Reviewer's report

Title: Arthroscopy or ultrasound in undergraduate anatomy education: a randomised cross-over controlled trial.

Version: 2 Date: 7 July 2012

Reviewer: Abtin Alvand

Reviewer's report:

This is a very interesting paper that addresses an important and topical area of undergraduate medical curriculum – anatomy education. It attempts to determine the effect of tools such as ultrasonography and arthroscopy as potential supplementary tools for teaching musculoskeletal anatomy to a large cohort of medical students. It is important for medical educators to explore the benefits of these tools because of two main reasons; firstly, due to the reduction in undergraduate anatomy teaching in many institutions, and secondly, due to the widespread use of arthroscopic surgery and musculoskeletal ultrasonography. However, I do feel that some of the conclusions in this manuscript may inadvertently cause readers to over interpret the results of this study.

Major Compulsory Revisions:

I have concerns about the conclusions that have been reached based on a 15 point MCQ (especially since only 10 of the points are attributed to shoulder/knee anatomy). The authors consider this MCQ test to be their “Primary Target Parameter’, and although I acknowledge that there was a ‘statistically significant difference’ in performance between these groups, one must be wary of drawing major definitive conclusions from the MCQ test results – unless off-course an a priori power calculation was carried out. Was this done?

It is otherwise somewhat misleading to suggest that an over all test score 11.9/15 is significantly better than an 11.3/15 test score. The same applies to the sub-analysis test results for the shoulder and knee task. It may have been easier to demonstrate the benefits of these additional teaching tools if the authors had stated whether or not there was a ‘minimum pass mark’ or competency level for the tests. Was there a minimum pass mark?

A more comprehensive knowledge-based shoulder and knee anatomy test may have demonstrated differences more clearly and this should be highlighted in the study limitations.

My current understanding of the manuscript is that although, arthroscopy and ultrasound teaching do not have a major effect on learning joint anatomy, they are beneficial in raising interest amongst our future surgeons and attracting them towards a career in surgery. The authors should therefore consider re-wording the major findings of this study accordingly.

Minor Essential Revisions
1. Methods (First paragraph, second sentence) “2011 all second ......” : this is confusing. I presume you meant: “During 2011, all ......”

2. Methods (Lecture training section): Authors refer to “Sandwich theory and Bloom-taxonomy”. The reader may benefit from references.

3. Methods (Lecture training section): Why was “particular value taken on group dynamic processes and conflict communication”? Is this of particular relevance to anatomy teaching? If not, then this sentence should be excluded, as it is generic to group teaching scenario.

4. What was the previous teaching experience of the physicians who taught arthroscopy? Were they involved in regular teaching of medical students or residents?

5. There are a number of grammatical mistakes throughout the manuscript that will need addressing – particularly in the Discussion section.

6. Minor typos in Figure 1 “Examen” and the letter “a” in the bottom box before “20 points”

**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, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests