [Mündermann, Annegret](#) ;**Year** 2018**Title** Repeatability of spatiotemporal, plantar pressure and force parameters during treadmill walking and running**Journal** Gait & posture**Volume** 62**Pages / Article-Number** 117-123**Mesh terms** Adult; Biomechanical Phenomena; Exercise Test; Female; Foot, physiology; Gait, physiology; Healthy Volunteers; Humans; Male; Pressure; Running, physiology; Walking, physiology; Walking Speed, physiology

Instrumented treadmills with integrated pressure mats measure spatiotemporal, pressure and force parameters and are often used to investigate changes in gait patterns due to injury or rehabilitation.; What is the within- and between-day repeatability of such an instrumented treadmill for spatiotemporal parameters, peak pressures and forces during walking and running?; Treadmill gait and running analysis were performed at 5.0, 6.5, and 9.0/km/h in 33 healthy adults (age: 31.6/±7.4/years; body mass index: 23.8/±3.2/kg/m; 2;) once on day 1 and twice on day 7. For all three speeds, intraclass correlation coefficients (ICC) and smallest detectable differences (SDC) corresponding to 95% limits of agreement were calculated for spatiotemporal parameters and peak pressures and forces in the heel, midfoot, and forefoot regions.; All spatiotemporal parameters and peak forces in the heel, midfoot, and forefoot regions showed a good within- and between-day repeatability (ICCs/>0.878) for all gait speeds with within-day repeatability being generally higher. For peak pressures, only the heel and forefoot regions but not the midfoot region, showed good repeatability (ICC/>0.9) at all gait speeds. SDCs ranged from 1.5 to 2.5° for foot rotation, 4.4 to 6.6/cm for stride length, 0.7 to 2.5% for length of stance phases, and 2.8 to 9.2/N/cm; 2; for peak pressures in all foot regions. For walking, SDCs of peak forces in the heel, midfoot and forefoot regions were below 60/N, and for running below 135/N.; Except for peak pressures in the midfoot, spatiotemporal and kinetic gait parameters during walking and running showed a good within- and between-day repeatability. Hence, the investigated treadmill is suitable to analyze gait patterns and changes in gait patterns due to interventions.

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