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The WEARION project: Using real-time feedback from insole technology to improve the biomechanics of running and reduce injury rates.

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Real-time biofeedback from wearables may help to guide and optimize running training and contribute to enhance performance and potentially avoid injuries. Recent advances in insole sensing and app development have created the opportunity to provide feedback on key biomechanical outcomes related to running technique. Key challenges to capitalize on these developments are optimization of system design for accurate biomechanical assessments, validation of outcome variables against ground truth data and rigorous evaluation of different feedback approaches.

The aims of the WEARION project were i) to redesign the insole sensors to optimize assessment of loading parameters, ii) to validate the sensor design via mechanical and human testing at the CAREN system, ii) develop new AI algorithms to provide real-time feedback on running technique and loading parameters and iv) to evaluate the optimized system in a 6-month lasting RCT in which the effect of two different feedback modes on injury rate in running was tested .

While there are numerous applications of real-time feedback provided by wearables to enhance performance, there are also several limitations and challenges that need to be overcome to ensure these methods are effective. This talk will discuss the lessons learned from the WEARION project and highlight limitations and challenges in this emerging field of application. The target audience includes individuals interested in using technology and in particular wearables to optimize running performance.

**Topic:** Sport Technology

**Presentation:** Invited

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