Advent Calendar 2021

1. Mobile-O Activity: "Go for a Sunday walk together with someone and bring hot drinks to enjoy outside." There are many technologies available to help you monitor how fast you walk in real life, including single body-worn sensors. Kamran Jinman and his colleagues have reviewed the many existing algorithms and arrived at a conceptual framework for accurate speed estimation.

2. Mobile-O Activity: "Do some stretching exercises as an active break at work." There is great potential in using digital mobility outcomes (DMO) such as real-world walking speed as clinical measures in different medical conditions, but which variables should we focus on? Pohrmus and colleagues took a deep dive into the clinical utility of different DMOs.

3. Mobile-O Activity: "Do the physical activity you enjoy the most!" If you think that mobility assessments in a gait lab provide the same information as in unobstructed, daily living environments, you are wrong. Wimmer and colleagues illustrate the weak association between mobility assessed in superfluous versus unobstructed settings, and make a case for long-term gait monitoring in movement disorders in daily life.

4. Mobile-O Activity: "Dance with your friends and family while preparing lunch or dinner." Gait parameters can easily and reliably be estimated using fewer lab equipment, but what if this is not at hand? Francesco Salsi and colleagues present a solution that is cheaper and easier to use – also outside the lab.

5. Mobile-O Activity: "Have a walk in your city center. Christmas lights are fantastic!" Gait asymmetry can be measured using acceleration data from body-worn sensors, but these calculations are often difficult to interpret. In this paper, our researchers propose an easy linear calculation of asymmetry in pathological gait.

6. Mobile-O Activity: "Merry Christmas and a Happy New Year!" Traditionally, impairments in Parkinson’s Disease are measured in a hospital setting using standardized gait tests, but these are increasingly supplemented with body-worn sensors. These sensors can measure gait in a patient’s home as well, but are home assessments as reliable as assessments performed in the hospital? The publication of Gazzarrini and colleagues investigated this.

7. Mobile-O Activity: "Take a phone call with a colleague or a friend. Do you have a desk job – you can work from home standing up!" Imagine being able to determinantly assess your patient’s mobility, understand how well they are functioning, evaluate the effect of treatment, and identify the need for urgent follow-up before visible, irreversible changes take place. Del Din and colleagues show how close we are to achieving this.

8. Mobile-O Activity: "Set a phone reminder to move at least once an hour, even if it’s just to make more coffee." Biomarkers such as temperature, heart rate and blood pressure are important indicators of your health. So is real-world gait, but getting regulatory condensation for this is easier said than done (just ask about the Mobile-O qualification process!), and what do we even mean by "real-world gait"? In this paper, by Trotta and colleagues.

9. Mobile-O Activity: "Get off the bus one or two stops early and walk the remainder of your journey." Gait changes in people with Multiple Sclerosis have been studied intensively in the lab and the clinic, but we lack good measures about everyday gait in the community. This paper investigated real world gait alterations and their contributing factors.

10. Mobile-O Activity: "Rock around a Christmas tree with your friend or family!" Mobile-O holds that mobility loss is a “real sign,” just like temperature or blood pressure, and digital measurements of mobility can predict clinical outcomes. But in order to get digital mobility assessment accepted for use in clinical research and practice, a technical validation is required against “gold standard” measures like video analysis and object orientation. Therefore, the paper proposes a novel measure and methodology to achieve these goals.

11. Mobile-O Activity: "Do some squats while preparing your Christmas lunch." Body-worn sensors provide rich information about continuous gait – but can it be used to predict fatigue? The most common symptom in Multiple Sclerosis? Ibrahim and colleagues have investigated this important question.

12. Mobile-O Activity: "Dance with your friends and family while preparing lunch or dinner." Gait speed in daily life can be estimated using small body-worn sensors, but when it comes to impaired gait patterns there are many challenges. Our Mobile-O colleagues highlighted the main methodological issues for walking speed estimation when using a single body-worn sensor versus the treadmill.

13. Mobile-O Activity: "Take an outdoor walk and challenge yourself by regularly changing your pace and walking uphill!" For most people, physical activity levels vary considerably over time, and it is also the case for persons living with different motor subtypes of Parkinson’s disease (PD). Galizzi and colleagues studied to what extent different subtypes of PD are related to different levels of physical activity.