Reviewer's report

Title: Reliability of upright posture measurements in primary school children

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Reviewer: Leon Straker

Reviewer's report:

This paper reports on a small reliability study. The method of assessing posture from photographs is very commonly used and it is useful and important to have the reliability of the assessment evaluated. This is therefore a useful paper.

The paper is well written and presented. The method was appropriate, the major limitation being the small sample size for the number of factors assessed.

Publication of the revised paper will provide a useful contribution to postural research.

Abstract
use meaningful name instead of trunk angle a height did not "influence the difference between tests", rather there was a difference in 4 postural angles with age
rephrase sentence starting "pain on the day of testing" to indicate that children with pain were less reliable
rephrase last sentence to "Age was strongly associated with height (rxxxx) and less strongly with motor control (rxxxxx).
insert qualifier such as 'reasonable' between demonstrated and reliability in the conclusion sentence.

Background
This section could be substantially improved.
Paragraph 1
More detail should be provided on available evidence for reliability of posture measures using similar techniques.
Para 2/3
role of postural control in the biological variability of postural assessment should be dealt with as just one of a number of factors which may effect reliability. Thus the list of factors at the start of para 3 should come before para 2 and para 2 edited to be directly related to postural variability. Other factors listed in para 3 should be EACH briefly discussed with evidence/opinion on why they could influence reliability.
Other factors which could influence reliability and which are not mentioned currently in the paper are: marker palpation and placement and digitisation reproducability.
Par3 - suggest rather than "latter primary school years" use years of age as school years vary considerably across countries
-children have relatively larger heads, not larger heads!
Method
sample
"reception to year 7" - use years of age as school years vary considerably across countries
how was sample selected - only says convenience
equipment
why aren't shoulder and pelvis marker/angles not included? is it because their reliability was poorer?
what were the subjects instructed to look at (visual target effects head angle)
were markers removed and reapplied for retest?
suggest more user-friendly and consisten angle names - trunk, neck on trunk, head, head on neck, lower limbs (gaze angle is not head angle, and can't really call GT to ankle lower trunk)
statistical analysis
testing approach is outlined i fig 2, descriptive statistics are not reported in fig 2
could be clearer that retest, age and gender effects tested separately (presumably because of small n - if so should be acknowledged as a limitation in Discussion)

Results
rather than parts 1,2,3 use meaningful sub headings
part 1
report power or beta probability for gender non sig effect
Part 2
report descriptive data on pain, motor control etc. before its effect on reliability reported
para 1 doesn't seem to tally with last Results paragraph
part 3
para 2 - clarify relationships between height and age etc are with each other and not with angle differences
clarify/provide statistics for "an indication"
report alpha prob in table 5 (table title says it does, but it just gives both lots of r squared)

Discussion
general comment is focus Discussion on reliability issue an systematically work through tested effects and discuss untested effects.
para 1
"trend towards significance" doesn't tally with p<.05, unless you adjusted your critical alpha levels to account for multiple testing - in which case state this and also report beta as with a small n there could be high type 2 error probabilities
potential role of postural response maturity earlier in the head seems overstated part 1 para 3
discuss other possible sources of error
acknowledge small sample size/power limitations
provide confidence intervals/SEM to enable future researchers/clinicians a clearer indication of what change would need to be seen to be reasonably considered too large for test/retest error

Conclusion
penultimate sentence - insert 'adequate' before reliabilty as it is a
continuum, not dichotomous

Tables
Table 1 - very small cell sizes, which is presumably why separate ANOVAs
Table 2 - format better, user friendly angle names, report to sensible
number of decimal places - 1 or at max 2
Table 4 report Fdf as well as p, and beta for non sig
Table 5 report p

Figure 2
isn't a summary of the descriptive statistics

References
motor control references very old

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

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

None