Author's response to reviews

Title: Association between physical activities and school records in Korean adolescent students

Authors:

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Version: 3 Date: 16 November 2011

Author's response to reviews: see over
Author’s response to reviews

Title: Association between physical activities and school records in Korean adolescent students

Authors: Wi-Young So (wowso@snu.ac.kr)

Date: 14 November 2011

Reviewer's report

Title: Association between physical activities and school records in Korean adolescent students

Version: 1 Date: 4 October 2011

Reviewer: Marsha Dowda

Reviewer’s report:

Associations between physical activities and school records in Korean adolescent students

The purpose of this study was to determine whether PA is related to school records in the case of Korean adolescent students. This is a good idea and would add to the literature because of the unique population. However there are some series as well as some minor problems as listed below.

Major

Background, Page 3.

1) It is critical for the author to present a definition of school records. This definition needs to represent exactly what it would have meant to the Korean adolescent student who completed the item. In the 3rd paragraph the authors mention school achievements and records of adolescent students. How does school achievement and records differ? Are school conduct and school attendance also being considered?

Thank you very much! Korea Youth Risk Behavior Web-based Survey (KYRBWS) had not investigated school conduct, attendance and achievement. KYRBWS just had investigated school record via below question.

The self-reported school records were evaluated using the following questions: In the past 12 months, how has your average school record been? The response options were classified into 5 groups: (1) very good school record, (2) good school record, (3) average school record, (4) bad school record, and (5) very bad school record.

Therefore, this survey is not being considered school conduct, attendance and achievement. For this reasons, we deleted “school achievement” in manuscript. Thank you very much!
2) The authors state that there is no epidemiological evidence in clinical practice that indicates that there is an association between PA and school records. But, there is a body of literature about the relationship between students’ school achievement and physical activity and fitness. For example: Tremblay et al. The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. Pediatric Exercise Science, 2000, 12: 312-323. Welk et al. The association of health-related fitness with indicators of academic performance in Texas schools. Research Quarterly for Exercise and Sport. 2010;81(Supp 3):S16-S23.

Thank you very much! I have edited sentence and have inserted four references.

Before) There is no epidemiological evidence in clinical practice that indicates that there is an association between PA and school records

After) These reports showed that regular PA might improve the performance of adolescent students at school. In addition, several studies reported that PA helps academic achievement and outcomes [14-17]. However, even though PA has beneficial effects on academic performance via increased brain activities, only a few studies have examined the epidemiological evidence that indicates whether there is an association between PA and the school records of students. Furthermore, although there have been regional studies, no nationwide study has focused on this issue and its effects on Korean adolescents.

3) Characteristics-(Table 1), how were height and weight obtained? Also mentioned should be made on the calculation of BMI.

Thank you very much! I have described how height, weight, and calculation of BMI were obtained. Besides, I also have added the sentence at the limitation of discussion. Furthermore, several studies have recently shown that obesity is also associated with reduced cognitive and memory functions [1-2]. I have added BMI to covariate variables and then re-run SPSS program. Thank you very much!


(Covariate variables) Body mass index (BMI): the students were asked to self-record their height and weight, and the BMI (kg/m^2) was calculated from the data recorded by each student.

(Discussion – limitation) The study has a few limitations. First, this study was conducted online; therefore, the family’s economic status, parents’ education levels, and the student’s height and weight were not directly measured and were recorded by the students themselves. Therefore, these data might be inaccurate.

8) It seems that either age or grade should be considered as well in the analyses, since it is known that PA usually declines with age.

I also have added ages to covariate variables because it is known that PA usually declines with age.

(Covariate variables)

Age: The age of the students defined by the KYRBWS-V data was used without any modification.

Page 6 Data analyses

7) Were sampling weights and complex sampling design incorporated in data analyses?

Dr. Nancy Brener who is another reviewer also requested revised content that 3) Methods: Please clarify
whether the data analysis accounted for the complex sample design used in the study. If it did not, the analyses would need to be re-run.

