Supervised Cognitive Experiential Training of Surgical Skills

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Background

- Surgical training involves multiple domains and levels of skills acquisition. Learning is a complex, multifactorial, and evolving process. Part of the educational process takes place outside the operating room and simulation lab using substantial, concise, and highly organized learning materials provided by educational institutions and academic organizations.
- Learning operative skills is an essential training component. These skills are developed and evaluated during training rotations. One of the challenges in this process is ensuring the acquisition of all the required surgical skills during training.
- Teaching surgical skills is demanding and challenging, pushing surgical educators and programs to continuously work to improve training quality and outcomes. A common issue with training surgical skills is indoctrination. Mentors frequently advise their trainees to perform in a specific pattern that is similar to the mentor's performance. When trainees deviate from this pattern, they may be criticized regardless of their performance.
- Indoctrination leads to trainees imitating their mentors with the same surgical techniques, approaches, skills, and applications without a deeper understanding of the rationale and reasoning, alternative approaches, and other applications.
- Deviating from the mentor's pattern does not necessarily equate to poor performance. Consequently, trainee's fail to fully develop understanding, application, analysis, evaluation, and innovation skills due to a limited experience to build these skills due to indoctrination by mentors.
- A better approach to training surgical skills where trainees are prompted to **evaluate and decide** will likely improve learning quality.
- The purpose of this abstract is to review training by supervised cognitive experience as a surgical training approach.

Objectives

- To improve the training quality and outcomes of surgical trainees by enhancing their understanding, application, analysis, evaluation, and innovation of surgical skills through supervised cognitive experiential training.



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Methods

- Trainees are encouraged to engage in self-studying in preparation for the simulation lab or operating room.
- Learning opportunities for surgical skills are presented to promote understanding of the procedure and thoughtful selection of the approach in both the simulation lab and the operating room.
- On performing surgical procedures or practicing in the simulation lab, the surgical trainee is prompted to answer sequential questions about the available options of doing the step or skill and why it should be done in a particular way, while also providing alternatives.
- A wide range of training moments such as dissecting, exploring, mobilizing, and repairing should be included.

Results

- Training by cognitive experience stimulates the trainee to think deeply and independently to make decisions and manage during a surgical procedure.
- The mental exercise initiates and scientifically guides the inquiry in the trainee's mind, which leads to a series of cognitive learning process, culminating in high intellectual learning and mastering of operative management.
- Supervised cognitive experiential training initiates the trainee's further search for improvement and innovation, especially with actively evolving technology.
- This training approach can be similarly reproduced in a SimLab or in a digital module format. These formats are highly efficient in creating a fully shared curriculum for all trainees at different times and places.

Conclusions

- **Training by supervised cognitive experience is a promising and valuable training approach.**
- **This method enhances the development of thoughtful and innovative surgical approaches and skills.**
- **Supervised cognitive experiential training is a practical and reproducible training approach.**

References

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