Author's response to reviews

Title: Risk factors for development of non-specific musculoskeletal pain in preteens and early adolescents: A prospective 1-year follow-up study.

Authors:

Ashraf A El-Metwally (a.el-metwally@abdn.ac.uk)
Jouko J. Salminen (Jouko.Salminen@tyks.fi)
Anssi Auvinen (anssi.auvinen@uta.fi)
Gary J Macfarlane (g.j.macfarlane@abdn.ac.uk)
Marja Mikkelsson (marja.mikkelsson@reuma.fi)

Version: 2 Date: 11 April 2007

Author's response to reviews: see over
Dear Editor,

Thank you very much for your consideration of the above manuscript for publication in BMC Musculoskeletal Disorders. We thank the reviewers for their helpful comments and queries and have responded to their specific points below.

Reviewer 1: Charlotte Leboeuf-Yde

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Abstract, background: When you talk of an obvious underlying "cause", I suppose that you mean cause=diagnosis not as an aetiological explanation. Perhaps this should be specified. You write that ...can be an obstacle for "healthy" educational and social performances. Perhaps the word "successful" is what you intended?

I deleted this sentence completely and wrote instead “These symptoms have a negative impact on children's physical and emotional well-being, but their underlying aetiology and risk factors are still poorly understood” (abstract-background-2nd sentence; Introduction-first paragraph)

Abstract, methods: It would be nice to know how many of the 1756 children, who were free of musculoskeletal pain.

This information is now part of the abstract (Abstract-methods-second sentence)

I was curious to read that headache, abdominal pain, sadness/feeling down, day-time tiredness, difficulty in falling asleep ..." might predispose to the development of musculoskeletal pain. Predispose? They may occur in children with musculoskeletal problems but do they actually predispose?

I used the word “predict” instead of the word “predispose” (abstract-methods-end of line 3).

Abstract, conclusion: What about vigorous exercise?
I changed the conclusion section in the abstract and text to include all factors predicting musculoskeletal pain in our study (abstract-conclusion; 2nd sentence; text-conclusion-last sentence)

**Introduction, first para, last sentence:** Again "cause". Regardless if you mean cause as in aetiology or in diagnosis, I do not like that sentence. Why the word "although"? Pain is pain, and why would one cause/diagnosis or another have more or less impact on daily living? Abdominal pain could be equally distressing regardless whether it is caused by 2 kilos of prunes or an inflamed appendix. I also do not like the word "usually" as in "usually an obstacle". Where is the proof for that?

I deleted this sentence completely and wrote instead “These symptoms have a negative impact on children’s physical and emotional well-being, but their underlying aetiology and risk factors are still poorly understood” (Introduction-first paragraph)

**3rd para, last sentence.** You claim that associations in cross-sectional studies cannot be interpreted as causal due to the problem of establishing the temporal relationship. It might be more prudent to write "cannot ALWAYS be interpreted...", as sometimes it can. In fact, often the problem with establishing causality is that other factors indicating cause are not studied although they could have been (such as dose-response and reversibility).

I added the word “always” in the phrase (introduction-3rd paragraph-last sentence)

**Last para on the same page:** "high schoolchildren" as opposed to small schoolchildren? Hyphen between high and school would sort that out.

I added the hyphen (introduction-4th paragraph-first sentence)

I think that your literature review could be more thorough and broader in its context. You have for example missed out on genetics (i.e. a biological factor), puberty (probably also a biological factor) and the objective measurement of physical activity (which perhaps explains the varying results in previous studies and could threaten the validity of your own physical activity data).

I added biological/structural factors to this list, and included two references for two recent studies which have found significant associations between some biological/structural factors and musculoskeletal pain in children- 1- Wedderkopp N et al, 2005, 2- Kjaer P et al, 2005. I have not included genetic factors as I was only refereeing to factors that are associated with musculoskeletal pain in children, based on results of previous studies. A recent twin study (published in Twin Research Journal) that aimed to explore the genetic influences of childhood low back pain reported that a strong genetic contribution is not evident in children below 15 years of age. I believe that this is the only study investigating this relationship in children published so far (Hestbaek L, 2004).
Methods: I would have liked to see the pain drawing that you used, to learn how you defined the different anatomical areas. When looking at fig.1, I am left uncertain as to what you mean by "chest" and "upper back" for example.

I have scanned the pain drawing and sent it as a supplementary document, for the reviewer to have a better view of how we have defined anatomical areas.

How valid do you think that your self-reported vigorous exercise data were?

In this study, we have collected subjective information about all potential risk factors, except hypermobility. Using a validated objective tool for collecting data about physical activity would, for sure, improve the validity of data about physical activity, however, there is no validated objective tool for measuring physical activity in children, and even if it exists, we can only use this tool for collecting such information within the school area and not outside school. In this study we were interested in examining the potential association between musculoskeletal pain and the frequency of physical activity in general, not only physical activity within the school premises.

I have added the following sentence in the discussion section “Another methodological issue regarding our study that need to be addressed is our reliance on self-completed questionnaire, rather than a more-valid objective tool, for collecting information on physical activity. However, objective data is hard to collect in large-scale population-based studies and at present there is no generally accepted objective evaluation method to measure physical activity in children” (Discussion, end of second paragraph)

2.2 Follow-up

Whether the baseline variable significantly influenced the likelihood of dropout or not is not that relevant. It is more relevant to present the data visually, and let the readers see for themselves if they ACTUALLY did differ or not. A table would be nice.