Thank you very much! I had used SPSS Version 12.0. This version did not support the data analysis accounted for the complex sample design. Therefore, I have re-run data analysis including covariate variables such as age, body mass index, that is Dr. Marsha Dowda’s comments using SPSS Complex Sample™ version 18.0 (SPSS, Chicago, IL, USA) and then I have revised the data results in Table 2.

As a result, the data have very slightly changed. This study has a big subjects (N>70,000). For this reason, even though including the covariate variables such as age, body mass index, analysis, it is a little affected the results compared to previous results. Thank you very much!

Changed Methods (Data analysis)

All results from this study are shown as the mean ± standard deviation (SD) values. The statistical software SPSS Complex Sample™ version 18.0 (SPSS, Chicago, IL, USA) was used in all the analyses to evaluate the complex sample survey. For statistical assessments, we took into consideration the complex sampling design of the KYRBWS-V. To assess associations between school records and PA, after adjusting for covariate variables such as age, BMI, parents’ education level, and family’s economic status, multivariate logistic regression analyses were performed. The statistical significance was set at \( p < 0.05 \)

4) Frequency distributions of the PA levels and academic achievement percentages could be presented in a table. Perhaps this information could be presented by grade.

Thank you very much! I have added frequency distributions of the PA levels in Table 2 and school records in Table 1. Thank you!

5) Independent variables—here self-reported a school record is listed as an independent variable. It seems that school records should be the dependent variable in the analyses.

Page 6 Results and Table 2.

9) It seems that actually the dependent variable was school records. This really needs to clear.

Thank you very much! I have revised the self-reported school records from independent variables to dependent
6) Dependent variables- PA variables should be the independent variables in the analyses.

Thank you very much! I have revised the PA variables from dependent variables to independent variable. Thank you

Minor

Page 4 Private information—perhaps another term could be used? Perhaps identifier is what is meant here.

Thank you very much! I have revised.

Page 8 Discussion. Suggest eliminating the sentence – Therefore, for adolescent boys, sports–related activities that are defined as vigorous should be considered as moderate PA and not vigorous PA when comparing the activity of boys to that of girls.

Thank you very much! I have deleted that sentence! Thank you!

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Thank you very much! I have revised all manuscript content via professional editing company.

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I DECLARE THAT I HAVE NO COMPETING INTERESTS

Reviewer's report

Title: Association between physical activities and school records in Korean adolescent students

Version: 1 Date: 6 October 2011

Reviewer: Nancy Brener

- Major Compulsory Revisions
1) The Background needs to be expanded and restructured. As written, it does not provide sufficient rationale for conducting the study. One way to improve its structure might be to start out by saying (1) PA has some known benefits (and list them), and (2) there is some evidence that it is beneficial for academic achievement (describe other studies that have looked at this relationship), but these studies have the following limitations (and explain those). Some examples of studies that have examined the relationship between PA and academic achievement include:


Thank you very much! I have added paragraphs and references related with (1) and (2) in INTRODUCTION and REFERENCE, respectively, and then yellow highlighted.

2) Methods: Is the term “school record” well understood among Korean students? To me, it is a vague term that might include not only academic achievement but also behavioral conduct in school. These constructs might not have the same association with PA.

Thank you very much! Because this survey is not being considered school conduct, attendance and achievement, we think that ‘school record” was cleared term. Please, if you have another recommended term, please let me know. I will revise your recommended term next time. Thank you very much!

3) Methods: Please clarify whether the data analysis accounted for the complex sample design used in the study. If it did not, the analyses would need to be re-run.

Dr. Marsha Dowda who is another reviewer also requested revised content that 7) Were sampling weights and complex sampling design incorporated in data analyses?

