Thesis Project Form

Title (tentative):   Assessing balance ability in ataxic children

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Description

Motivation and application domain

Charcot-Marie-Tooth (CMT) disease is considered to be a familial peripheral neuropathy with impairment of motor and sensory nerves. Although CMT disease is diagnosed generally without difficulty, there is occasional central nervous system involvement (spinocerebellar tracts and optic nerve tracts); Indeed, when unusual features are present, this may not be so. This may happen when added to the obvious peripheral neuropathy there is inco-ordination mimicking cerebellar disease. CMT disease with "cerebellar" ataxia and normal or absent plantar responses had also been misdiagnosed as spinocerebellar degeneration (other than Friedreich's ataxia). The cerebellum is responsible for integrating somatosensory, vestibular and visual inputs for control of balance and people with cerebellar ataxia become more dependent upon vision to control balance compared to controls. Standing balance tasks allow the evaluation of ataxia-related, static balance impairments in a "purer" form, without the influence of locomotor dynamics or impairments in multi-joint coordination for goal-directed leg placement. Thus, measures of postural sway during quiet, unsupported stance (static posturography) provide a method to quantify the quality of postural (balance) control.

General objectives and main activities

The objective of this thesis project is to assess balance ability under various conditions, including cerebellar disturbances and/or peripheral disturbances, with the aim of describing and distinguishing each condition from the other. The student will collaborate with the team of Movement Analysis Robotics Laboratory of the U.O.C DH Neuroriabilitazione e Attivita? Sportiva Adattata. Standard stabilometric analysis will be implemented.

Training Objectives (technical/analytical tools, experimental methodologies)

- Stabilometry
- Data analysis
- Statistics

Place(s) where the thesis work will be carried out: DIBRIS, via all'Opera Pia 13

Additional information

Maximum number of students: 1