Reviewer's report

Title: A prospective, randomized, blinded evaluation of a video-assisted '4-stage approach' during undergraduate student training

Version: 2 Date: 29 August 2013

Reviewer: Henning Biermann

Reviewer's report:

Thanks to the authors for submitting this interesting study. It is an article that explores particular aspects of training in the field of trauma for medical students. Two different approaches to teach standard procedures have been compared. The title implicates a prospective, randomized and blinded evaluation. Here are some limitations, that should be addressed in the discussion. Here are some suggestions to improve the paper:

Major Compulsory Revisions

1. The authors evaluate the effect of training with nine dichotomous items. There is no information on what the used items were. Listing them is necessary and only this allows the reader to judge on adequacy of the chosen items. The majority of the students get all nine points without a significant difference. The global performance is in contrast to that significant better in the study group. It should be discussed if the nine items are appropriate to distinguish between a good and an excellent performance and if there is a bias.

2. The study compares a standard 4-step/stage approach with a media supported approach, where the first two steps have been replaced by a video. It was not absolutely clear to me, but it seems as if there is a difference in step two. While the standard second step contains a demonstration with acoustic explanations from an instructor, the video seems to work with type overlays. That means the students have to read them instead of listening to them. This could address the type of learner (aural-style learner/ visual style learner). This should be briefly discussed.

3. The authors state in the discussion, that “the differences in presentation styles in the control group were also reduced since the instructors began using the video to prepare their own lessons”. Was that during the study period or before? What has been done to reduce the differences in the control group before? Did the instructors have an equal background like a PHTLS / ATLS instructor status? Might those mentioned differences be the cause of the improved global performance evaluation of the study group?

4. The randomization did not include individuals but only the allocation of groups. Have there been any differences in the demographic data of individuals apart from gender? (age, learning type, pre-course experience in the field of trauma / ABCDE approach) A table with baseline group characteristics appears
necessary. The distribution of individuals to the groups by the dean’s office appears to be at least doubtful when the title of the paper indicates a randomized evaluation and should be addressed in “limitations”. From my point of view individuals as well as groups have to be randomized for categorizing it as randomized evaluation.

5. The relevance of the student’s subjective impression of knowledge gained and the free-text comments is not clear. The data compares the period before and during the study, but not the study group with the control group. Within the paragraph “methods” the authors describe a six-point Scale on how to evaluate a pre-hospital trauma patient. Within the paragraph “results” the authors describe a percentage concerning knowledge increase about how to treat a trauma patient. Is this the same data from the same item? Please report the results Pre-Post on the Likert-Scale. How is the percentage of knowledge increase defined? If this is data from the same item then please report the results to the described Likert-Scale.

Were the Likert scales really titled “totally agree” vs. “not at all true” or is this due to translation? I would expect them to be “agree/not agree” or “true/not at all true”.

6. “The topic of the module was the structured examination of a trauma patient following the ABCDE mnemonic protocol [6] as well as integral basic treatment and monitoring (neck immobilisation, monitoring of ECG, pulse oximetry, blood pressure, oxygen administration, insertion of a peripheral venous cannula).“ Regarding to the students’ evaluation the course is about examination of a pre-hospital trauma patient. This should be clarified. Why has the ATLS students manual been cited, and not the PHTLS Manual? If the examination is according to the PHTLS concept: Why is ECG part of the primary survey, which normally is not the case? Are there other modifications to the approach?

7. The examiners were only blinded to the allocation of the groups. Has there been a difference in the results of the two examiners, since KF/KS, in contrast to OS, has designed the study and knew about the endpoints? Maybe this should be discussed in “limitations”.

Minor Essential Revisions

1. There is a low number of citations used for discussion. I would recommend to consider a search for additional citations, since half of the cited papers have already been cited from the authors of reference eight. Maybe there is new data available.

2. It looks like the course is part of the curriculum. It should be clarified if this is true or if the course is facultative.

3. “This could have <<BEEN>> useful in assessing the results of the relative increase in knowledge, and in detecting potential differences in the persistence of the imparted knowledge depending on the teaching method”
4. Abbreviations of the authors: “KF” is obviously used for Katrin Schwerdtfeger, why not “KS”? 

5. Methods 2nd paragraph: “patient data” instead of “patient date” 

6. Methods – intervention 2nd /3rd line: either use “14” or “fourteen” 

7. Results – utilization of resources 3rd line: “two” instead of “tow” 

Discretionary Revisions 

1. ABCDE mnemonic has already been used for the evaluation of casualties in 1979 by Nancy L. Caroline in “Emergency care in the Streets” and since then widely used and therefore not specific for the ATLS manual 

2. 4-stage approach was adapted for resuscitation training by Bullock as cited but originally published by Peyton as 4-step approach and included the trainees telling what they do, before demonstrating it in the fourth step 

3. PHLTS, ALS, ETC are not in the list of abbreviations 

All in all the study seems to be very interesting and relevant for this aspect. I would be happy to read it after the mentioned points are revised and clarified.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I am co-author of one of the cited articles. Apart from that I declare that I have no further competing interests