Reviewer's report

Title: Effectiveness of strength training in combination with Botulinum Toxin-A on hand activity in children with cerebral palsy: A pre-post intervention study

Version: 1 Date: 8 February 2012

Reviewer: Jules Becher

Reviewer's report:

Type of paper: Research report

The research is a RCT in 10 patients with Cerebral Palsy, 9 unilateral and 1 bilateral. In 2 groups, the effect of botulinum toxin A treatment of elbow flexors and/or pronator teres has been compared to the same treatment with strength training.

The aim of the study is well defined.

In patient selection (participants and recruitment), MACS level 1 or 2 is selected, assuming functional bimanual use. This is an incorrect statement: the MACS scores the overall performance in hand function, but not the way it is performed. Randomization occurred in matched pairs by tossing a coin: this method is sensitive for selection bias. In the selection of patients, there is no need described, no goals for the patient for the therapy on activity level, only an increased muscle tone and difference in active and passive range of motion.

Outcome measure

Main outcome measure was "hand activity", and was measured with the AHA and Melbourne test. According to ICF, AHA is a bimanual capacity test, not a performance test, and Melbourne test is an artificial unilateral hand capacity test, as the best performing hand will always be used as dominant hand. The chosen outcome measures do not give any information about the change in performance in the use of the hands in daily life. The term hand activity suggests the measurement on activity level, but should be bimanual capacity for AHA, and the Melbourne is more an impairment measurement of the affected side. So, the primary outcome measure is not adequate.

Statistical analysis:

The data were not normally distributed, so only non-parametric tests could be used. The number of patients, 5 in each group, in a very heterogeneous group (group B 4 male, 1 female; group BT 1 male and 1 bilateral involved child, 4 female) is an acceptable explanation for this. There is no power calculation about the required number of patients, but based on the AHA, it is very likely that the numbers are too small. It is unclear if difference in muscle strength has been tested at baseline. In these small numbers, it is impossible to perform an proper trial analysis with analysis of variance and confounders.

Results: Results are described: there is a tendency to suggest positive effects,
despite the lack of significant differences. There is no attention paid for differences in sex.

The discussion is very long-winded in relation to the results. The conclusion does not mention that only the small number of patients already could explain the lack of significant differences between the 2 treatments

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I have no competing interests