MD-PAEDIGREE

Stength protocol

NND group - WP 11

SAPIENZA
UNIVERSITÀ DI ROMA

Strength (1/2)

The purpose of this protocol is to **support HHD strength measurements** by means of optoelectronic system.

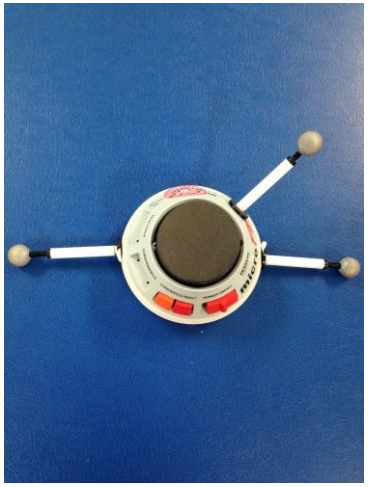
The use of optoelectronic system (Vicon) as support to the HHD allows an accurate and automated computing of:

- Joint centers and anatomical distances.
- Force direction and HHD application point.
- HHD orientation.
- Limb displacement while measuring.
- Joint torque.

The protocol uses IR reflective markers placed on the HHD and on the body of the subject (PIG protocol + clusters on both thighs).

Trials:

- Static (standing).
- Hip flex/ext/abduction
- Knee flex/ext
- Ankle dorsiflex/plant.flex

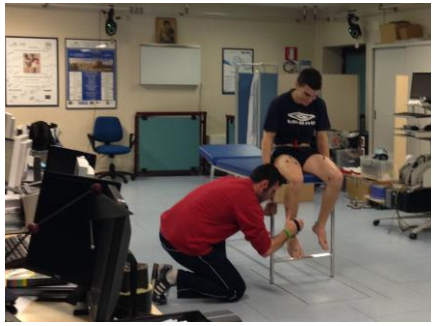


Strength (2/2)

Example:

Preliminary measurements of knee extension force.

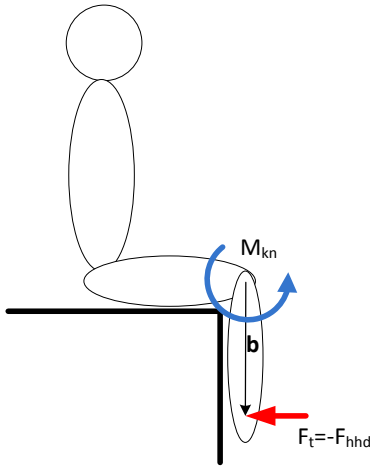
Adult healthy subject.

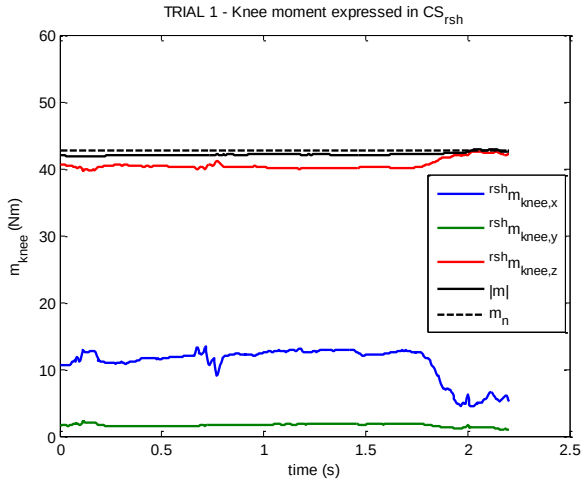


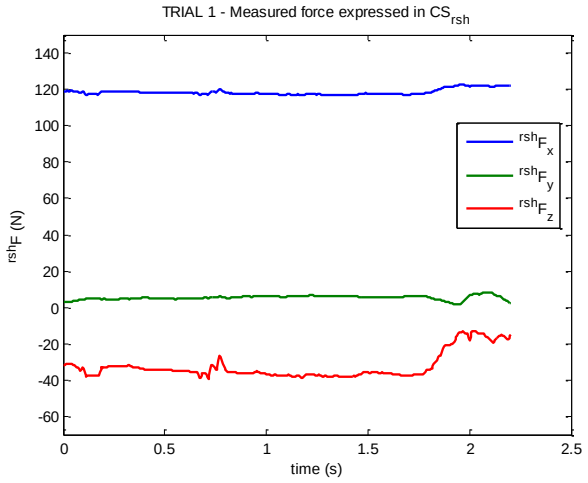
HHD was placed on the shank according to the standard strength measurement protocol.

Strength was measured for about 5 seconds and force peak value was read on the display of the dynamometer.

Dynamometer orientation was computed with respect to the shank and 3D components of force and knee torque were computed







Knowledge of dynamometer position and orientation allows an accurate computing of torque.

This method helps to test and ensure the quality of strength measurements .