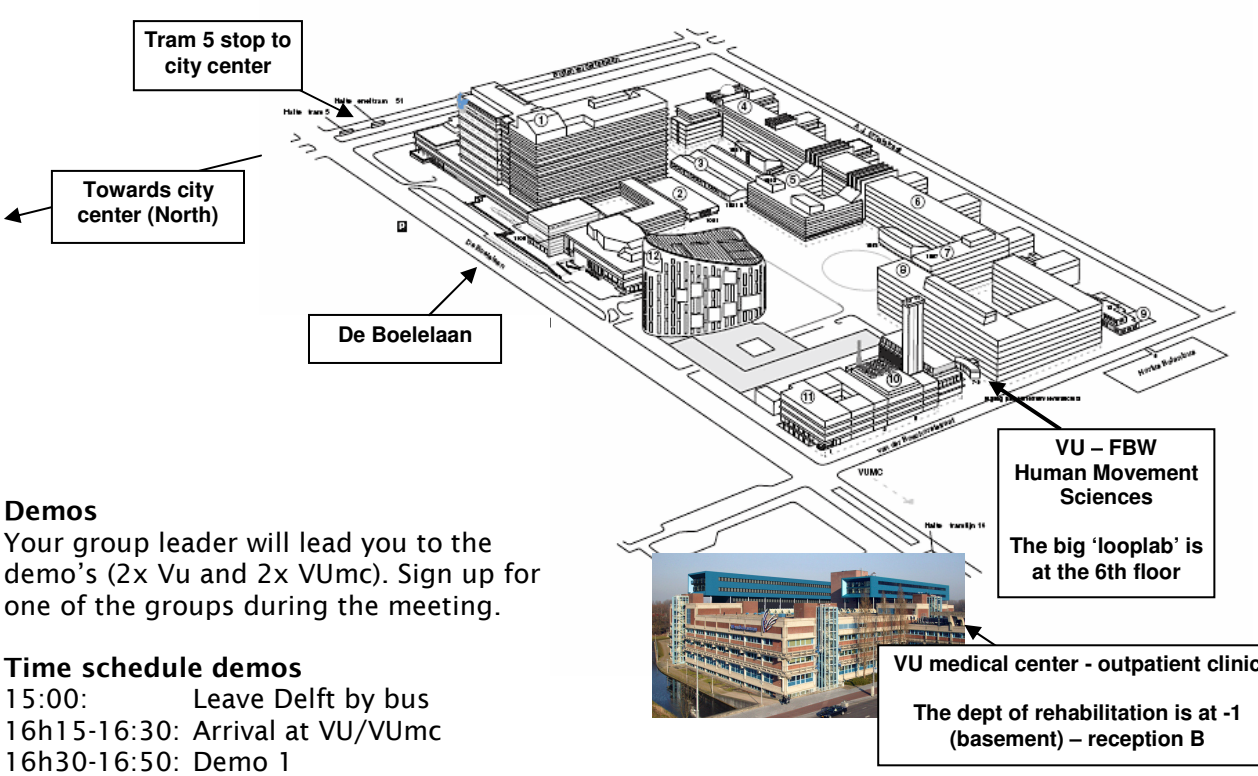
Amsterdam Guide – Tuesday May 27

How to get to Amsterdam?
By bus! Buses leave at 15h00 from Hotel Campanile, and will reach the VU at around 16h15.

VU & VUmc



Demos
Your group leader will lead you to the demo's (2x Vu and 2x VUmc). Sign up for one of the groups during the meeting.

Time schedule demos
15:00: Leave Delft by bus
16h15-16:30: Arrival at VU/VUmc
16h30-16:50: Demo 1
16h55-17:15: Demo 2
17h15-17:45: Break (coffee / tea / drinks) +change groups from VUmc to FBW and vv
Free drinks and snacks are available at the VUmc rehabilitation waiting room
17h45-18:05: Demo 3
18h10-18:30: Demo 4
~18:30: Leave for Amsterdam city center (tram 5)

How to get to the city center?
Take tram 5 together with your own group. Your group leader has tickets ('strippenkaarten') for everyone. It is about a 15min tram ride to the Leidseplein. The tram leaves every 10 minutes, you might need to wait for the next tram if it is full (we might not fit all together).

Dinner
Café Hoopman – Leidseplein 4. Dinner & one free drink are included.

After dinner
Spend more time at cafe Hoopman or explore Amsterdam (see map). Make sure to end at Amsterdam Central Station. The direct walk from the Leidseplein to central station is about 2km. You can also take tram 1, 2 or 5 (buy a single ticket in the tram).

