Author's response to reviews

**Title:** Eye exercises of acupoints: their impact on refractive error and ocular symptoms in Chinese urban students

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**Version:** 5 **Date:** 11 August 2013

**Author's response to reviews:** see over
**Reviewer’s report**

**Title:** Eye exercises of acupoints: their impact on refractive error and ocular symptoms in Chinese urban students

**Version:** 4  **Date:** 28 June 2013  
**Reviewer:** Eric Borsting

**Reviewer’s report:**

Review of revised manuscript

*The revised manuscript is much improved and has addressed most of the issues raised in the first review. However, there are still several smaller issues that need addressing.*

**Introduction**

*The third paragraph starting with convergence insufficiency seems out of place. The study is not investigating CI and associated symptoms but is proposing to use the CISS to quantify near point symptoms in children with myopia. This should be clearly stated in the introduction. The conclusion does use language related to near point symptoms but this is not in the introduction.*

- **Per the reviewer’s suggestion, we have added a description about the purpose of the study at the end of third paragraph.**

  In the current study, the aim was to evaluate the impact of these eye exercises of acupoints on refractive error, as well as the near visual symptoms using the CISS questionnaire, among Chinese urban children (aged 6-17 years) recruited from the baseline population of the 3-year cohort Beijing Myopia Progression Study (BMPS).

**Methods**

*The authors are administering the CISS in a different manner than was done in the CITT trial. This should be clearly stated. The authors are also administering the CISS to children less than 9 years of age. The CISS has not been validated in children less than 9 years of age. This should be clearly stated in the methods section.*

- **Per the reviewer’s suggestion, we have stated the different administering methods of our CISS from the CITT group. We have also mentioned clearly that some of the children were less than 9 years of age (Page 5, Line 17-18 and Line 21-25).**
Studies from the Convergence Insufficiency Treatment Tail (CITT) group have demonstrated that the CISS is a valid instrument for quantifying near vision symptoms in 9 to 18 year-old children…Different from the CITT study, children of the current study completed the CISS with the help of trained staff, as well as their parent(s), rather than read it to the children exactly without assistance. Furthermore, 159 (159/409, 38.9%) of the children were less than 9-years-old, for which the CISS questionnaire has not been validated yet.

When describing the Myopia Questionnaire the authors use “etc” in the description. This should be removed and the specific areas covered need to be stated.

- Per the reviewer’s suggestion, we have removed the “etc”. The questionnaire that we used was adopted from the Sydney myopia study, and we have cited the link to the same available online due to its length (page 5, line 4).

Children were surveyed at the testing center with the help of trained staff regarding their habitual refraction, daily activities (indoor and outdoor), living environment, study pressure, and study motivation, diet, eye exercises of acupoints, and CISS questionnaire.


It is not clear how long the students were doing the acupoint stimulation activities. That is, the time between the baseline examination and the outcome visit.

- The eye exercises of acupoint were compulsory/routine activities during the school day since entry into primary school (about 10 minutes a day, 5 days a week as described in the first paragraph of the Background, page 3, line 5-9 and line 16-17). The current study was a cross-sectional observation of the effect of these eye exercises.

Data analysis

Cycloplegic is spelled incorrectly in the first sentence.

- Thank you. We have corrected this.
Discussion

The authors state that children who followed the exercises more seriously, who followed the school broadcast, and were well acquainted with them tended to have lower CISS scores. This could be a placebo effect. Those who were more engaged in the treatment would expect to get better. There is little justification from the current study results to warrant further study in this area. Just how much exercise would be necessary to get an effect and would children do this. It seemed problematic to get the 10 to 15 minutes a day of the activity. Would children do 1 to 2 hours?

- We admit that there may be some placebo effect of performing the eye exercises on relieving the ocular symptoms, since the current study was a cross-sectional observation without a control group. We have included this in the Discussion section (page 9, line 27-29).

Furthermore, the placebo effect of the eye exercises may not be excluded, since there was no control group in the current study.

- The eye exercises of acupoints in the Chinese school are performed routinely twice a day (morning and afternoon), about 5 minutes each time from entry into primary school. The current study was a cross-sectional observation of the effect of these eye exercises on refractive error and ocular symptoms. Children could be required to perform these longer each time or more times a day when further trials are conducted and the results analyzed.

Conclusion

The authors state that the effect of acupoint exercises was unclear. I would disagree with this statement. The results were pretty clear that little effect was seen with this treatment as it relates to refractive error.

- We admit the effect of eye exercise on reducing myopia was not seen in current study. Per the reviewer’s suggestion, we have stated this in the Conclusion of both Abstract and at the end of the manuscript.

Abstract

Conclusions The traditional Chinese eye exercises of acupoints appeared to have a modest effect on relieving near vision symptoms among Chinese urban children aged 6 to 17 years.
However, no remarkable effect on reducing myopia was observed.

Conclusions
This cross-sectional study demonstrated that the eye exercises of acupoints had a modest effect on relieving ocular-based near vision symptoms in Chinese urban children aged 6 to 17 years. However, no remarkable effect on reducing myopia was observed in this study.

