UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative): Study the usability of BridGE, a new device for training selective pelvis movement and trunk stability in people with motor impairment following a neurological deficit.

Thesis advisor(s): Pierella Camilla, Maura Casadio (maura.casadio@unige.it)

E-mail: Camilla.Pierella@unige.it

Address:

Phone:

Description

Motivation and application domain

Sitting balance is an important target in motor rehabilitation and injury prevention as poor sitting posture can induce musculoskeletal problems affecting life quality. Exercises to improve core stability like strengthening specific muscles of the low-back or of the pelvic floor performing selective pelvic movements exercises have been suggested to improve sitting balance promoting an efficient interaction between spine, pelvis, and the entire kinematic chain. It is in this framework and with such aim that we developed a new device BridGE and we preliminary tested it with healthy subjects.

General objectives and main activities

The general goal of the study the usability of BridGE with a population of people that have motor impairment following an injury to the nervous system. BridGE is a sensorized balance board with two IMUs, one inside the balance board and one on the trunk of the subject that is sitting on it, for training selected pelvis movements while monitoring the trunk position. Subjects will perform various tasks controlling vertical and horizontal movement of a cursor on a screen with two distinct pelvic movements: lateral tilt and antero-posterior tilt. During practice we will also monitor the trunk tilt as the request will be to maintain the trunk as still as possible, to decouple trunk and pelvis movements.

The main activities will consist in:
- Improving the actual BridGE platform, integrating in the system wireless IMU making it portable and usable in the clinic.
- Test the improved system with subjects of trunk deficit following an injury to the nervous system.

Training Objectives (technical/analytical tools, experimental methodologies)

1. Background literature analysis
2. Improvement of the technology
3. Definition of the Experimental set-up
4. Data collection and analysis

Place(s) where the thesis work will be carried out: DIBRIS, via allâ€™opera pia 13. Ospedale la Colletta, Arenzano

Additional information

Maximum number of students: 2