

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Physical Activity and Incident Asthma in Adults: The HUNT Study, Norway
AUTHORS	Brumpton, Ben; Langhammer, Arnulf; Ferreira, Manuel; Chen, Yue; Mai, Xiao-Mei

VERSION 1 - REVIEW

REVIEWER	Dr. A.J. van 't Hul Radboudumc, Nijmegen, The Netherlands.
REVIEW RETURNED	06-Sep-2016

GENERAL COMMENTS	<p>The manuscript (MS) addresses an interesting topic and has a sound rationale. The debate on the influence of physical activity (PA) on asthma incidence is on-going and data from this epidemiological study from Norway is another piece that fits nicely in this puzzle and favours the side of the con's that physical activity and asthma incidence are related.</p> <p>As far as this reviewer recognizes, relevant literature is used to point out the rational for this study. The large dataset and the long period of follow-up are string points. A major critic on this study is the methodology to measure PA, that is, subjective, self-reported questionnaires instead of objectively measured PA with motion sensor. The authors acknowledge this and their final conclusion is very much in line with this major limitation. However, this limitation should be added to section on the Strength and limitations of this study.</p>
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REVIEWER	Mike Stickland University of Alberta, Edmonton, Canada
REVIEW RETURNED	06-Sep-2016

GENERAL COMMENTS	<p>The relationship between asthma and physical activity has been of interest for many years. The purpose of the current study was to investigate the associations of physical activity and change in physical activity with incident asthma in a cohort of Norwegian adults. Over 18 thousand adults were examined over an eleven-year following within the Nord-Trondelag Health Study, and results indicate that physical activity level as not associated with incident asthma.</p> <p>The paper is well-writing, and strengths of this study include a large sample size with an eleven-year follow up, and two separate time points of PA evaluation.</p>
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	<p>The two main limitations of this work are the self-reporting of physical activity and asthma diagnosis. While the authors present publications supporting the accuracy of both self-reported asthma and self-reported PA, there are many other papers demonstrating poor reliability/validity of both self-report approaches. Thus, there is significant concern that this study is negative mainly because of the validity of tools to assess asthma and physical activity. The authors do address this within the discussion; however, the overall enthusiasm for this paper, and what this adds to the literature is diminished.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1

1. The manuscript (MS) addresses an interesting topic and has a sound rationale. The debate on the influence of physical activity (PA) on asthma incidence is on-going and data from this epidemiological study from Norway is another piece that fits nicely in this puzzle and favours the side of the con's that physical activity and asthma incidence are related.

As far as this reviewer recognizes, relevant literature is used to point out the rational for this study. The large dataset and the long period of follow-up are string points. A major critic on this study is the methodology to measure PA, that is, subjective, self-reported questionnaires instead of objectively measured PA with motion sensor. The authors acknowledge this and their final conclusion is very much in line with this major limitation. However, this limitation should be added to section on the Strength and limitations of this study.

Response.

We agree with the reviewer's comments and have added a line to the strengths and limitations sections to help clarify the measure of PA as a limitation of the study.

“An additional limitation of this study was that physical activity was subjective and self-reported in questionnaires as opposed to objective measurements such as motion sensors. However, the reliability and validity of the questionnaire used to define PA in HUNT2 have been investigated, and the question on hard PA, which predominately defined the two highest categories of physical activity (moderate and high), correlated well with other measures including VO2max.¹⁸ The question on PA in HUNT1 have also been validated.¹⁹ The question on frequency showed high repeatability (spearman's correlation coefficient 0.87), reliability (weighted Kappa coefficient 0.80), and moderate correlation with VO2max (spearman's correlation coefficient 0.43).¹⁹ Despite not using an objective measure of PA, which is not very practical in large-scale epidemiological studies, by evaluating PA at two different time-points we may have reduced the chance of spurious results due to exposure misclassification.”(page 14, paragraph 3)

Reviewer 2

1. The relationship between asthma and physical activity has been of interest for many years. The purpose of the current study was to investigate the associations of physical activity and change in physical activity with incident asthma in a cohort of Norwegian adults. Over 18 thousand adults were examined over an eleven-year following within the Nord-Trondelag Health Study, and results indicate that physical activity level as not associated with incident asthma.

The paper is well-writing, and strengths of this study include a large sample size with an eleven-year follow up, and two separate time points of PA evaluation.

The two main limitations of this work are the self-reporting of physical activity and asthma diagnosis. While the authors present publications supporting the accuracy of both self-reported asthma and self-reported PA, there are many other papers demonstrating poor reliability/validity of both self-report approaches. Thus, there is significant concern that this study is negative mainly because of the validity of tools to assess asthma and physical activity. The authors do address this within the discussion; however, the overall enthusiasm for this paper, and what this adds to the literature is diminished.

Response.

We thank the reviewer for their comments. To help highlight your concern we have added the following line to the limitations section in the discussion.

“It is possible that there is a weak association between PA and incident asthma, which can only be detected with very precise measurements of PA and asthma.” (page 15, paragraph 2)