LETTER TO THE EDITOR

Reply to: Wanted: Automated objective proficiency assessment metrics for the FAST exam (and other POCUS studies)

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We thank Drs. Bell and Holden for their appreciation and valuable insights [1] about our recent work on the evaluation of sonographers' skills by means of hand motion analysis [2].

We perfectly agree with them that the measurement of probe motion should be coupled to that of hand motion. Unfortunately, in our experimental set, the probe was almost always occluded, thus it could not be recorded by the cameras.

This is one limitation of optoelectronic devices, as already discussed in our investigation [2]. In contrast, Bell et al. [3] used a different technology (electromagnetic tracking) that is free from this limitation but that can measure only a reduced number of markers.

To overcome this problem, we calculated both conventional and standardized metrics to assess hand motion, and found useful information related to experience (both groups performed almost the same number of movements per second, but experts quickly performed more probe heading adjustments in a reduced working volume) that are currently being used for didactic purposes. All this information can partially compensate for the current lack of a direct assessment of the action at the ending edge of the tool.

In practical terms, thanks to the results of our research, we are now limiting the elbow and forearm excursion during US training. This enhances the trainee perception of the more efficient (time and path length) and effective (achievement of the proper views) handling of the instrument, speeding up the improvements of the wrist motion, and the ability to tilting and fanning the probe (the action end of the probe reported by Holden [4]).

We are grateful to Drs. Bell and Holden for underlining this important part of our common research. We are already working toward the definition of a new protocol that may overcome the current limitations.

Compliance with ethical standards

Conflict of interest Chiarella Sforza has no conflict of interest to declare. Mauro Zago has no conflict of interest to declare. Matteo Zago has no conflict of interest to declare.

References

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