Reviewer's report

Title: The relationship of body composition with physical fitness in the 14 years adolescents residing within the Tlokwe municipality, South Africa: The PAHL-Study

Version: 2 Date: 29 November 2011

Reviewer: Amina Khambalia

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Minor Essential Revisions

1. The research question posed by the authors could be better defined and more specific. Perhaps the investigators could state the objectives as twofold: to determine the prevalence of underweight, normal weight and overweight adolescents aged 14 years old in the Tlokwe municipality and to assess the association between physical fitness and body composition separately for boys and girls adjusting for race and locality. The paper's reporting of the results should be organised into these sections (see comments later on in regards to results section).

2. The background could be better organised to improve flow of ideas and rationale for doing the study. The case for doing this study is not made strong enough and needs to be more convincing. Suggestions would be start with some epidemiological data reporting the prevalence of underweight and overweight adolescents using the National DHS in 2002. Are results provided for adolescents? Currently the authors report findings from DHS on women and men. It would be more appropriate for this study to report findings on adolescents. If the DHS does not sample children and adolescents, then this could be a case for providing data from this study – while not a national and population-based sample, it at least gives some insight.

3. Table 2 is fine but it makes me question why BMI was the outcome for physical fitness predictors rather than % body fat?

4. The authors do not provide information in Table 2 on the confounders – race and locality?

Major Compulsory Revisions

1. For the methods, it might be better to start with the study design – “This study is part of an observational multidisciplinary longitudinal study on Physical Activity and Health Longitudinal Study (PAHLS) that started in 2010 and to be continued for a period of five years.” Then state that this study reports baseline data.

2. Please provide response rate and report any differences between respondents and non-respondents. Did 2 of the eight schools refuse to participate? Any reasons provided? How does this affect the findings? Limitations in responses from schools and students should be addressed in the discussion section.
3. The methods need a short sub-section on setting. Readers unfamiliar with South Africa need some information on the Tlokwe municipality. Where in the country is this municipality – what are the general characteristics of this area and its inhabitants. Such as it a local municipality in Dr Kenneth Kaunda District Municipality, North West Province, South Africa. The total population is 128,353 in a density of 48/km2 (124.4/sq mi) and is composed primarily of Black Africans (~70%) followed by .......etc.

4. Why was physical fitness rather than physical activity assessed and why were measurements of physical fitness standing, bent arm hang and sit-ups. Available data on measures of strength rather than cardiovascular health is a limitation that needs to be mentioned in the discussion. The association with BMI and body composition would be different based on measures of strength rather than aerobic fitness. Muscle is heavier than fat, so is it possible that overweight participants were muscular rather than fat? This distinction given the anthropometric measurements available needs to be made.

5. The methods need to describe how data on locality, race and sex were collected. Was locality based on the location of the child’s home or was it school-based locality? Was a questionnaire used and were these measured reported by students?

6. Why were only 14 year olds included in the study?

7. Please state and clarify in statistical analysis section that analyses were performed separately for boys and girls.

8. RESULTS – while the authors unfortunately have very little data on the demographic profile and characteristics of this population, I think TABLE 1 should be created with three columns: Entire Sample, Boys, Girls, p-value comparing Boys vs Girls. Variables in the table should be sex, school, locality, race, mean values for BMI, body mass, % BF, SBJ, BAH, SUP and % underweight, normal weight, overweight.

9. The finding that the underweight group performed the best on physical fitness indicators needs to be interpreted more and contextualised within the literature. Why? Is this expected? Are underweight girls too physically active to keep on adequate weight and what is causing this physical fitness – household chores, farmwork, walking distance to school, athletics? From a public health perspective what should policy-makers in South Africa take from the results from this study in terms of designing programs and interventions? The significance of these findings is not made clear.

10. The confidence intervals for the odds ratio are very wide indicating that a lot of confounders have not been adjusted for. Lack of information on genetics is not likely to be the sole explanation, further reasons for lack of significance and large confidence intervals need to be provided in the discussion under the limitations. What about socio-economic factors and lifestyle (such as diet), etc.

11. The paper would greatly benefit from further work on grammar and writing style. At times sentences are wordy, incorrect choice of words are used and there is unnecessary repetition.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

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'