

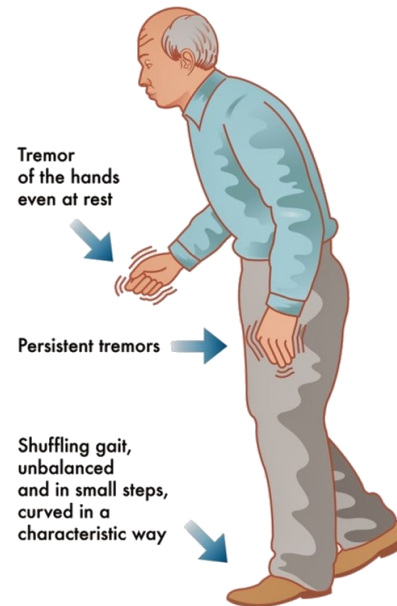
Stride length estimation from an ankle-worn IMU in Parkinson's disease

R. Romijnders*, M. Abedinifar*, K. Saegner*, C. Hansen*, W. Maetzler*

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- Gait and balance disturbances are common and important clinical manifestations of Parkinson's disease (PD)
- Stride length is among the gait parameters most sensitive to levodopa-based treatment of Parkinson's disease
- Inertial measurement units (IMUs) allow to measure mobility in free-living environments (e.g., at home, at work)

Can we determine stride length from an ankle-worn IMU in people with Parkinson's disease?



eP1-05



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Reference system:
12-camera Qualisys system
optical motion capture (OMC)

$N = 34$ participants
21 male, 13 female

Age: 41 – 85 years



slow



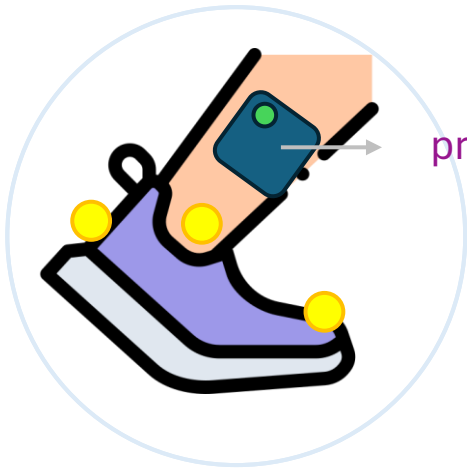
preferred



fast



5 meter

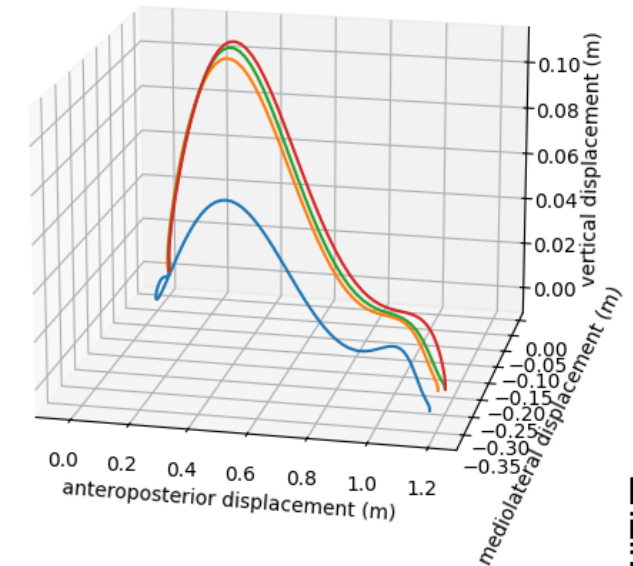


preprocessing

event
detection

stride
segmentation

trajectory
estimation



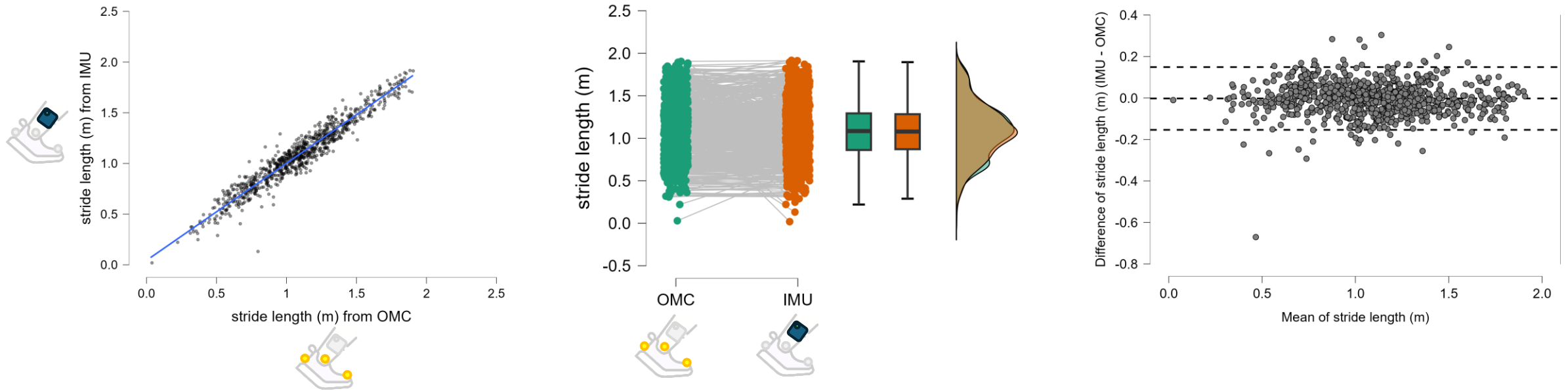
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- A relatively **small underestimation** of stride length is found (i.e., on average 0.2 cm)
- An **excellent** $ICC_{3,1}$ correlation coefficient, i.e., 95% confidence interval: [0.968, 0.975]
- Stride length estimation seems not to depend on the length of the stride itself

Can we determine stride length from an ankle-worn IMU in people with Parkinson's disease?

YES, we can!

eP1-05

