Reviewer's report

Title: The association between functional movement and overweight and obesity in British primary school children

Version: 1 Date: 6 August 2012

Reviewer number: 1

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A. MAJOR COMPULSORY REVISIONS

A1. Despite the fact that the introduction (p.4-5) is in itself well-written (however, partly methodological in nature), appropriate / original references have not always been used. This is for instance the case within the first sentence (ref. 1 & 2 from the same research group as the present paper) and at the bottom of the first page when referring to the functional movement screen test battery (ref. 7). In this respect, authors should carefully check for this type of error throughout the entire manuscript. Furthermore, in my opinion the introduction does not represent a full coverage of the current literature concerning this particular topic. I would suggest to consult and possibly integrate the work of Morano M. et al. (2011), Tsiros M. et al. (2010), Shultz S. et al. (2009, 2010), Chan & Cheng (2009), Wearing S. et al. (2006), Gushue D. et al. (2005), Graf C. et al. (2007), Deforche B. et al. (2003), etc. From this non-exhaustive list, it should be clear that there have already been several studies investigating the association between childhood overweight / obesity and (impaired) movement / mobility. Therefore, please rework the introduction and also change the first sentence of the discussion on p.9.

A2. The added value of the present study in relation to the previous one by Duncan & Stanley (2012) is not entirely clear, except for the fact that not only total FMS score but also the individual scores from each of the seven FMS test items was analyzed in relation to BMI (status), with children in the OW/OB group always performing poorer than their NW peers. Hence, the discussion section (p.9-13) is limited to the same negative association between OW/OB (~ higher BMI) and functional movement in general. Another important remark is that the psychometric values of the FMSs (validity / reliability) are lacking for the composite score as well as for the individual item (!) score (p.6-7). Given that both types of scores were analyzed, it is necessary to add this information to the manuscript in order to justify the choice of variable(s) being used. Furthermore, I’m very interested to know whether the 90 children participating in the present study are all different from those participating in the previous study (N=58) by the same authors (Duncan & Stanley, 2012). Finally, the present paper does not provide new FMS normative values for the childhood population, although this is implicitly announced at the end of the introduction (p.5).

A3. Authors should also investigate BMI-related group differences by means of
the Mann-Whitney and/or Kruskal-Wallis tests, which are the non-parametric alternatives for the independent-samples test (NW vs. OW/OB) and the one-way anova (NW vs. OW vs. OB → cfr. infra), respectively.

B. MINOR ESSENTIAL REVISIONS

B1. As a researcher, I am not very familiar with the Functional Movement Screen. Still, I am not convinced that the FMS is the best choice as a tool to assess functional movement in a (clinical) childhood population. To my knowledge, the FMS (consisting of several physical fitness test items) has been mainly designed for the physically active individual in order to identify those athletes at increased risk for injury due to functional limitations or asymmetries to their body (movement). So, could the authors please state in the manuscript why they preferred the use of this particular test battery and how it relates to functional skill performance and everyday life activities?

B2. (p.3&6) How many of the 32 children included in the OW/OB group were OW and how many of them were OB? Please add this additional information in the abstract as well as in the manuscript. Authors should also inform the reader why both weight categories were added together as one single group. If possible, test results should also be analyzed using three separate BMI groups (i.e., NW vs. OW vs. OB) as it is important to understand the impact of excess body mass on children’s functional movement according to the degree of under- or overweight (by discriminating between all weight categories).

B3. (p.7) Authors should explain to the reader what are the criteria to score 0/1/2/3 on the different test items of the FMS. Please add this essential information to the manuscript.

B4. (p.7) As Table 1 intends to provide a clear overview of total FMS scores (mean +/- S.D.) as a function of gender and weight status groups together with the combined score, authors should consider the following lay-out (cross-table) and fill out each resulting field.

1st column:
  - Row 1: “Total FMS Score”,
  - Row 2: “Males”,
  - Row 3: “Females”,
  - Row 4: “Total (according to weight status)”

1st row:
  - Column 1: “Total FMS Score”,
  - Column 2: “Normal-weight”,
  - Column 3: “Overweight / Obese”,
  - Column 4: “Total (according to gender)”

Last row / Last Column:
  - Results for the combined (sub)groups
B5. In both Figures (1&2) as well as in Table 2 the possible categorie of a score ‘0’ is missing, which makes each of this fragments incomplete. If the null score was achieved by none of the participants, this information should at least be mentioned in the manuscript and / or the Figure / Table legends.

B6. The explanation for the gender differences found in functional movement should be moved from the conclusion section to the discussion section (p.9). The parallel made with the gender related findings from the studies of Burton (2009) and Duncan & Stanley (originally on p.11-12) should also be moved forward (i.e., to the same place on p.9). Authors should also rephrase their point to make when comparing / contrasting these study results in relation to gender (and weight status).

B7. References for the assumptions made in the paragraph on p.9-10 are lacking. Please rectify this.

C. DISCRETIONARY REVISIONS

C1. (p.3) In analogy with the results as a function of weight status, it would be interesting to mention in the abstract on which particular FMS test items the girls outperformed the boys in this study.

C2. (p.4) Please be aware that the use of the abbreviation FMS might be confusing, given that it also frequently used to refer to “Fundamental Movement Skills” as evaluated, inter alia, by the Test of Gross Motor Development (TGMD).

C3. (p.5) The authors mention that 86% of the participants is Caucasian. What about the ethnicity / race of the remaining 14% of the children included in this study?

C4. (p.6) Please note that there is a space missing in the last sentence of the paragraph that ends at the top of this page.

C5. (p.6) Needless to repeat the 7 separate FMS test items as they has been listed a few lines before.

C6. (p.6) Please remove the capital letter at the beginning of the word “stadiometer”.

C7. (p.7) In order to be correct / complete, please add “and rotary stability” (at the end of the last sentence in the results section), given that as for the deep squat also 1.7% of OW/OB children obtained a score of ‘3’ for this particular test item.

C8. (p.11) Please change “30 kg m²” into “30 kg/m²”.

C9. (p.12) I believe the word “present” should read “presented” in the first sentence of the last paragraph.

C10. (p.12) Please change the verb “will” at the bottom of the page into a more tentative “may” as longitudinal evidence for the statement being made is currently lacking.
C11. (p.14) “Future research in needed” should read “future research is needed”.

**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.