Reviewer's report

Title: Principles of brain plasticity in improving sensorimotor function of the knee and leg: A double-blind randomized exploratory trial

Version: 1 Date: 10 June 2009

Reviewer: Patrick O McKeon

Reviewer's report:

The authors have prepared a manuscript describing the experiment in which cutaneous afferent information was eliminated in the adjacent areas of the knee in healthy subjects. The authors conducted sensory and motor tests to determine whether there was enhanced sensory and motor performance in the knee in the presence of anesthesia of adjacent areas on the limb.

- Major Compulsory Revisions

The authors have prepared a well-written manuscript. There are no major compulsory revisions. The Abstract, Introduction, Methods, Results, and Discussion sections are well developed. There are only a few suggestions for improvement. Please see comments in the Minor Essential Revisions section below.

- Minor Essential Revisions

Abstract:

The first sentence in the manuscript does not support the argument built in the experiment. I recommend introducing the principles of neuroplasticity in the first sentence as they relate to enhanced sensorimotor control associated with anesthesia of adjacent structures.

Introduction

Throughout the introduction, the authors identify “training” as a means of rehabilitating a person with a knee injury. Please operationally defined the type/types of training (i.e. proprioceptive, balance, plyometric, etc.)

Page 3, paragraph 2: Please clarify the statement, “In order to improve sensory and motor function, more nerve cells are needed.” It may be beneficial to remove the statement entirely.

Methods

Subjects and Randomization

Page 5, Lines 5-7: “The physical activity and age distribution…” Please clarify whether these subjects were matched to patients with ligament injuries from another study.
Page 5, Lines 7-8: “The subjects were randomly assigned...stratified by gender, to temporary anesthesia...” Please revise this sentence for clarity.

Page 10, 1st paragraph: Please provide your interpretation of effect sizes (i.e. <0.4 = small, .41-.7 = moderate, <.7 large).

Statistical Analysis
Page 9: Please clarify sample size calculations. Knee kinesthesia 24 (or 12). Was this for pre post measures or between group measures?

Results
The results are presented clearly.

Discussion
Throughout the discussion, the word “training” is used. Again, please clarify what is meant by “training.”

The authors present relevant and valid arguments based on the results of this study. The limitations are clearly addressed. In addition, the authors present logical rationale for the study of those with pathology using these research methods.

The last paragraph of the discussion contains a large amount of speculation, which is appropriate for this type of study.

- Discretionary Revisions

Statistical Analysis:
Why did the authors choose to use paired and independent t-tests? Would an ANOVA with repeated measures be more appropriate? Would comparisons using change scores be more appropriate than pre-post comparisons for all measures?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.