

Introduction

Gait is an excellent model in auditory-motor synchronization¹ because it is:

- Natural and automatic
- Influenced by the characteristics of an external auditory stimulus (e.g. tempo, regularity)²
- Reflects individuals differences in the responsiveness to the stimulus' tempo³

Problem. There is no suitable method which is highly sensitive to individual differences in adapting to rhythmic stimulation while walking.

Objective. Devise a method of gait measurement that:

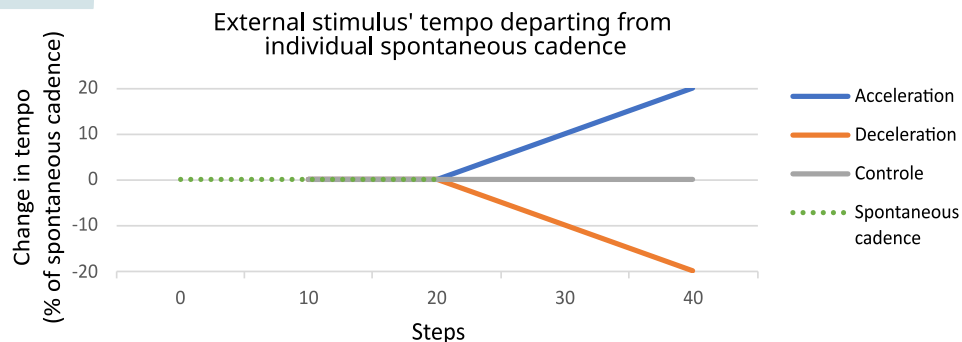
- Is highly sensitive to individual differences in responding to an auditory stimulus
- Allows to define a stability window in the vicinity of spontaneous gait cadence

Method

In order to highlight individual differences, we propose a new method called TeensyStep, based on TeensyTap⁴



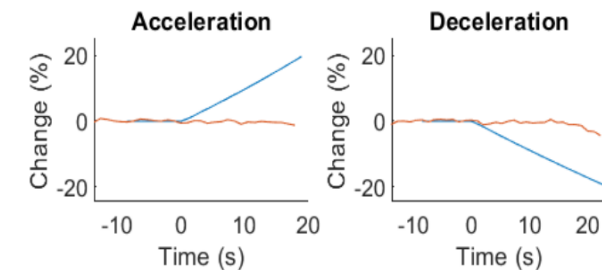
Protocol



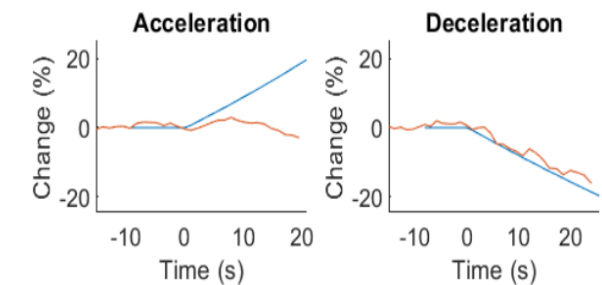
Type of response to the auditory stimulation

When participants are asked to walk naturally with the stimulus, we observe different responses :

Exemple of a non-responder



Exemple of a responder



Conclusion

- The Ramp paradigm is currently used as a way to test the effect of explicit and implicit response to the participants to the stimulus change) by manipulating the kind of instructions
- It allows us to observe distinct response profiles