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Title: "BalanceColor : Force Sensor Biofeedback for Weight-bearing Training in Stroke Patients"

Abstract:

Rational: Symmetry of weight bearing is one component of balance. It is a prerequisite for good transfer and walking ambulation. In normal population, each foot bears approximately 50 % of body weight. A hemiplegic/hemiparetic patients from neurological lesion distribute more weight on a non-affected limb. In recent study, most of them improved weight distribution during visual biofeedback. A visual biofeedback electronic balance training device from developed country has high cost, so limit of used only in some hospitals. A low-cost biofeedback device is invented for widely used in hospital or in community.

Objective:

1. To develop a force sensor biofeedback device (BalanceColor)
2. To test the efficacy of the device for improving weight symmetry in stroke patients

Device:

Hardware

1. Force sensor
2. Line connecting to PC
3. PC

Software

1. BalanceColor Soft Wear for visual biofeedback
2. Weight Distribution Calculator Soft Wear

Plan:

1. Make and test a BalanceColor force sensor biofeedback device
2. Pilot study for immediately effect of visual biofeedback in 10-20 stroke patients with asymmetrical weight bearing
3. Statistical analysis

Future plan:

This device

1. Test the device in large population
2. Distribute the device to other hospital/community

Develop a new version

1. Game-based visual biofeedback for balance training
2. More force sensor for mapping of foot pressure distribution