Reviewer’s report

Title: To strengthen self-confidence as a step in improving prehospital youth laymen basic life support

Version: 1 Date: 16 May 2019

Reviewer: Peter Brinkrolf

Reviewer's report:

Dear authors,

thank you very much for your well-written manuscript covering an interesting topic. However, I have some concerns regarding publication, making major revisions necessary:

1) My major concern is that this study reports a quite obvious, expectable result which does not "help" the reader in doing anything "better" or getting new insights: Briefly, you say: Teaching someone something somehow rises his self-confidence in the subjects taught. This is not very "new" and therefore - to my opinion - questions the relevance of the manuscript. However, the topic is important and I would be happy to encourage the others to get this study "valuable" enough for publication. It would be very helpful, if the study could add something more beyond what we already know. To give you some ideas of questions you could analyze:

- Compare short vs. extensive training: How does the length of training effects the results? Is there a "minimum" of time needed to get such improvements?

- Or: Does the effect last for long? For how long? When should the training therefore be repeated?

- Or: You could compare two different methods of training to show potential differences / better ways of training to get an optimum effect

- Or: Compare different ages of participants - is there a minimum (or maximum??) age to achieve those positive results

I guess you understand my intention - I would be happy to re-review the manuscript if any of the aspects named above (or some other interesting aspect) could be added to get some more relevance.

2) Why did you choose 50 study participants? Was this based on a power calculation? Were there any exclusion criteria? Please clarify. The size of a study population should always be determined before by means of a sound power calculation
Please let me point out some further minor aspects to be improved:

1) Please spell all abbreviations out fully, when using them the first time, e.g. „CPR“.

2) You cite “Herlitz 2017” six times on page 3. Please shorten or give other references

3) You distinguish between BLS and CPR. Please explain this.

4) Please cite the coauthor of the study by Böttinger 2015 as „Van Aken“ (instead of just „Van" on p4 Line 11 and instead of "Aken Van" on p3 line 4)

5) Were the 3 steps of the study all done within one day or was there a longer time interval in between? Do you think, the time interval between the 3 steps influenced your results? Please clarify and discuss

6) How was the qualification of the educators? Was the training always done by the same person? Are the educators the same people, who recorded and analyzed the results? Please describe the methods in more detail

7) How was the questionnaire developed and validated? Please describe in more detail.

8) Page 5, line 46-49: „The statement; I would risk causing harm to the person I do CPR on, improved by decreasing from 53 to only 14 on the 100-point Likert scale were 0 represented No." Please comment, why you rate this as an improvement. Causing harm to the patient (e.g. a rib bone fracture) is acceptable while performing CPR - furthermore, the fear of causing harm hinders laymen to perform CPR. Therefore, I do not see the improvement, If LESS people would risk causing harm after your training.

9) Were there any differences between the study participants regarding the last CPR training? Did the time interval between last CPR training and study affect study results?

10) Did you teach mouth-to-mouth-ventilation? And if yes, why? Please clarify and discuss.

11) Did you teach use of AED?

12) Which traumatic event was simulated by the actor? Did you teach specific differences between traumatic and non-traumatic OHCA? Why did you chose the rare case of traumatic OHCA?

13) Were there any study participants, who had previous additional CPR training, e.g. because they are firefighters or school paramedics? Please give more information on the participants.

14) The statement "For a person, suffering a cardiac arrest, to have the chance of survival, it is required that another individual is present and performs CPR (Herlitz 2017)." is too strong. For sure, there are survivors of cardiac arrest who did not receive bystander-CPR. Bystander-cpr increases the chance of survival, but is not a "conditio sine qua non"
15) Did you use a paired t-Test? As you ask the same individuals twice, you should do so.

16) In tab one, last statement, there is an error with a additional "do" in the sentence.

17) You write in your limitations section "A limitation is that this study did not bring the youths' CPR skills to perfection". I do not see the context of this statement, as you do not at all report anything about the participants' CPR skills. Please explain or modify.

18) Were there any differences detectable between different age groups or genders? You comment on it in your discussion, but don't reflect on your own results.

19) Please reread your discussion to minimize unnecessary repetitions.

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

No

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

Unable to assess

**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

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

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