

## Synchronisation procedure

1. Run synchronisation.m

2. Select force plate data file (.mat) FP\_data-ES39.mat  
(This file contains a cell array with the data of the four foot pressure sensors and the start and end index obtained manually with a modified ForcePlateMain.m file. Also - for test purposes.

⇒ Possible improvement: Create MATLAB script that does all the steps, that were carried out for test purposes, automatically, so that one only has to select the separate .txt files that contain the data of one cycle, ~~each~~ respectively. (10-12 ~~cycles~~ per subject)

3. Select GaitWatch data file (GaitWatch...calibrated.mat)  
This file was created by manually running the GW main.m script and saving the required variables as GaitWatch...calibrated.mat file

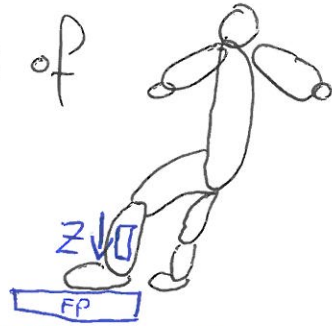
⇒ Possible improvements: Right now this file only contains a, g, h data. Also pitch, yaw... etc. should be included. One could write a script that extracts all useful variables for synchronisation and further processing and ~~it~~ saves them in a ...calibrated.mat file.

4. Select cycles manually by clicking and pressing the ALT-key. Set ~~marker~~ ~~before and after~~ ~~each cycle~~ between each cycle and at beginning and end and press "continue execution".

5. Figure 1 shows the detected peaks of

a-z-right-shank

⇒ The point in time when patient hits the force plate with his right foot



If this is correct  
a should be negativ?

What if the patient steps with left foot first??  
! Needs to be improved!

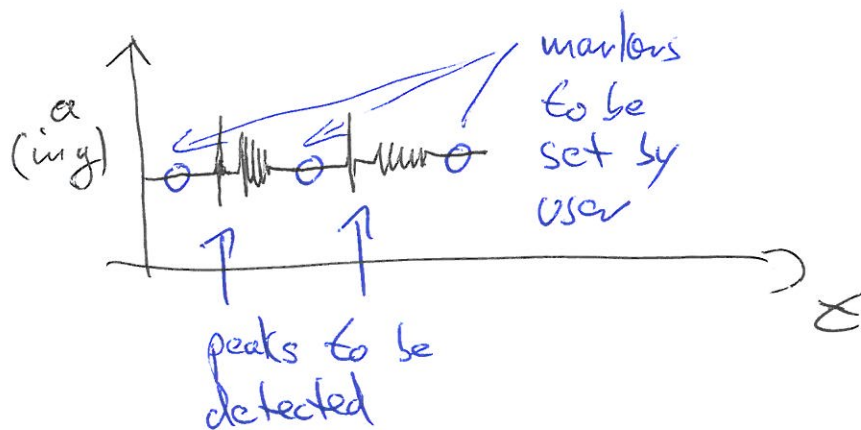
6. Figure 2 shows exemplary the trunk acceleration ~~as~~ time series with event markers at the point in time when subject hits force plate.

7. Figure 3 shows 1. cycle of force sensor trace overtime with corrected time axis

Variable-names and comments need to be corrected  
Since this is the force sensor data, not the force plate data

8. Figure 4 shows  $\epsilon_{le}^{V_{corrected}}$  and resampled force sensor trace over time. Linear interpolation was used (note the deviation at  $\epsilon_{le}$  peak (14.5s))
- Also the same event as in the other time series ~~is~~ was added.

Typical acceleration Graph



9. Figure 5 shows the whole force sensor trace with Eventmarkers at the point in time when subject hits the force plate
- $\Rightarrow$  time corrected and resampled time series of all 72 cycles