Author's response to reviews

Title: When children play, they feel better: Organized activity participation and health in adolescents

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Dr. Jorge Mota
Associate Editor
BMC Public Health
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Dear Dr. Mota,

We would like to thank you for providing us with the comments and suggestions for the revision of our manuscript. Below you will find a List of changes relating to the manuscript MS: 1280922056174184 entitled "When children play they feel better: Organized activity participation and health in adolescents" by Petr Badura, Andrea Madarasova Geckova, Dagmar Sigmundova, Jitse P. van Dijk and Sijmen A. Reijneveld. We provide a point-by-point responses, with each of them preceded by the respective reviewer’s comment. The changes made are highlighted in red-coloured text and thus, can be easily tracked in the manuscript.

Once again we would like to express our gratitude to the editors and the reviewers for their stimulating comments, which were of great help to us in the process of revision.

Yours sincerely,
on behalf of all co-authors,

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List of changes

**Reviewer 1:**

**GENERAL COMMENT**

Thank you for submitting the above mentioned paper to BMC Public Health. It is a very interesting manuscript, based on strong data that adds to the field of healthy youth development. The paper is well written, with no grammar of type errors and easily readable.

**MINOR ESSENTIAL REVISIONS**

**R1.1**

Strengths are clearly stated but limitations could be more deeply discussed. In my opinion, since sport participation (individual sport) had an important association with HYD variables in boys, the lack of Physical activity measures could be pointed out as a limitation too.

**RESPONSE:**

Thank you for this valuable comment. We acknowledge the reviewer’s suggestion and therefore added information on the lack of physical activity measures as a possible limitation to the Strengths and limitations section. The added text is (p. 13, lines 15-18):

‘Fourth, we found sports participation to be strongly associated with health but we could not adjust for physical activity. We could thus not determine to which degree this association was due to physical activity in itself, or due to the organisational aspect of sports participation.’

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**Reviewer 2:**

**GENERAL COMMENT**

The authors pose an interesting question in the manuscript, using a database of a well-designed study.

The results section could be improved to follow the topics that are discussed in the discussion section. Some statements that are made in the results are not statistically based.

Overall the manuscript is well written and the topic is interesting and has some practical implications.

**RESPONSE:**

First, we would like to thank for thorough review of our manuscript and the provision of valuable comments. We tried to address all of them as much as possible. We reduced the usage of abbreviations throughout the text. We included data from statistical tests to support the findings as reported in the Results section and also enriched the information on the characteristics of the sample by providing more detailed information on the number of concurrent activities and rates of youth participating in at least one activity.

The revised text in the Statistical analyses section (p.7, lines 10-13) is:

‘We used chi-square tests to assess the statistical significance of gender and age differences in particular activities, number of concurrent activities, and clusters of OLTA and we used one-way ANOVA with a Tukey’s HSD post hoc test to assess the statistical significance of differences in average number of activities with increasing age.’

The revised text in the Results section (p.8, lines 3-4) is:

‘...activities and the average number of activities youth were involved in was 1.52 ($SD = 1.17$).’

The changed text in the Discussion section (p.11, lines 13-14) is:

‘...having different patterns of activity involvement, i.e.’ all-rounders’ and ‘artists’ clusters.’
The changed text in the Discussion section (p.11, line 19) is:
‘…who are involved in different types of OLTA…’
We also adapted Tables 1 and 3 by adding the requested information in order to address comments R2.2, R2.4, and R2.5.

DISCRETIONARY REVISIONS

R2.1
The use of uncommon abbreviations makes the paper difficult to read (e.g. HYS, OLTA), if possible use the complete form.
RESPONSE:
Thank you very much for noting this. We have replaced HYD by the full expression, i.e. ‘healthy youth development’ and used World Health Organization instead of WHO. However, we kept the ‘OLTA’ abbreviation because, in some parts of the text (e.g. statistical analyses, beginning of the discussion), we believe that the full expression ‘organized leisure-time activities’ would be at the cost of smooth reading due to its relatively frequent occurrence in the text. Also, the two remaining abbreviations used in the manuscript (HBSC, ANOVA) were left as they had been because we believe these are well-established in the field.

MINOR ESSENTIAL REVISIONS

R2.2
In table 1 please include above the category inactive, the active category with an * reporting that it is referring to “at least 1 activity”
RESPONSE:
Thank you for noting. We have added the ‘Active’ category to the middle section of the Table 1 with an * explaining that it presents the adolescents involved in at least one activity, in the footnote to the table.

R2.3
P.8, line 3-4: Are the mean and SD presented referring to the mean of activities that youth were engaged? Please clarify
RESPONSE:
Thank you for this suggestion. We rephrased the mentioned sentence in the Results section (p. 8, lines 3-4) as follows:
‘…and the average number of activities youth were involved in was 1.52 (SD = 1.17)’, which should make the meaning of both the figures clearer.

MAJOR COMPULSORY REVISIONS

R2.4 p.8, line 4: “The rate of participation declined with increasing age”; “Team sports were the favourite organized activity in boys, while girls preferred artistic pursuits”… the author should include statistical analysis to make these statements.
RESPONSE:
We would like to thank for this comment and agree with the reviewer that we should present the statistical data regarding these statements. For this reason, we added the p-values based on Chi-square tests for gender and age differences in particular activities and in OLTA clusters, to Table 1. The p-value was also added into the text next to the statement on declining rate of
participation with increasing age (p.8, line 6). It was calculated using one-way ANOVA with a Tukey’s HSD post hoc test. Accordingly, both the tests were also included into the Statistical analysis section of the manuscript.

The added text is (p.7, lines 10-13):

‘We used chi-square tests to assess the statistical significance of gender and age differences in particular activities, number of concurrent activities, and clusters of OLTA and we used one-way ANOVA with a Tukey’s HSD post hoc test to assess the statistical significance of differences in average number of activities with increasing age.’

**R2.5** Table 3: it is not clear how youth reporting more than 1 activity were handled in these analyses.

**RESPONSE:**
Thank you for advising us of this ambiguity regarding Table 3. We added the Inactive category into all four Models within the Table 3 indicating it as a reference category and also changed the Table caption to make it clearer that it uses the derived clusters of OLTA as independent variables.

The new caption is:
‘Table 3 Associations with health indicators of participation in clusters of organized leisure-time activities compared to inactive: odds ratios and 95% confidence intervals for the various clusters vs. inactive adolescents.’

Moreover, to avoid eventual misinterpretation, we altered the text of the Discussion related to Table 3 as well:
(p.11, lines 13-14) ‘…who engaged in multiple activities.’ was replaced by the text:
‘…having different patterns of activity involvement, i.e. ‘all-rounders’ and ‘artists’ clusters.’
(p.11, line 19) ‘…combining sports with other types of OLTA…’ was replaced by the text:
‘…who are involved in different types of OLTA…’

**R2.6** Include in the results the number of youth that were involved in multiple activities by categories (2, 3, 4, 5, 6). It would be interesting to understand the associations of the number of activities (0 to 6, regardless of the activity) with the dependent variables. (as mentioned in the discussion: p. 11, line 12-14).

**RESPONSE:**
We highly appreciate this suggestion so we included the numbers of youth involved in multiple activities concurrently by categories (1 to 6 activities) to Table 1, with p-values based on Chi-square tests regarding differences by gender and age differences, as clarified in our response to comment R2.4.