How to get back to Delft?
Buses will leave from the bus station on the right (east) side of Amsterdam Central Station. Look for the **Nooteboom touringcar**. One bus will leave at 23h00 and one bus will leave at 00h00. The ride home will take ~1h15. If you want to leave earlier or later, take the train back to Delft. Direct trains leave at :10 and :40 every hour until midnight, or at :42 every hour all night after midnight. Tickets (€11,30) can be bought at the desk (open all night).

Any problems? Call Marjolein +31-(0)6-22076329

Demo descriptions

A. Clinical gait analysis
Location: VUmc, clinical gait lab
Demo leaders: Jaap Harlaar + Jiska Kempen
Demo: Video, EMG, GRF, 3D kinematics
The clinical gait lab at the VU University Medical Center is used regularly for patient care (diagnosis and evaluation) and research purposes, in order to improve daily functioning of patients with various motor disorders. A 10m walkway is equipped with two force plates, and video and muscle activity (EMG) are recorded synchronously. With multimedia movement analysis software (MoXieviewer) the movement data can be easily evaluated by physicians and therapists. 3D data are collected with an optoelectric motion analysis system (Optotrak). Data collected in this lab will be used for the gait analysis tutorial on Wednesday May 28.

B. Measuring stability of walking
Location: VUmc, physical therapy gait lab
Demo leader: Sjoerd Bruijn
Demo: Perturbation machine, treadmill, 3D kinematics
Feel how it is to be perturbed! Stability is an important aspect of walking, and can be impaired in many patient populations. However, stability is very hard to quantify. Using the Perturbation Machine, subjects walking on a treadmill are perturbed (i.e. pulled to the side, or forward or backward) at a fixed moment in the stride cycle, and the effect on the walking pattern is measured. Using this set-up, the gait sensitivity Norm that predicts stability in passive dynamic walkers and robots, is tested in humans (also see presentation Wednesday).

C. Energy cost of walking
Location: VUmc, patio
Demo leader: Merel Brehm
Demo: Ambulatory VO2 measurements
Walking economy is a measure for the effort of walking, and is often increased in patients with motor disorders. Improving the economy of walking is an important treatment goal. With ambulatory measurement of oxygen consumption, the energy cost of walking can be calculated. In this demo, the measurement tools and real-time registration of VO2 and CO2 will be demonstrated and the energy cost of walking of one of the participants will be measured.

D. Tripping over and avoiding obstacles during walking
Location: VU-FBW, looplab
Demo leader: Mirjam Pijnappels
Demo: Tripping & obstacle set-up (3D kinematics & force plate)
During bi-pedal walking, perturbations may have serious consequences for balance. Tripping over an obstacle is an externally induced perturbation that very often is the cause of falls in the elderly. We have investigated tripping reactions in both young and older adults and we will demonstrate the experimental setup and videos of these tripping experiments. Furthermore, we will demonstrate current studies on another type of perturbation, sideway obstacle avoidance. In these experiments, the appearance of the obstacles is timed on kinematic parameters of the ongoing trial.

E. Ambulatory measurement of human walking
Location: VU-FBW, looplab
Demo leaders: Josien van den Noort & Gert Faber
Demo: Instrumented force shoe & inertial and magnetic sensors
Ambulatory measurement of lower extremity dynamics using an instrumented force shoe. Each shoe is equipped with 2 force sensors (6 degrees-of-freedom) to measure ground reaction force and moments, and 2 inertial and magnetic sensors (IMS) measuring movement (orientation). The force shoe and the IMS are alternatives to the systems currently used in standard gait laboratories (e.g. force plates and optoelectronic systems). These systems are ambulant and do not require fully equipped gait labs. Step-to-step variation can be easily evaluated.

F. Walking with a lower limb prosthesis
Location: VU-FBW, G418
Demo leader: Han Houdijk & Daphne Wezenberg
Demo: Dummy prosthesis
Become a little more of a passive dynamic walker yourself: walking with a lower limb prosthesis.
One of the motives for studying and modeling human gait as well as designing and building robots is to improve lower limb prosthesis and orthosis. Although many of us have probably considered the consequences of losing (part) of the leg and walking with a replacement, few have actually experienced what walking with a prosthesis is like. In this demo you will get the opportunity of walking with an above knee (dummy) prosthesis. We will experience and discuss what limitations are experienced by people walking with a prosthesis and how these problems relate to problems tackled in dynamic walking research.