Thank you very much! I had used SPSS 12.0. This version did not support the data analysis accounted for the complex sample design. Therefore, I have re-run data analysis including covariate variables such as age, body mass index that is Dr. Marsha Dowda’s comments using SPSS Complex Sample™ version 18.0 (SPSS,
Chicago, IL, USA) and then I revised the data results in Table 2. As a result, there are very slightly changed the data. This study has a big subjects (N>70,000). For this reason, even though including the covariate variables such as age, body mass index, furthermore, changed to complex sample design analysis, it is a little affected the results. Thank you very much!

Changed Methods (Data analysis)

All results from this study are shown as the mean ± standard deviation (SD) values. The statistical software SPSS Complex Sample™ version 18.0 (SPSS, Chicago, IL, USA) was used in all the analyses to evaluate the complex sample survey. For statistical assessments, we took into consideration the complex sampling design of the KYRBWS-V. To assess associations between school records and PA, after adjusting for covariate variables such as age, BMI, parents’ education level, and family’s economic status, multivariate logistic regression analyses were performed. The statistical significance was set at $p < 0.05$

4) Discussion: The focus on brain and memory function is too narrow. What other aspects of PA might affect “school records” (e.g. attention, alertness)?

Thank you very much! The results of this study did not provide information that other aspects of PA might affect “school records” (e.g. attention, alertness). For this reason, I have added a limitation. I am a really sorry!

(Limitation)

The study has a few limitations. First, this study was conducted online; therefore, the family’s economic status, parents’ education levels, and the student’s height and weight were not directly measured and were recorded by the students themselves. Therefore, these data might be inaccurate. Second, this study did not provide information that PA might affect attention and alertness at school. Therefore, more well-designed studies should be carried out to determine the extent to which these variables might contribute to attention and alertness. Third, this study was a retrospective cohort study. Therefore, we did not examine cause and effect, but only interrelationship. However, we studied 75,066 subjects throughout Korea. Therefore, the results of KYRBWS-V can be considered an indicator of the relationship between PA and school records in the case of Korean adolescent students.
5) Conclusions: Please describe the implications of this study for schools, health care providers, etc.

Thank you very much! I have added the implication for schools, health care providers, etc. And then yellow highlighted. Thank you very much!

(Case study)

The implication of this study for schools and health care providers is that adequate PA can play an important role in improving and maintaining school records.

(Authors' comments)

Additionally, the results of data is a very slightly changed because of adjusted for covariate variables such as age and BMI, and complex sample design via re-run. For this reason, I was a very little changed results, discussion and conclusion, and then yellow highlighted. Thank you very much!

- Minor Essential Revisions

1) In the Abstract Background and in the Background, the author notes that “there is no epidemiological evidence in clinical practice”. The use of the term “clinical practice” is confusing here. To me, “clinical practice” is what happens in the offices of health care providers. Please use a different term.

Thank you very much! I have changed term. Thank you!

2) In the Abstract, the Results are much too detailed, and the Conclusions read more like the Results should read. Please revise the Results to provide more of a summary of what the analyses found, and revise the Conclusions to describe the implications of the findings.

Thank you very much! I have tried to edit more summary, and revised the conclusions to describe the implications of the findings.

3) Also in the Abstract, the direction of the “school records” variable is not clear. A reader might assume that odds ratios > 1 indicate that more vigorous activity is associated with better school records, but the author
should note this explicitly and not leave it to the reader to assume.

Thank you very much! I have edited for reader and then yellow highlighted!

4) Background: Did references 11 and 12 really indicate that “regular PA wills improvement the school achievements and records of adolescent students?” Or did these studies simply show an association between the two? Please clarify.

Thank you very much! I have edited. Furthermore, I have added the 4 reference that support regular PA will improvement the school achievements or records of adolescent students. Thank you!

(INTRODUCTION)

PA was recently found to improve cognitive and memory functions [12-13]. These reports showed that regular PA might improve the performance of adolescent students at school. In addition, several studies reported that PA helps academic achievement and outcomes [14-17].

