Reviewer's report

Title: A shallow chest correlates with right thoracic curvature in the normal spine: Features resembling those observed in structural scoliosis

Version: 11 Date: 29 July 2014

Reviewer: Richard Burwell

Reviewer's report:

The authors have addressed the major points raised in my First and Second Reviews, namely:

Why did the patients have CT scans?
The measurements,
Decreased AP chest diameter in girls with right thoracic AIS was described and interpreted by:

Now, additional points need to be addressed.

1. Is the question posed by the authors new and well defined? Answer Yes.
2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work? Answer Yes in part.
   The description of the measurement of ribcage rotation angle (page 7, last three lines), is not clearly expressed. I suggest consideration of the following as replacement:
   “The ribcage rotation angle was defined as the angular divergence of a line drawn at right angles to a line joining the posterior inner chest wall bilaterally, from the line joining the neural canal to the sternum.”
3. Are the data sound and well controlled? Answer Yes/
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Answer Yes in part.
   The term “thoracic side curvature” is used, evidently as the preferred alternative to Cobb angle (see Figure 5) in these normal females. The writing should be consistent, using one or other, and so stated.
   In the Results section on page 5, Cobb angle, rib rotation angle and anterior chest dimension are reported without stating that these were degrees or mm. In Figures 3-5, P values are given; the Spearman rho values should also be presented.
In the References, numbers 5 & 6 have only one initial for each author and not two as in the publications. Single initialled authors are recorded as different individuals from the same individuals with two initials. 

In the References, number 6 does not have the complete list of authors - two names are missing.

5. Are the discussion and conclusions well balanced and adequately supported by the data? Answer Yes in part.

In Background end of first sentence, reference 6 is also appropriate.

The aorta is described as having a “left shift”. This is relative to the vertebral body of T8. Is it not there is a “right shift” of the vertebra? If so, the “left aortic shift» is a relative shift - possibly – without causal significance?

On page 5, it is stated that “Recently, has been reported that the normal spine exhibits right thoracic curvature.....” These findings have been known for many years. The word “confirmed” or “established” should replace “reported”.

6. Do the title and abstract accurately convey what has been found? Answer. No. The title states, “A shallow chest correlates with right thoracic curvature in the normal spine.... ,”

In the Abstract (page 2), it is stated that “Right thoracic side curvature and right ribcage rotation correlate with a shallow chest and the aortic position....”

In the Conclusions (page 11), it is stated that, “A shallow chest and aortic position are correlated with ribcage rotation and thoracic side curvature...”

Yet, in the results section (page 9) for the thoracic curvature, a statistically significant correlation is recorded only for “ribcage rotation and right thoracic curvature (p=0.02)”- with no record for a significant correlation of shallow chest and right thoracic curvature although stated to have been analysed.

How many right curves were there? For on page 7 it is stated there were right and left convex curves.

**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’