Reviewer’s report

Title: A personalized, intense physical rehabilitation program improves walking in people with multiple sclerosis presenting with different levels of disability. A retrospective cohort.

Version: Date: 14 January 2015

Reviewer: Jan-Patrick Stellmann

Reviewer’s report:

The paper addresses two important points in MS research: The validity of clinical walking tests and measuring the effect of complex interventions like rehabilitation.

However, based on the description of the database used for this study I would assume that a substantial improvement is possible.

Major Compulsory Revisions

1. The comparison of pre/post testing by t-test is rather trivial. I would suggest to reanalyze the data to identify predictors of treatment response, e.g. age, gender, EDSS Functional systems, baseline performance and others. One could discuss multivariate linear models with change as outcome or a treatment response as defined by previously published benchmarks or relative changes.

2. Mood and fatigue might have major effects on the performance of clinical gait tests. I wonder if any standardized assessments addressing QoL, mood or fatigue are available and could be included in analyses. At least FS Cognition scores should be investigated.

3. The authors state that "Protocols of all sessions were stored in the computerized data system." Are there any information of training intensity, motivation or adherence available for analysis?

4. The authors mention in the result section, that they included only patients with relapsing remitting MS. The reason for this is not mentioned in the method section. I would suggest to include all MS diseases courses.

Minor Essential Revisions

5. Abstract: The number of patients in the database is misleading as less than 10% of the patients are included in the study. The number should be deleted and only appear in the method section.

6. The lack of findings in 10m/20m Walk and TUG might be due to the missing sensitivity of the tests to detect short term improvements. This should be added to the discussion.
7. Rehabilitation is considered to have long term effect on physical activity. Results show already an improvement after 3 weeks of training - this is an important message and should be mentioned in the discussion.

Discretionary Revisions

8. Abstract: The improvements of the 2 MWT should be mentioned in brackets after the group. The current wording gives the impression of the largest improvement within the mild disabled group.

Level of interest: An article of limited interest

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