Reviewer's report

Title:A 12-month, moderate-intensity exercise training program improves fitness and quality of life in adults with asthma: a controlled trial

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Reviewer:Hayley Scott

Reviewer's report:

This study by Meyer et al reports on the effects of 12 months of exercise training in adults with asthma on physical fitness and quality of life. The strengths of this study are: 1. There is a very high retention rate in this study and attendance at the sessions is high. 2. This study is transferable as it was relatively inexpensive to run. 3. The intervention produced improvements to fitness and quality of life. 4. It is the longest study duration for this style of intervention to date.

MAJOR COMPULSORY REVISIONS

• Could you please specifically list your study inclusion and exclusion criteria in your manuscript? For example, were patients with certain comorbidities, lung function limitations, etc excluded from your study? Also, you mention in Figure 1 that 3 patients were excluded as they had a high level of physical activity involvement at baseline. What was the cut-off level for the amount of physical activity that was acceptable for this trial? This should also be reported in the inclusion/exclusion criteria for the trial.

• Your results and statistical analyses have used only parametric tests. Does this mean that every single variable was found to be normally distributed?

• This study is limited by the fact that there is no data on physical activity participation, both prior to and following the intervention. This limits the conclusions that can be drawn from this study in relation to whether the once/week session alone was sufficient to improve fitness, or whether a once/week session was sufficient to motivate participants to exercise more in general, which in turn improved their fitness. Future studies should therefore measure usual physical activity levels, both pre- and post-intervention.

• Tables 2 and 3 – you should also calculate a p-value which accounts for any changes to each outcome in the control group. This should be discussed prior to reporting any within group changes.

MINOR ESSENTIAL REVISIONS

• Why is your sample size calculation for the intervention group different to your sample size calculation for your control group? I would have thought these would be the same.

• Table 1 reports FEV1 at baseline. Do you have this data for the follow up visit also? It would be interesting to report, even if lung function was unchanged. Also, do you have FVC data? This would also be interesting, as well as FEV1/FVC.
• The ICS dose in table 1 (beclomethasone equivalents) appears to be incorrect – this number should be much higher (up around 1000).
• How was allergic asthma defined? e.g. by skin allergy testing? You should report this in your Methods.
• Did you measure asthma control, for example using the ACQ? If so, it would be good to report it.
• The participants have been categorised into mild, moderate and severe. What criteria did you use for this classification? Was it GINA? This should be reported in the methods. Also, you could list this result in your patient characteristics table 1, so people can have a quick reference.
• Could you please elaborate on what you are specifically referring to in relation to “physical capabilities” in the first paragraph of your background?
• You report that there was a slight increase in peak flow following the exercise training sessions. At what point prior to the session was peak flow recorded? Was it before or after SABA? Could this increase in PF be related to the SABA participants took prior to the exercise session?
• The Discussion states that the younger population of asthmatics in previous trials may be due to under-diagnosis of asthma in adults. I believe it is important to acknowledge another reason for this, which may be due to the inclusion/exclusion criteria that may be used for other more trials being stricter; for example excluding those with certain comorbidities, which are more common in the older population.
• In the Discussion it is discussed that improvements in exercise capacity were not correlated with improvements to QoL. Could you hypothesise a potential alternate mechanism? For example, later in the manuscript you mention exercise has been shown to reduce inflammation.
• In the Discussion, the statement “Exercise limitation in asthmatics is not correlated to disease severity but is largely due to psychological factors” needs to be referenced and elaborated upon.

DISCRETIONARY REVISIONS
• Methods: Assessments. There is a typo in the 2nd paragraph: “We used a German validated version of the short form 36…”
• Results, patient population – were the 2 participants that wanted to participate in the active group excluded, or did they withdraw?
• In your abstract please update the way p-values are reported so it is consistent in relation to decimal places and whether you use “=” or “<”.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable
**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.