Twitter Thread by Karl Zelik



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Occupational #wearables for monitoring low back load have potential to improve ergonomic assessments & enable personalized, continuous monitoring of overexertion injury risk in the workplace.
#biomechanics #ergonomics

Encouraged by what we

We wanted to know: if we can only use a small number of wearable sensors to monitor low back loading, then which sensors should we use, where should we place them, what type of algorithm should we employ, & how accurately can we monitor back loading during material handling?

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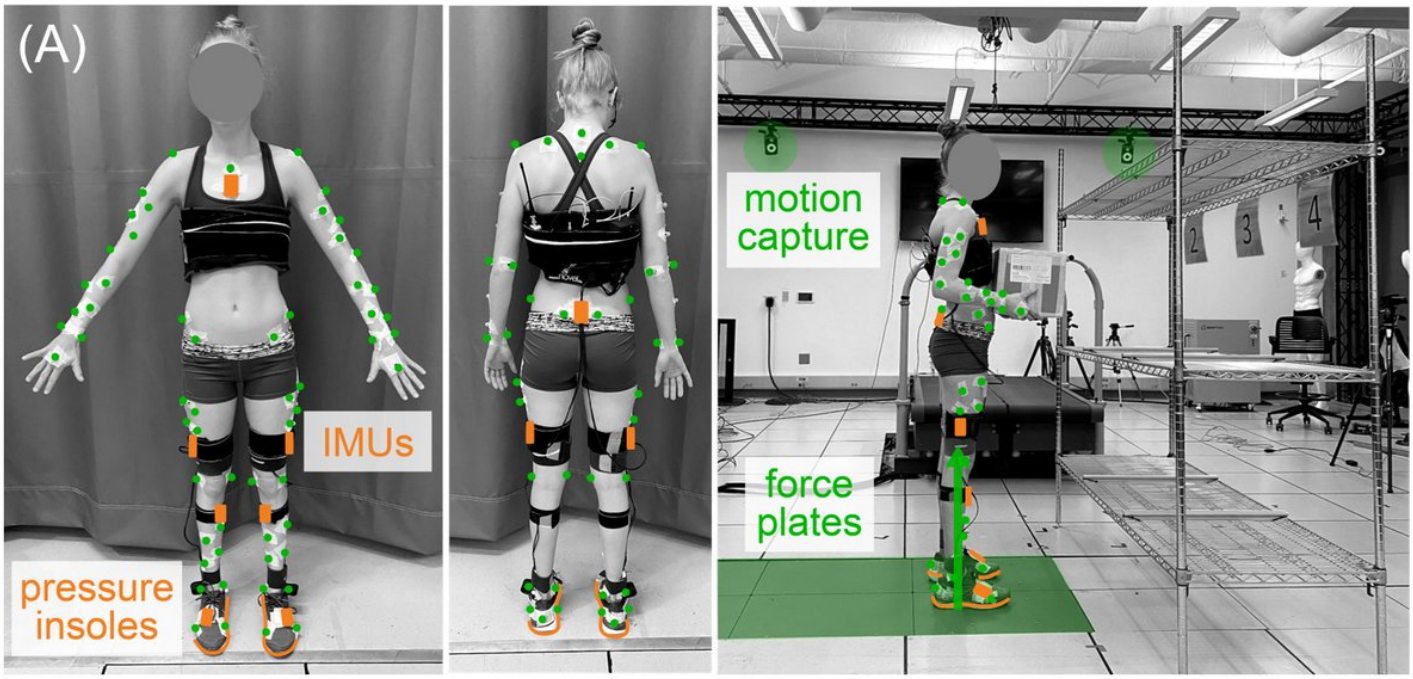
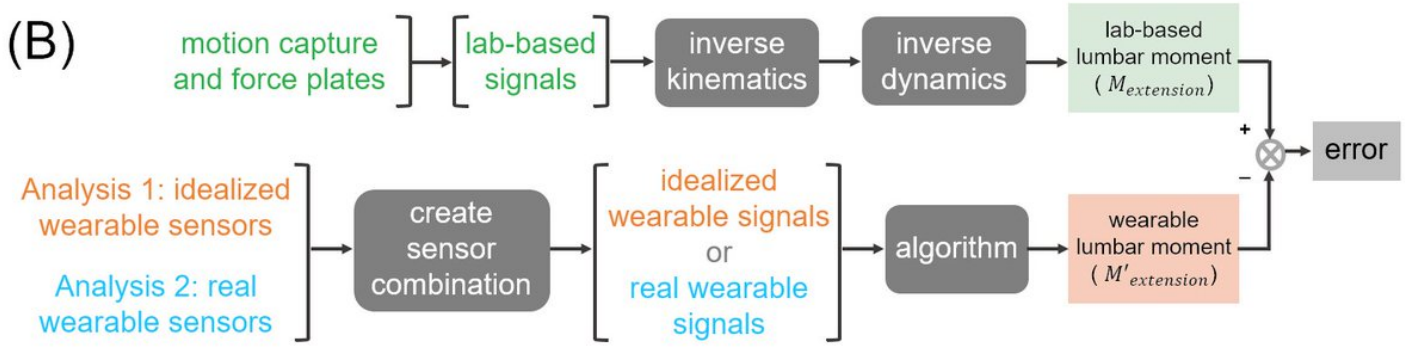

(A)
IMUs
pressure insoles
motion capture
force plates


(B)
motion capture and force plates
lab-based signals
inverse kinematics
inverse dynamics
lab-based lumbar moment ($M_{extension}$)
+
−
error
Analysis 1: idealized wearable sensors
Analysis 2: real wearable sensors
create sensor combination
idealized wearable signals or real wearable signals
algorithm
wearable lumbar moment ($M'_{extension}$)