Reviewer’s report

Title: Validation of the Imperial College Surgical Assessment Device for spinal anesthesia.

Version: 0 Date: 08 May 2017

Reviewer: Dan Benhamou

Reviewer's report:

This study assesses the use of the ICSAD device to track procedural performance when doing a spinal anaesthetic. Three categories of physicians (of various experience) were included to assess validity of the model. The authors state that the methods used allow for both construct and concurrent validity. The authors should however add one or two sentences in the Methods section to explain why is meant by these two terms which are likely unfamiliar to most readers.

The paper is original and well done and the use of a motion tracking device to assess procedural competence is interesting as it is thought to provide more objective assessments than those obtained with instructor review.

One limitation is related to the absence of power analysis done before the study. It is noticeable that the number of subjects included is small at first glance and several results may remain insignificant simply because of inadequate power. Results however show that this small number is enough to obtain several interesting correlations. The post hoc analysis is mentioned in the Discussion section but not described in the Results. Please provide details in the Results section.

Additional comments

The authors who described the system do not call it ICSAD but rather synchronised video and motion analysis. Please modify also in the title.

P9, L120: is the Gaumard S411 a model for "easy lumbar puncture"?

P9, L 127: Because the device is not well known, it would be useful to add one or two pictures showing the system and how are placed motion capture devices on the hands.

Ref 12 should be replaced by a reference which can be more easily accessed by readers such as Dosis A et al 2005 and/or Aggarwal R et al, 2008.

P12, L168: withdraw the word "perfect" and only provide the kappa coefficient here. The word "perfect" is a comment and this has no place in the Results section.

P16, L245: the sentence starting by "Also, Hayter..." is not clear. Please modify.
P16, L258: replace "by" by "for".

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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