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

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Reviewer's report
Title: Eye exercises of acupoints: their impact on refractive error and ocular symptoms in Chinese urban students

Version: 4 Date: 8 July 2013
Reviewer: Kathryn Rose

Reviewer's report:
The authors have undertaken substantial revision of the manuscript in line with the reviewer’s suggestions and comments. It is noted that the authors have now made the hypothesis of this paper clearer at the end of the introduction, but they have still failed to justify why they would be looking at symptoms related to near work in persons with myopia. This is brought further into question by the unsurprising low CISS scores obtained for this group, who were predominantly recruited on the basis of their refractive error. The analysis of the measures related to the symptoms of convergence insufficiency with refractive error as the primary outcome is still unconvincing, with the potential to confuse the naïve reader.

- The Chinese eye exercises of acupoints have been compulsory measures during school years from entry into primary school for the purpose of relieving ocular fatigue (mainly the symptoms related to near work) and reduction of myopia, for about half a century. However, these exercises and their effects are controversial. Hence, the current study focused on the effect of these eye exercises on refractive error and also ocular-based near
symptoms using the CISS questionnaire. Assessment of near symptoms in young myopes is consistent with the goal of this traditional Chinese educational policy/practice.

Major revisions:
The term “students” is used to describe the subjects in this study which implies that the study was solely school-based, however, no mention is made in the manuscript that patients were also recruited via advertisement in the hospital (mentioned in reply to reviewer’s comments) which makes the study in no way generalisable to the whole population or a school population. The sample is also biased by the choice of elite schools that of course would elevate the prevalence of myopia and may also present particular attitudes to the performance of eye exercises. This limitation of the study and its possible biases should be addressed in the discussion. Also the term “students” should be changed to ‘subjects’ throughout the manuscript.

• The sample of our study was not school-based. However, children recruited from the advertisement in the hospital were also from the elite Beijing schools, so all were “students”. Per the reviewer’s suggestion, we would have added this possible limitation regarding our sample in the Discussion section (page 10, line 10-11).

First, the children were enrolled consecutively at the baseline of the Beijing Myopia Progression Study. Hence, results of the current study may not be generalisable to the entire population of Beijing children across the educational spectrum.

• The term “students” would indeed have some biases, so per reviewer’s suggestion, we have changed it to “children” throughout the manuscript.

While the authors have somewhat modified their call for further studies of the effect of eye exercises and reduction of refractive error, they still argue for larger studies looking at different eye exercise regimes despite their own negative finding. They need to make it clear that well-designed RCTs would be necessary to prove or disprove the widely held belief that these exercises are effective in reducing myopia, a very different design from the current study. However, it should be noted because it is such a widely held belief in Asia, it would be difficult to establish a control group.

• Per reviewer’s suggestion, we have stated the necessity of RCTs for such eye exercises and
their effect in the Discussion section (page 9, line 11-13; page 10, line 13-14).

Hence, well-designed randomized controlled trial (RCTs) would be necessary to investigate the effect of different durations of the eye exercises of acupoints on reducing myopia.

Finally, further studies, especially well-designed RCTs, with a larger sample size and different eye exercise schedules, are warranted to understand better the dose-effect of these eye exercises of acupoints on myopia and the related visual-based near symptoms.

- For the control group, i.e., children who do not perform the eye exercises, the private school students are not compulsory to perform these. Hence, we do not want to state that “it would be difficult to establish a control group”.

**Minor revisions:**

*The new columns in Tables 2 & 3 are not labeled in manner that makes it clear what is being presented namely “Multiple OR (95% CI)* for age” but also adjusted by age, gender etc.? Please clarify.*

- Per reviewer’s suggestion, we have clarified the new columns in Table 2 and 3 in the table notes.

Table 2

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Table 3

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The abbreviation “ser” for serious attitude to exercises and “aqu” for acquainted with exercises should be included in Figure 2 & 3 as a legend.

- Per reviewer’s suggestion, we have added the legend of “ser” and “aqu” in Figure 2 and 3.
**Figure 2a** Spherical equivalent (SE, diopters) of the different groups by attitude towards performing the eye exercises of acupoints (seriously or not) and acupoint acquaintance level (acquainted or not). The SE was different among the groups (p=0.05). **Ser:** performed eye exercises of acupoints seriously; acq: acquainted with acupoints. Plot is the mean ± standard error.

**Figure 2b** Convergence insufficiency symptom survey (CISS) score of the different groups by attitude towards performing the eye exercises of acupoints (seriously or not) and acupoint acquaintance level (acquainted or not). The score was significantly different among the groups (p=0.002), namely between the first and last group (bonferroni correction). **Ser:** performed eye exercises of acupoints seriously; acq: acquainted with eye exercises acupoints. Plot is the mean ± standard error.

**Figure 3** Multiple-adjusted odds ratios (adjusted for age, gender, average parental refractive error, time spent on near work and outdoor activity) for myopia by attitude towards performing the eye exercises of acupoints (seriously or not) and acupoint acquaintance level (acquainted or not). The group with a more serious attitude for performing the eye exercises of acupoints and acupoint acquaintance of eye exercises was the reference group. **Ser:** performed eye exercises of acupoints seriously; acq: acquainted with eye exercises acupoints.

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests

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Thanks for your wonderful comments and suggestions.

Best regards

Corresponding author, Yuanbo Liang