Author’s response to reviews

Title: Arthroscopic proficiency: methods in evaluating competency

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Author’s response to reviews: see over
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BioMed Central
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Dear BioMed Central Editorial Office,

Please find attached the revision submission for the manuscript:

Arthroscopic Proficiency: Methods in Evaluating Competency
MS: 1246281375740264

A point-by-point description of the changes made and responses to the referees’ comments are found in the following pages.

Thank you for your consideration,

Sincerely,

Justin Hodgins, MD
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Referee 1:

1. The conclusion should be modified: which kind of studies are from most scientific interest for the future?!

Agreed. The concluding statements have been revised with inferences that are more specific.

“There is uncertainty concerning the adequacy of arthroscopic training and the best means to achieve technical competencies. Skill acquisition utilizing surgical simulation requires further demonstration of transfer validity and the application of complex arthroscopic tasks in these environments. Valid assessment tools evaluating technical performance are required to establish objective parameters in arthroscopic training to generate standardized benchmarks of competency and ultimately improve technical proficiency.”

Referee 2:

Major Compulsory Revisions

1. Since the second week of January, 2012, review articles on this topic have been published. The authors should review recent literature and incorporate previous reports into their discussion.

An updated review including up to February week 2, 2013 was completed. An additional 10 articles were identified relevant to the manuscript and are included into the body of the text. The revised search engine results within the Methods and the figures have been updated accordingly. The Results sections and corresponding tables have also been revised.

Updates included:

(1) The validity of cadaver and surgical simulation in arthroscopic training:

Six Articles were identified describing the following topics; validation of orthopaedic bench models, role of simulation in identifying future orthopaedic surgeons, shoulder arthroscopy
simulation, learning and retaining simulated meniscal repair skills, randomized controlled trial of
development of simulated arthroscopic skills and a new systematic review of the internal
validity of arthroscopic simulators. Table 1 updated.

(2) The role of psychomotor analysis and arthroscopic technical ability:
Two additional original research articles were identified; safe levels of probing forces of menisci
and the validation of simple visual parameters for objective evaluation of technical skill. Table 2
updated.

(3) The validated assessment tools that are available to evaluate technical competency:
Two additional original research articles introducing objective arthroscopic assessment tools
were identified; the Arthroscopic Skills Assessment Form and the Objective Assessment of
Arthroscopic Skills (OAAS). Table 3 updated.

2. The literature review has been restricted to Medline and Embase, can the authors explain the
exclusion of other relevant databases such as Cochrane Central Register of Controlled Trials, Google
Scholar, etc.

During the study’s inception, preliminary searches were conducted using additional databases of peer-
reviewed literature (Cochrane Central Register, etc.) screening for relevant articles without success. The
Medline and Embase databases were the highest yielding sources of peer-reviewed journals containing
the desired topics with minimal redundancy. Using the chosen databases, we were able to provide a
detailed, reproducible literature search outlined in the methods section. This method allows us to
precisely describe the origin of the articles from which the results and conclusions of the manuscript are
drawn, a process that is not usually provided in survey and current concept reviews.
3. It is not clear how the articles were included. In other words, was it an abstract review, a full text review, and if so, how many reviewers rated the trials? Please clarify.

This information has now been added to the methods section of the manuscript. Two independent reviewers evaluated the abstracts and articles selected underwent fulltext review. Studies were excluded only if there was mutual agreement between the two reviewers. Additional detail has been added to the inclusion and exclusion criteria described in the methods.

4. Please indicate article type; case report, database, debate, etc. according to BMC Medical Education Guidelines.

The article is submitted as a research article reporting on systematic reviews of published research. It was not feasible to conduct a formal systematic review given the four major topic areas (1) – (4) stated in the background and abstract. The manuscript is a survey review identifying and appraising several topics within the umbrella of arthroscopic technical training, evaluation and competence, which includes multiple systematic reviews.

5. With respect to construct validity (page 9, paragraph 3), is distinguishing between novice and expert arthroscopists adequate, or do we need to be able to distinguish between different levels of novice users so that simulation can be used to train and not just credential orthopaedic residents?

Agreed. This point was introduced in the recent systematic review of the internal validity of arthroscopic simulators. The discussion section has been amended to introduce this important observation.

6. A paragraph should be added to define the various types of validity that are relevant to simulation training. Transfer validity is discussed at the end of this section, but it is important for the reader to understand the various aspects of validity and which types of validity are addressed by the assessment tool that is being used.

Agreed. At the introduction of the surgical simulation within the results section the concept of construct and transfer validity are introduced prior to discussing study findings.
7. In Table 1, ‘simulator is not a type of validity, please be more specific (i.e. construct, face, etc.)
The appropriate changes have been made. These original articles were designed to demonstrate
construct validity in the new simulators.

Discretionary Revisions

8. The literature was well-synthesized in this review, and given the knowledge that was acquired during
the course of this research, I would suggest that the authors add some comments to the discussion
section that are potential and specific solutions to the lack of evidence in the literature. In other words,
should surgical simulation be incorporated into residency programs so that a certain level of proficiency
is required before the resident moves to the operating room? Should surgical simulation be used to
screen potential residents?

The simulator portion of the discussion has been revised to reflect the new literature identified in the
most recent search. Barriers to the widespread acceptance of arthroscopic simulators may include: the
inability of current simulators to discriminate between trainees of intermediate skill levels and provide
objective feedback, the lack of studies demonstrating transfer validity and the heterogeneity of current
simulated environments. Further high-quality studies are needed demonstrating skill-sensitive
simulators with standardized validity protocols that consistently translate into improved technical
performance in the operating room. There is not sufficient evidence to comment on the utility of
surgical simulation in selecting potential surgical residents based on technical abilities. The literature
suggests differences in the innate abilities of random populations of medical students and
improvements in technical performance in individuals with no previous arthroscopic experience.
Whether this is predictive of selecting trainees with improved technical performance during an
orthopaedic residency and ultimately in the operating room is not yet known.

Minor Essential Revisions


Corrected.
10. Methods - Insert a comma after Week 2
Corrected.

11. Use ‘Figure’ instead of ‘Fig.’ when making reference to a figure.
Corrected.

12. Remove the ‘/’ before the ‘:’ in the Ovid Medline and Embase search results section
Corrected.

13. Page 9, 3rd paragraph: Please revise first sentence to: “In contrast to laparoscopy, the focus of the arthroscopic literature has been………”
Corrected.