

Notes on [See one—practice—do one—practice—teach one—practice: The importance of practicing outside of the operating room in surgical training](#) by Jason J. Han MD, Will Patrick MD

By Jason J Han, MD

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This article from the December issue of the *Journal of Thoracic and Cardiovascular Surgery* by Drs. Han and Patrick pose one major question – should trainees practice surgery on their own as much as they learn to operate in the OR?

The authors contend the undeniable importance of practice has long been recognized across various high-performance disciplines such as music or athletics.

Yet, in a field as technically demanding as cardiothoracic surgery, and as regulatory pressures continue to limit autonomy and training opportunities for trainees in today’s healthcare climate, the importance of practicing on one’s own remains loosely defined and vaguely enforced.

Thus, the authors propose to create a culture of practice that is encouraged by teachers and embraced by trainees.

Its benefits? The authors put forward 3 major potential advantages:

1. It increases the efficiency of surgical education.

In practice, it is possible to generate conditions that are far more productive than in the OR. Trainees can participate in massed practice with high-repetition and constant-feedback. In the time it takes to complete one CABG skin-to-skin, a trainee can practice the coronary anastomosis innumerable times, fine-tuning skills and reinforcing muscle memory.

2. Reinforcing muscle memory outside of the OR can free up more mental space to take away more nuanced learning points from each operation

Instead of being preoccupied with the mechanical aspects of the operation, a well-rehearsed trainee can participate in more sophisticated decision-making processes, essentially starting on a different level within a learning curve.

3. Being prepared allows you to be more creative

Having practiced something hundreds if not thousands of times provides a surgeon with a new perspective. When Dr. Dwight Harken was confronted with the challenge of removing shrapnel from wounded soldiers’ hearts in June of 1944, he was able to succeed because he had spent years in the lab previously learning how to remove foreign objects from a dog’s mitral valve without killing the animal.

If you’re wondering what would define “good” practice, the authors also propose several ideas on how to successfully encourage or instruct trainees to practice.

First, it has to become a part of the training philosophy. It requires daily, persistent, gritty investment of time and energy. The gains are going to be so gradual as to appear imperceptible at times, but one has to maintain faith in its value.

Second, we need to create drills – focused, repeatable tasks designed to address specific aspects of one’s performance. It breaks down complex operations into concrete learning goals. It can be low-fidelity and low-cost as to be easily accessible from home. Drills are going to be central to how trainees improve on their own.

Lastly, expert guidance and coaching are essential. Habits are only as good as they are safe and effective. When trainees are stuck after practicing on one’s own for some time, guidance is needed intermittently to set the course straight. The attending surgeons can point out these areas explicitly at the end of a case, and establish an expectation for trainees to work on these areas independently prior to the next case.

Overall, this thought-provoking article by Dr. Han and Dr. Patrick is a must-read for all trainees. If you are interested in learning more, please find [the full article here](#) at the *Journal of Thoracic and Cardiovascular Surgery*.