

Naam presentator: Jos Goudsmit

Titel abstract/symposium: Measuring Running Technique Key Points

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INTRODUCTION Earlier research identified the design requirements needed to address the challenges of measuring and improving running technique in the real-life running context using an intelligent feedback system [1]. The present study aims to address the requirement, measure relevant running technique key points. More specific the aim of this study is to identify the key points that (i) can be measured with easy to wear sensors and (ii) change noticeably when running at different cadences [2].

METHODS Four healthy subjects, able to run at least 30 minutes, ran at 6 randomized cadence trials on a treadmill. Trials lasted two minutes and running speed was set at the subjects' comfortable running speed. Measured data included running key points and heartrate. Subjects were equipped with 17 IMU's (Xsens), two pressure insoles (Interlink Electronics) and a heartrate monitor (Wahoo Tickr). Video recordings (Apple iPad) of the lateral and anterior view were made for reference purposes.

RESULTS Nine running key points were successfully measured. Hip rotation speed showed great variations and outliers. Horizontal stride distance, swing time, stance time, body angle and lower leg angles showed relation between the trials.

DISCUSSION/CONCLUSION Hip rotation speed measurements seems unreliable, while other key points show relation between the trials and were successfully measured. Most of these key points can be measured using a small number of sensors on the lower leg and feet. These findings will be subject in the next iteration of the design of the feedback system.

REFERENCES

1. Goudsmit, J.; Janssen, M.; Luijten, S.; Vos, S. Tailored Feedback Requirements For Optimal Motor Learning: A Screening and Validation Of Four Consumer Available Running Wearables. *Proc.* **2018**, *2*, 1–7, doi:10.3390/proceedings2060198
2. Williams, K. R.; Cavanagh, P. R. Relationship between distance running mechanics, running economy, and performance. *J. Appl. Physiol.* **1987**, *63*, 1236–1245, doi:10.1152/jappl.1987.63.3.1236.