

# Master Thesis

## The effects of light touch on human postural control provided by a wearable device

When our body balance is disturbed or unstable in everyday life, we will get dependent on support e.g. by another individual to prevent bodily injury. Although, the number of therapists is low compared to patients relying on support. Alternative aids for individuals with disturbed postural control are needed to prevent falls and at the same time to maintain the patient active and as independent as possible.

It is known, that already a nonmechanical contact ( $<1$  N) with another person or a fixed object can decrease our body sway and therefore improve postural control. We get additional information about our body posture and dynamics in space and time that are integrated in motor control.

Therefore, the effect of light touch provided by a wearable device should be analysed within this research topic.

### Research Questions:

Does tactile information provided by a body-fixed device helps us to understand better our body dynamics?

Can a wearable device providing light touch help us to improve postural control?

Does the effect depend on the location of force application?

Is a body-fixed reference comparable with a global reference?

How does the type of stimulus affect body sway?

These and similar questions should be investigated within this topic by using global and body-fixed tactile stimulation references, force plates and motion captures.

### Methods:

Balance tests with different tactile stimulation and different stimulation location by a wearable or fixed device.

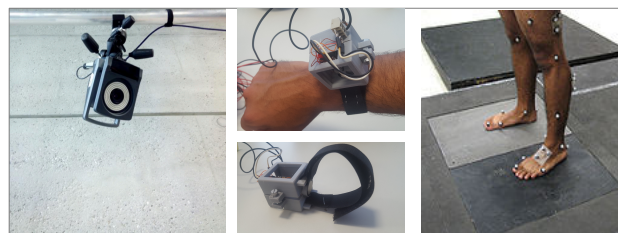


Figure 1: Methods for assessment of sway: motion capture system (left + right), light touch providing device (middle) and force plates (right).

### Informationen/Literatur:

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