Our follow-up rate was 93.4%. This was not clear in the previous version of the article. I have made this point more clear in the abstract (abstract-results title-first line) and in the methods section (2.2 follow-up section, first line). Those who were lost-to-follow-up were similar to those who were found with respect to all baseline variables and this was confirmed by some statistical tests to see if any factor can predict lost-to follow-up (which was so small). I am sure that the reviewer will agree with me that no table is needed for such small number of lost-to follow-up children.

2.4 Statistical methods, first line. remove the word "the" and add the word "to".

Discussion:

Done (2.4 statistical analysis- first line)

Discussion: First para: Have the data been shown pertaining to the second sentence or have I gone blind?

The reviewer is right. This information should not be included. I have deleted the sentence.
Last sentence: You use the plural in "factors" and "symptoms". Were there several of each of these?

The sentence was deleted and instead I wrote “Development of non-traumatic musculoskeletal pain was predicted by the prior report of psychosomatic symptoms (including, but not limited to, day tiredness), while development of traumatic pain was predicted by the previous report of day tiredness and practicing vigorous exercise”. (Discussion-first paragraph, last part)

Same page, last sentence. You should review your possible risk factors to see how many you consider to be "possibly avoidable" or change your explanation. I would say that almost none of them is. How would you for example avoid age, sex, abdominal pain, sadness, sleeping problems, and hypermobility? Also I think that many parents would be interested in finding out how you could stop kids from waking up at night.

Sentence was modified into “However, it must be noted that the main aim of this study was to investigate easily measured risk factors of musculoskeletal pain in preteens and early adolescents and identify high risk groups for primary prevention purposes” (Discussion, second paragraph, lines13-15).

p.11. three lines from the bottom, sentence starting "Despite these differences... I have problems understanding what you mean when I get to the end "found in latter adolescent population". Is it just me or did you leave out a word or something?

I have corrected this mistake to refer to the right study with the name of the main author and reference again (discussion, third paragraph, from line 13 till end of paragraph)

I do not like reviewers who become all upset because you did not include their own work in your manuscript. However, I think that you should look at Hestbæk et al's "Is comorbidity in adolescence a predictor for adult low back pain? A prospective study of a young population" in BMC Musculoskeletal Disorders 2006,7:29, because it should interest you and make your discussion more informed.

I have read this article, which gave me a better understanding of some previous studies relevant to my topic, especially regarding the relationship between childhood LBP and several biological/structural factors (ref. 11 and 12)

p.13, 4th line, do correct the typing error in the sentence starting "similar"

This sentence has been modified according to a suggestion from the second reviewer, so there is no “similar” now. (Discussion 6th paragraph, 3rd line till end)

Conclusion
Why do you not mention all your major findings, concentrating only on tiredness?

Now changed to include all significant predictors (conclusion, last sentence)
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

p.13, 2nd para, 3rd sentence. Perhaps add ("data not shown) and if this was a post hoc analysis, you could say that here

I added two sentences in the results section, indicating that hypermobility was not predictive of future musculoskeletal pain in children when we used a Beighton cut-off point of 6 and that when we reanalysed the data using a Beighton cut-off point of 4, we had similar results. I added the phrase “data not shown” in the results section (results, last sentence in section 3.2 and last sentence of section 3.3)

Reviewer: Dag Bruusgaard

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the can be trusted to correct)

1) The population is not general, but age restricted (p.4)

I used the phrase “of a previous survey of preteens from a general school population” instead of “general population sample” (introduction, 4th paragraph, first sentence)

2) You use psychosomatic (p. 8) and somatic p. 10) for the same symptoms

I used the term “psychosomatic” in the whole article instead of “somatic”

3) The incidence is among pain free individuals. You have not reported new onset in the whole group

I have modified the first sentence in the discussion to make this point clear “The present study showed that musculoskeletal pain is common in preteens and early adolescents, with 21 percent of schoolchildren, who were pain-free at baseline, reporting new-onset episodes of pain in at least one musculoskeletal site” (discussion-first sentence).

4) All facts in the discussion should have been presented in the results section (effect on daily activities, p.10, hypermobility, p. 13)

All results about hypermobility are now in the results section ((results, section 3.2 and 3.3).

I am not presenting any data about effect on daily activities in this article. The sentence that was mentioned in the discussion about this was deleted because it was not included in the results and was not one of the aims of the study.
5) You can not rule out the possibility that day time tiredness is related to psychological stress as you page 13. Your separation between traumatic and non-traumatic might not be as valid as you think.

I have modified this section in the discussion part to emphasise this point. This section is now as follows “The strong role of day-tiredness on development of traumatic musculoskeletal can not be explained by the confounding effect of vigorous exercise, as day-time tiredness independently predicted the onset of traumatic pain in the multivariate analysis (i.e. after adjusting for the effect of exercise frequency). One possible explanation would be that children with day-time tiredness are exhausted, fatigued and un-able to adjust their movement or posture to protect themselves from being injured in sports fields -regardless of the frequency of exercise performed- and possibly in other settings. This assumption is in accordance with a previous report identifying "overtiredness" as a one of the contributing factors to sports injuries [48].” (Discussion, 6th paragraph, 4th line)