Author’s response to reviews

Title: Association between Physical Activity and Cardiovascular Risk in Hong Kong Chinese Children and Adolescents

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“Association between Physical Activity and Cardiovascular Risk in Hong Kong Chinese Children and Adolescents”

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Dear editor,

Thank you for your email dated 25th Mar 2010. We would like to express our most sincere gratitude to you and the reviewers again for the time and effort spent with this manuscript. We would like to resubmit again our revised manuscript after addressing the concerns raised by the reviewers (see attached revised manuscript with track changes highlighting the amendments made).

Reviewer 1: Geir K. Resaland

Major Compulsory Revisions:

1. Validity of the questionnaire. The physical activity (PA) rating questionnaire adopted in this study demonstrated acceptable criterion validity (Hui, 2001; Hui et al., 2001) and convergent validity (Chan & Hui, 2001). From the data of 4,296 Chinese children (age=9-19 yrs we collected, the PA rating yielded a correlation of $r=-0.43$ with 1-mile run time, which is comparable with other similar PA questionnaires for youth. It was also found that the active children, as classified from the PA rating, possessed higher fitness patterns than the somewhat active children ($p<0.001$), and somewhat active children demonstrated higher fitness patterns than the sedentary children ($p<0.001$) (Hui et al., 2001). In another study, the zero-order correlation between PA rating and the Modifiable Activity Questionnaire for Adolescents (Aaron et al., 1993) was $r=0.59$, whereas with the Godin Leisure-time Exercise Questionnaire (Godin & Shephard, 1985) was $r=0.35$ (Chan & Hui, 2001). With regard to the understanding of the various level of exercise intensity, the PA rating was distributed and explained by trained research assistants. Instruction on completing the PA rating was explained verbally which included the definition and examples of low, moderate, and vigorous intensities. Written examples were also given in a table format together with the PA questionnaire. Children were encouraged to ask any questions if they found any confusion in comprehending the questionnaire. In order for PA to influence health, PA has to be a habitual lifestyle that practice for a considerable long period of time, such
as 6-12 months. Although there are other PA questionnaires available asking for PA behaviour in the past 7-days or month, such questionnaires would not be valid for the purpose of this study because we do not expect any impact on health from the past 7-days PA. Although there is limitation in recalling PA in the past 12 months accurately, however, our experience found that subjective estimation on the average weekly PA in the past 12 months would yield a more acceptable and reliable description on the overall PA habit and lifestyle, instead of just a shorter period of time such as 7-days or past month.

The fact that it may be difficult for children to recall their physical activity levels over 12 months had been added in the limitation part as suggested.


2. CVD risk factors and the clustered risk score:

   i. The suggested approach to include HDL-C and systolic blood pressure only and exclude LDL-C ie follow what Andersen et al adopted (ref 18) had been done in the revised manuscript. Table 1, 2 & 3 and the text had been revised accordingly.

   ii. Insulin levels were not measured in this cohort due to budget restriction. Only fasting plasma glucose levels were reported and analyzed in this study. Therefore, we could not follow exactly what Andersen et al done to use insulin resistance. This point had also been acknowledged in the limitation part.

   iii. Agreed. In the revised manuscript, BMI was not included in the adjustment in the regression analysis.

   iv. Thanks for the suggestion to use Tim Cole’s criterion to diagnose childhood overweight/obesity. Indeed, there are different diagnostic criteria to diagnose childhood overweight/obesity (please also refer to one of the papers from our group. Ko GTC, et al. BMC Pediatrics 2008,8:10) and the diagnostic criterion we adopted in this study based on the Centers
for Disease Control and Prevention (see additional reference added: Pediatrics 2002; 109:45-60) was also used by many researchers and would allow comparisons with other’s work.

   i. Sorry for the typo mistake. The school children recruited in this study, including both primary and secondary schools children and adolescents in Hong Kong, should be aged 6 to 20 years. The amendment had been made in the abstract and result part.
   ii. There were 115 boys and 105 girls did not complete the physical activity questionnaire and were excluded from the analysis. Mean age of the non-responders were 11.2 ± 2.6 and 11.2 ± 2.9 years in boys and girls respectively. Since these non-responders were significantly younger and majority of them were pre-pubertal (Tanner stage 1, 50.6% boys and 33.7% girls) or early pubertal (Tanner stage 2, 25.9% boys and 37.3% girls), their anthropometric and clinical characteristics were expected to be different from the responders and thus excluded from the analysis. These points were added in the result part in the revised manuscript.

*Minor Essential Revisions:*

1. Pubertal stage assessment: the questionnaire used to assess puberty was validated in Hong Kong Chinese school children (see reference 14). Sorry for the typo mistake. Our cohort was of age 6 – 20 years.

