Reviewer's report

Title: The efficacy of a comprehensive lifestyle modification programme based on yoga in the management of bronchial asthma: a randomized controlled trial

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Reviewer: Cheryl M Salome

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General comments
This paper reports the effect of a substantial yoga-based intervention on objective and subjective measures of asthma, and has shown small but clinically meaningful changes in quality of life and peak expiratory flow in the active treatment group. The study was appropriately designed as a randomized controlled trial, and the outcome measures were performed using standard techniques. The improvements in PEFR and quality of life are consistent with effects described in earlier studies. The attempt to examine the effects of yoga on biochemical markers of asthma is novel, but the high degree of variability in the biochemical markers means that the findings in this respect are inconclusive. Thus, it is not clear what this paper adds to what is already known. Furthermore, additional information about the subjects and the interventions is essential in order to interpret the findings.

Major compulsory revisions
1. The hypothesis underpinning the selection of biochemical markers should be clearly stated. What was the rationale for measuring ECP and urinary PGF2a metabolites? How would changes in either of these markers be interpreted in relation to the mechanisms by which yoga affects asthma?
2. Further information about the baseline characteristics of the subjects should be included. What treatment were the subjects taking at entry into the study? How was mild and moderate asthma defined?
3. Information should be given about the control intervention. What constituted the conventional treatment in both the control and intervention groups? Was there any attempt to optimize the level of conventional treatment before introduction of the yoga intervention? How frequently were the control group subjects seen during the first two weeks of the study, when the yoga group was undergoing intensive training? Was the control group asked to keep a diary of medication use? Were they telephoned regularly during the follow up period? Could any of the differences between the groups be attributable to differences in exposure to the researchers or health care practitioners?
4. Was the yoga intervention group given any advice about medication use in relation to yogic practice? For example, were they encouraged to delay or reduce their use of rescue medication?
5. What was required of the yoga intervention group during the follow-up period? How many hours per day did they need to spend on their yogic practice? How was compliance monitored? Was adherence with the dietary advice included in the measure of compliance? What level of compliance was considered acceptable, and how many of the subjects achieved this?

6. The generalized linear model used for the data analysis is appropriate for this study design, but has not been used appropriately to determine if there are differences between treatment groups. The analysis has primarily determined if there are significant within-group changes from baseline, and the post-hoc tests have been used for multiple between-group comparisons at different time points. A more powerful approach would be to use the GLM to determine whether the time trends in the outcome variables over the period of the study differs significantly between treatment groups (ie a single p value for each variable).

7. The conclusions are overstated, and need to be qualified. Non-significant trends in the data, such as changes in FVC and response to exercise are incorrectly claimed to be significant in the discussion or conclusions of the study. The statement that yoga could improve physical work capacity is speculative and should be labeled as such. The claim that only yoga can bring about a genuine improvement in physical capabilities is incorrect and should be removed.

8. The authors argue strongly that previous studies have failed to deliver a complete and holistic yoga intervention, which they argue is required to adequately test the therapeutic effect of yoga. However, the effects induced by their study are similar to those of previous studies, showing modest gains in various markers of asthma, using components of yogic practice such as breathing exercises or meditation. The claim that a yoga practice can only be effective if it becomes “a component of the yogic way and view of life” is surely a testable hypothesis, and in the absence of specific data should be labeled as speculation.

9. The conclusion that yoga has additional benefits over conventional therapy because it gives additional improvements in pulmonary function is incorrect, and should be removed. Although the authors failed to provide any description of the conventional therapy used in this study, there is substantial published evidence that standard therapy for asthma (bronchodilators and inhaled corticosteroids) have substantial effects on pulmonary function. The present study did not examine the effect of conventional therapy on pulmonary function.

10. The applicability of these findings in a general population of asthmatic patients is not clear. The magnitude of the time commitment required by the subjects is large relative to the magnitude of the benefits, suggests that this approach is unlikely to be widely applicable. Although the authors have made some discussion of the limited application of the results, they also need to consider whether

Minor essential revisions

11. Add units (puffs / 2 weeks??) for rescue medication use to table 8 or table legend.
Discretionary revisions
12. The data presentation would be more effective as figures rather than tables

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**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