5) Methods: Please clarify how the surveys were anonymous it teachers assigned unique identification numbers to the students. How could students be confident that these numbers could not be linked to their names?

Thank you very much! The KYRBWS-V was administered by Korea Centers for Disease Control and Prevention (KCDCP), Korea government big project, and using on-line methods. The students just receive ID-number from school teacher via government administrator.

All the details of the data collection procedure (how the surveys were anonymous it teachers assigned unique identification numbers to the students and how could students be confident that these numbers could not be linked to their names) have been reported by the KCDCP (http://yhs.cdc.go.kr/). However, unfortunately, the all detailed experimental procedure was Korean language. Please accept my country sincere apology.

However, this survey based on developed Youth Risk Behavioral Surveillance (YRBS) (Eaton et al., 2010) and Global School-based Student Health Survey (GSHS) (World Health Organization, 2011) of Centers for Disease Control and Prevention (CDC) in the United States, and Monitor Health Behavior in School-aged Children study (HBSC) (Currie et al., 2001) of the World Health Organization (WHO) Europe. Therefore, KYRBWS is very similar compared to those surveys. For this reason, KYRBWS-V was almost same using method to get
how the surveys were anonymous it teachers assigned unique identification numbers to the students and how could students be confident that these numbers could not be linked to their names. Thank you very much!


6) Methods: Please clarify how response option “unknown” was treated for the parents’ education level. Were students with this response simply excluded from the analysis?

Thank you very much! “Unknown” means that the parents did not give their education level to student who is their son or daughter. Therefore, we corded (1) unknown, (2) middle school or lower, (3) high school, and (4) college or higher. Not excluded from the analysis! Thank you very much!

- Discretionary Revisions

1) The authors should consider an additional analysis that preserves the levels of response for the school records variable. It seems overly crude to dichotomize that variable into “below average” vs. “average or above.” To simplify the analysis, the PA variables could be dichotomized instead to see if the different levels of school records are differentially associated with PA. For an example, of a similar analysis, see [http://www.cdc.gov/healthyyouth/health_and_academics/pdf/health_risk_behaviors.pdf](http://www.cdc.gov/healthyyouth/health_and_academics/pdf/health_risk_behaviors.pdf)

I am a really sorry! Because this comment is discretionary revisions, I would like to skip this comment.
As you know, this article is almost finished manuscript. If we accepted your comment (Discretionary Revisions), we have to change all of manuscript content. It is impossible to us! I am a really sorry!

**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

Thank you very much! I have revised all manuscript content via professional editing company.

**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.

We also need you to make the following changes:

1. Please document within your manuscript if the data you have used is openly available or re-identified. If it is not openly available, please document the name of the ethics committee which approved its use

I declare that the data I have used is openly (actually always) available at [http://yhs.cdc.go.kr/](http://yhs.cdc.go.kr/)

Furthermore, fifty six articles already published in the Korea or International Journal from many research teams!

I would like to introduce several studies that reported international journal using Korea Youth Risk Behavior Web-based Survey!


자료활용현황

자료활용현황
설문지형성
원시지자료형

제목
조회자
구분

56. Yooni Che
학위논문
The Factors in relation to Suicide by the Adolescent's Self-Restoration and Living Behavior
Influence of Early Onset of Drinking and Problem Drinking on Suicide Ideation and Attempt among Korean Adolescents: Analysis of 2009 Korean Youth Risk Behavior Survey
2011년

55. Sulli Chung
학위논문
Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

54. 백설의 소라
학위논문
The Factors in relation to Suicide by the Adolescent's Self-Restoration and Living Behavior
2011년

53. 김보라
학위논문
Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

52. 박대희
학위논문
Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

51. 김지민
학위논문
Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

50. 조경록
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Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

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Factors in Relation to Allergy Diseases of Adolescent in South Korea
2011년

The patterns of injury risk taking behavior due to alcohol among adolescents in Korea
2010년