2. Language: we would like to express our gratitude to reviewers for the meticulous check of the grammatical errors with revision done. We had also sought the help of Dr. Juliana Chan, who had her medical training in United Kingdom to double check the grammar before re-submission.

3. Introduction: “…children and adolescents are critical period of habit formation…” was rephrased as “…childhood and adolescence are critical periods of habit formation…”

4. Methods:
   i. “Only adolescents of Chinese ethnicity with no major illness were recruited for assessment.” was rephrased as “All participants were healthy volunteers with Chinese ethnicity.”.
   ii. The model number of the Tanita scale to measure body weight was TBF 410.
   iii. The model number of the Omron device to measure blood pressure was T5.
   iv. Blood pressure was measured twice on each subject with the mean value used. This point was elaborated in the methods section.
5. Results
   i. Among the 1882 subjects included in the analysis, 1857 (98.7%) (767 boys and 1090 girls) had valid blood samples.
   ii. 14.4% boys and 11.1% girls were overweight. Please refer to table 1 for details.

6. Discussion
   Thanks to the reviewer for the suggestions and the references were amended and added as suggested. The statement “…there are amassing evidence…” was changed as “…there is a wealth of evidence…” The additional reference from Riddoch et al was added.

7. Limitations
   i. Conclusion part in the Abstract was rephrased as “Self-reported level of physical activity is associated with cardiovascular risk factors in Hong Kong Chinese children and adolescents.”
   ii. The statement “Third, the effect of regular exercise on bone health in these young individuals had not been addressed.” was deleted.
   iii. The data of this study would be relevant to other Chinese youth populations.

Reviewer 2: Stig Eiberg

Major Compulsory Revisions:
The conclusion has been modulated as suggested.

Minor Essential Revisions:
1. The language and list of errors have been revised as suggested. Prof. Juliana Chan, last author of the paper had gone through the revised manuscript again for the language revision. Prof. Chan received her medical training in United Kingdom and is an English spoken person. The revised script with grammatical and stylish changes had been attached as a separate file for reviewer’s comments.
2. Self-reported physical activity has been explicitly stated in the abstract, the discussion and the conclusion.
3. The questionnaire had been validated in Hong Kong school children (please refer to reference Hui 2001 and response to reviewer 1). The young children of primary schools recruited in this study were assisted by their parents/guardian with answering the questionnaire.

Other comments:
Other comments raised by the reviewer have been addressed (see track changes in the revised manuscript) with additional remarks and elaborations as follows:
Page 3- line 4: Additional reference including diabetes had been included as suggested.

Page 4- line 2-6: Sorry for the typo that it should be 5 primary schools and 6 secondary schools recruited in this study. These schools were all randomly selected and the recruitment was stopped after a planned sample size of about 2000 subjects was recruited.

Page 6- line 11: The use of SBP or DBP, rather than MAP, is commonly adopted in many clinical trials because SBP and DBP have different magnitude of effect on cardiovascular outcome. Nonetheless, the revised manuscript had repeated the analysis with approach following Andersen et al 2006 ie use only systolic blood pressure as suggested by the reviewer 1.

Page 6- line 21-23: thanks for the suggestion to use Tim Cole’s criteria to diagnose childhood overweight/obesity. Indeed, there are different diagnostic criteria to diagnose childhood overweight/obesity (please also refer to one of the papers from our group. Ko GTC, et al. BMC Pediatrics 2008, 8:10) and the diagnostic criteria we adopted in this study was based on the Centers for Disease Control and Prevention (see additional reference added: Pediatrics 2002; 109:45-60).

Page 7- line 1 & 3: “demographic variables” were amended as “demographic and clinical variables”.

Page 7- line 6: the provision of exact p-value, though not statistically significant, ie p>0.05, is not uncommon in many published papers. This additional piece of information will provide more details to those who read this paper particularly if p value is just borderlinely above 0.05. One example is from the United Kingdom Prospective Diabetes Study (UKPDS), the landmark study comparing conventional versus intensive diabetes management in >5,000 newly diagnosed type 2 diabetic patients (Lancet 1998; 352;837-853). The p-value for the association between the 2 study arms and myocardial infarction is 0.052, ie just above 0.05. This will let us know that the result is just borderlinely insignificant.

Page 7- line 9: sorry for the typo. Yes, it should be “…aged 6-20”.

Page 7- line 9: sorry for the typo. Yes, it should be “…aged 6-20”.
Once again, on behalf of all co-authors, I sincerely hope that you will consider the revised paper for publication in BMC Public Health. I look forward to hearing positive reply from you soon. Thank you very much for your kind attention.

Yours sincerely,
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