Reviewer's report

Title: The reliability of three-dimensional scapular attitudes in healthy people and people with shoulder impingement syndrome.

Version: 1 Date: 24 January 2007

Reviewer: Heiko Graichen

Reviewer's report:

General
General Aspects:

This MS deals with an important aspect of shoulder research. To this reviewer the importance of scapular motion patterns in the pathogenesis of different shoulder disease is not fully understood in general. This is mainly caused by the problem of an exact and valid 3D analysis of scapular motion. The authors apply a previously developed method to patients with impingement syndrome.

To my understanding this technique suffers from the same problems as other marker analysis (soft tissue movement, marker fixation). Therefore I believe the actual problem is not solved. The results demonstrate exactly that problem, showing that the reproducibility is high if the set-up is not reattached, it is low after repositioning. The problem of fixation is also obvious, so the results at rest are good, at abduction and flexion they are moderate. In addition this technique is still static, not able to assess the dynamic problems. Beside these technical shortcomings I believe this MS is only a technical description of an already existing technique. No clinically relevant data regarding the patients with impingement syndrome was presented. Therefore it is more a Technical Note than a Full Paper.

Overall the set-up of the experiments is not sufficiently described and the numbers of individuals included as well as the patient selection is limited.

I recommend rejection of the MS in its present form.

Specific Comments:

Abstract:
The position of the transducers and the fixation should be described briefly.

In the results section of the Abstract a good and very good reliability is described, however, the meaning remains unclear.

Background:
There are MR based techniques that should be included.

Methods:
Patient selection is problematic. 8 subjects are not enough to assess the reliability of this technique sufficiently. The inclusion criteria are very unspecific; a lot of different pathologies can lead to a clinical impingement. An MRI can help to elucidate the pathology.

What was the rotation angle of the different arm positions? Why have these positions been chosen and no other clinically more relevant ones?

A sketch of the set-up would help to understand the technique more clearly.

Can the authors comment on the large differences of L-MR rotations?

This reviewer believes that it is statistically problematic to include both shoulders of the same patient. It would be preferable to include 16 individuals.

Results:
Well presented.

Discussion:
Scapula motion patterns are extremely individual and highly variable, this has been shown in many studies. Nevertheless, it is very important that measurement errors must be as small as possible to get valid information, as the authors have stated. This reviewer believes that the error presented in terms of any other position than that at rest is too high to give valid information.

Comparison of the mean to describe the deviations is not appropriate. The standard deviation is more
important.

A more general aspect deals with the pathogenesis of impingement syndrome. There are entities that are associated with alterations of scapular motion patterns, however, there are some that are not. Those groups should be investigated separately.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)

What next?: Reject because too small an advance to publish

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'