Author's response to reviews

**Title:** Real Time Noninvasive Assessment of External Trunk Geometry during Surgical Correction of Adolescent Idiopathic Scoliosis.

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**Author's response to reviews:** see over
Dr Theodoros B Grivas  
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Magula, Athens  
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Re: Submission for the manuscript entitled "Real Time Noninvasive Assessment of External Trunk Geometry during Surgical Correction of Adolescent Idiopathic Scoliosis".

Dear Dr. Grivas,

The authors would like to thank the reviewers for providing relevant comments on the second version of our manuscript. Please find enclosed a revised version of this manuscript. The paper was revised according to the concerns raised by the reviewers and our point by point response is appended. All modifications made in response to the reviewer’s comments are underlined in this new version of the manuscript.

Thank you for considering our paper for publication in Scoliosis, which we hope will bring new knowledge on the population affected with Adolescent Idiopathic Scoliosis.

Sincerely yours,

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Reviewer #1

1. The revised manuscript has included the response to comments that I have made before.

Reviewer #2

1. The orientation of the first four indices is not immediately clear to me. Indices 1 and 2 seem to me to be reversed on the drawing. If I am interpreting the orientations correctly, Index 1 is shoulder orientation in the transverse plane, Index 2 shoulder orientation in the coronal plane, Index 3 balance in the sagittal plane and Index 4 balance in the coronal plane. However, this interpretation doesn't fit with the x-ray images.

Indeed, the 3-D interpretation of those indices was not clearly identified on Figure 2B. We revised figure 2B accordingly to show the actual angle computed. We modified also the manuscript to clarify in which orientation the angle is considered and added further details about the clinical indices description.

The x-rays of patient were acquired pre and post operatively. Measurements reported in this study were recorded intra operatively. Posture changes might occur from the standing position to the prone position. Consequently, it can be difficult to compare the measures reported intra operatively and pre operatively on standing radiographs. We are going to investigate the posture changes with our technique before and after surgery, on standing position and in the prone position in future studies.

2. Page 7, Section 3, Results, First Sentence. The phrase both stages of surgery can be confused with the interoperative stages during and after; and doesn't seem to apply to the pre and post operative standing radiographs. Wording could be changed to --primary Cobb angle measured on standing pre and post operative standing posterior-anterior radiographs.

The first sentence of Section 3 was modified accordingly.

3. Table 2 uses wording --during and after--. page 7, Section 3, Line 4 begins --before and after --. Based on your edit of Figure 7 this should be --during and after--.

Section 3, Line 4 was modified to – during and after – for consistency.
4. Page 7, Section 3, Sentence 5 seems to be the beginning of the presentation of actual differences between the landmarks during and after the correction. However, the transition of thought from Table 2 to Table 3 isn't clear in the text. Suggest adding a sentence after sentence 4 beginning with ---Table 3 presents the measurements during and after surgical correction of the scoliosis.--

A smoother transition between Section 3, Sentence 5 was added to clarify the explanation of Table 2 and the explanation of Table 3.

5. Figure 6. In caption the wording --before instrumentation-- is used. For consistency consider --during and after instrumentation.--

The caption of Fig 6 was modified to during and after instrumentation as suggested by the reviewer.

6. Figure 7. This appears to be the absolute difference. If that is correct I think the word Absolute should be added to both the Figure and to the caption.

We agree that the absolute value should be added to the Figure and its caption.

7. Figure 7. The measurement shown is degrees but two of the indices shown are in mm. This needs to be clarified. Also, I question the value of presenting the data this manner. It would be much more helpful to present it in relation to the goal/normal, ie. no rotation and no displacement.

The balance was computed as a distance (in mm) to express the shift between the landmark rather than the angle. The former is more intuitive in this case, since we are evaluating small angles. This was corrected in the figure as well.

8. Table 2. Title has before and after surgical correction rather than during and after.

The title of Table 2 was modified accordingly

Reviewer #3

1. Title page and abstract are lacking from the manuscript.

Title page and abstract were added to the manuscript. Tables and figure captions were also integrated in this version.

2. Page 8: 4. Conclusion -- Discussion?

Discussion and Conclusion headers were added to the manuscript to conform with the Journal’s Instruction for authors.

3. Page 9, line4: use -- used?

We modified accordingly the verb “used” to reflect the past tense.