Author’s response to reviews

Title: Bright light therapy vs. physical exercise to prevent comorbid depression and obesity in adolescents and young adults with attention-deficit / hyperactivity disorder: study protocol for a randomized controlled trial

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Reviewer reports:

Reviewer #1: I have read the manuscript entitled "Preventing comorbid depression and obesity in adolescents and young adults with attention-deficit / hyperactivity disorder - study protocol of the pilot, multi-centre, investigator-blinded, parallel-group, randomized-controlled phase-IIa PROUD trial" (TRLS-D-17-00840), based on randomized-controlled trial which is aiming the prevention of comorbid depression and obesity in adolescents and young adults with attention-deficit / hyperactivity disorder. The manuscript is well-written and explores in detail the main issues of a study protocol.

However, I think it is extremely large for the standard of a scientific article. Specifically, I think that the Background section should be shortened. The main aspects relevant for the protocol should be included in the main text, but other ones should be placed as supplementary material. This is also the case for the Methods section, with an "Outcome measures" subsection too large. In general terms, I think that the authors should revise this version of the manuscript and to consider the use of supplementary material files, in order to make easier the reading of the manuscript and to help to understand better the main findings that are aimed.

Response: We thank the reviewer for reading our manuscript and his valuable comments. Following his suggestions we revised and shortened the manuscript to make the reading of the manuscript easier. Specifically, as suggested by the reviewer, we considerably shortened the background section by focusing more specifically on the aspects relevant for the protocol.
In response to the reviewer’s concern we also moved the detailed description of the secondary outcome measures to the supplementary material section (see additional file 3). In the main text we describe the Inventory of Depressive Symptomatology in detail because this is the main outcome measure. Secondary outcome measures are shortly introduced but the details are now described in additional file 3. Furthermore, we moved the details on the definition and handling of (serious) adverse events to the supplementary material section (see additional file 2).

Reviewer #2: This is a very thorough, comprehensive and detailed protocol for a RCT of bright light therapy against an exercise intervention in the prevention of obesity and depression for ADHD. Not only is the protocol very well-planned, but it is also a very meaningful line of inquiry, considering the paucity of research on interventions to address comorbidities in ADHD, as well as the lack of research on non-pharmacological interventions for ADHD and associated problems. I enjoyed reading the protocol - the rationale is well-established and the study design is carefully planned. My only concern is that there are a lot of measures, which might complicate data synthesis and interpretation. This being said, you do aim for a high sample size and you do have a lot of within-subject measurements, which should increase your power to detect significant effects. You also talk about moderation, but considering your study design, you could also test out possible mediation models, which would be highly informative.

Response: We thank the reviewer for her encouraging comments. We agree on the importance to test out possible mediation models. We have planned to explore variables possibly mediating treatment effects, such as reward processing, stress reactivity, and compliance with the intervention. In addition to the description in the introduction part, this is now described in more detail also in the statistical methods part (p. 38) and the discussion part (p. 45).

Please note that we also revised the title and declarations section in order to conform to the journal style for study protocol articles.

Thank you very much for your help.
Yours sincerely,
Jutta Mayer