WALKING AND RUNNING GAIT KINETICS ON A NOVEL UNWEIGHTED TREADMILL DEVICE

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STUDY TYPE: Observational basic biomechanical study

BACKGROUND/PURPOSE: Unweighted supported treadmill training is commonly used in clinical practice with broad applicability including gait and balance interventions with research to support the use for improved gait mechanics and earlier walking in pediatric populations. The LightSpeed® body support system was developed to offer a feasible option for unweighted rehabilitation specialists and clients. The purpose of this study was to determine the unweighting effect of the LightSpeed® treadmill system on lower extremity forces in healthy, young adults while walking and running on a treadmill.

METHODS: Ten healthy participants completed a trial of weighted/unweighted walking and running at their self-selected speed. Impact forces were measured using the PEDAR® system in both conditions.

RESULTS: Results showed significant differences in plantar pressure and forces in the LightSpeed® unweighted conditions compared to the weighted conditions during both running and walking.

CONCLUSION/CLINICAL APPLICATION: The results of this study support both clinically and statistically significant reductions in ground reaction forces during walking and running suggesting that this novel body weight support system may be a viable option for use by both the rehabilitation specialist and client for prevention and treatment. Future research on its’ efficacy as an intervention in various orthopedic and neurological populations is warranted.