

YOUR LAPSIM CERTIFICATION PROGRAM™ FROM SURGICAL SCIENCE

A VALIDATED CURRICULUM FOR RESIDENTS IN GENERAL SURGERY

The LapSim Certification Program™ - General Surgery is currently in use at local, regional, and national levels around the world to establish a minimum proficiency level, in terms of hand-eye coordination, depth perception, spatial awareness, and instrumentation before surgeons treat their first patients. Only the Surgical Science LapSim® comes complete with a curriculum for general surgery.

Here is why we can make these claims. The American Journal of Surgery published a study in which the following was concluded:

Resident subjects who trained on Surgical Science LapSim® and passed Ahlberg EXAM demonstrated a 60% decline in errors during their first 10 procedures in the OR, and 40% reduction in operating time, as compared to the control group.

SURGICAL SCIENCE HAS THE ONLY TRAINING SIMULATOR WITH THE LAPSIM CERTIFICATION PROGRAM™ GENERAL SURGERY

- LapSim® is the most progressive laparoscopy technical skills education platform
- Set a standard: by using our LapSim Certification Program™, you make sure all your residents reach proficiency level
- Key is self-paced and goal-directed learning as opposed to time/volume-based training



PROPRIETARY PROCESS FOR IMPROVED RESULTS

The LapSim Certification Program™ - General Surgery consists of the following courses, included in the LapSim® standard package, and especially designed for residents in general surgery.

LapSim Certification Program™ General Surgery	Phase	Completion Time
Expert Training 40 tasks	Training phase	8-24 hours
Ahlberg EXAM 12 tasks	Exam	1 hour

LapSim® Expert Training is a robust introduction to the fundamentals of laparoscopic technical skills, and a necessary component of the LapSim Certification Program™ - General Surgery. The Ahlberg EXAM is based on the study published in The American Journal of Surgery (AJG) by Gunnar Ahlberg et al, "Proficiency-based virtual reality training significantly reduces the error rate for residents during their first 10 laparoscopic cholecystectomies"¹ which showed a direct impact from LapSim® training on performance in the operation room.

CREATE A WORLD CLASS RESIDENT PROGRAM

When your residents pass the LapSim Certification Program™ - General Surgery, you know that their proficiency level has been benchmarked against surgeons who have carried out 300+ laparoscopic cholecystectomy surgeries, according to the study, and that they will enter the operating room with an elevated confidence.

¹Proficiency-based virtual reality training significantly reduces the error rate for residents during their first 10 laparoscopic cholecystectomies", Gunnar Ahlberg et al., The American Journal of Surgery 193 (2007) 797-804

EXPERT TRAINING: DAILY TRAINING TO IMPROVE SURGEON PERFORMANCE

Expert Training consists of 40 surgery exercises focusing on different skill sets and components. The exercises are programmed to increase in difficulty. The resident must pass the first exercise to be able to move on to the next exercise. This ensures progressive learning, preventing the residents from skipping ahead. Once the resident has passed all the 40 exercises, he/she is ready to proceed to the Ahlberg EXAM course on LapSim®.

The time needed to pass LapSim Certification Program™ - General Surgery may vary a lot between residents. Our experience is that some residents may need only eight hours while others need 24 hours to get through the full validated curriculum. The central idea is that every resident should reach the same performance standard through self-paced training, rather than spending a certain amount of time on the tasks.

EXERCISES INCLUDED IN EXPERT TRAINING

1. Camera Navigation
2. Instrument Navigation
3. Coordination
4. Grasping
5. Lifting & Grasping
6. Cutting
7. Clip Applying
8. Grasping (level 2)
9. Fine Dissection
10. Handling Intestines
11. Instrument Navigation (level 2)
12. Camera Navigation (level 2)
13. Cutting (level 2)
14. Clip applying (level 2)
15. Lifting & Grasping (level 2)
16. Lifting & Grasping (level 3)
17. Handling Intestines (level 2)
18. Cutting (level 3)
19. Instrument Navigation (level 3)
20. Coordination (level 2)
21. Grasping (level 2)
22. Clip Applying (level 3)
23. Suturing
24. Fine Dissection (level 2)
25. Cutting (level 4)
26. Coordination (level 3)
27. Instrument Navigation (level 4)
28. Lifting & Grasping (level 4)
29. Clip Applying (level 4)
30. Lifting & Grasping (level 5)
31. Grasping (level 3)
32. Suturing (level 2)
33. Grasping (level 4)
34. Fine Dissection (level 3)
35. Suturing (level 3)
36. Instrument Navigation (level 5)
37. Grasping (level 4)
38. Fine Dissection (level 4)
39. Clip Applying (level 5)
40. Suturing (level 4)



AHLBERG EXAM

The Ahlberg EXAM contains the exercises and settings used in the study by Gunnar Ahlberg et al. (reference above) where they confirmed the efficacy of metric-based virtual reality training to proficiency for residents first ten laparoscopic cholecystectomy surgeries. The LapSim Certification Program™ - General Surgery and its settings are identical to the one used in the study, indicating that when a resident passes the course, he/she is likely to have reached the same level of technical skills.

There are six exercises from LapSim® Basic Skills in the Ahlberg EXAM, and proficiency must be shown twice for each exercise.

"In conclusion, we believe that the results in this study demonstrate that skills acquired in LapSim® simulator improves the initial learning curve in laparoscopic cholecystectomy and that the system is clinically validated for this purpose."

Gunnar Ahlberg, MD, Ph.D.

BEHIND THE STUDY

The hypothesis was that resident training on a Surgical Science LapSim® would transfer to improved performance in the operating room. The first step was to identify LapSim® exercises for expert surgeons to complete. These have been called 6R. The second step was to identify five expert surgeons who have individually completed over 300 cholecystectomy surgeries. Once qualified for the study, these surgeons completed 6R. The median results were used to create the expert level, certification or Ahlberg EXAM.

A sample size of residents completed Basic Skills exercises at various difficulty levels, now packaged in the Expert Training course, and then moved on to complete Ahlberg EXAM. The number of attempts to pass the Ahlberg EXAM ranged from 161 to 594. Here is the very point of simulation training: you train until you show competence, not until you reach a certain number of training tasks or hours!

Once the residents had demonstrated proficiency and passed Dr. Ahlberg's Exam they entered the operating room and performed their ten first individual full laparoscopic cholecystectomy surgeries under supervision by an experienced laparoscopic surgeon and were scored blindly through videotaping. Surgical errors according to a defined list (exposure errors, clipping and tissue division errors, dissection errors) were assessed.

EXERCISES INCLUDED IN AHLBERG EXAM

1. Suturing
2. Suturing
3. Lifting & Grasping
4. Lifting & Grasping
5. Cutting (right)
6. Cutting (right)
7. Cutting (left)
8. Cutting (left)
9. Clip Applying
10. Clip Applying
11. Suturing
12. Suturing

DR. AHLBERG'S RESULTS

The results of this study indicated that the VR trained group actually transferred their skills into the operating room and performed to a significantly higher level during their first 10 cholecystectomy surgeries, as compared with the control group. Subjects in the control group made, on average, 3 times as many errors as the VR-trained group and displayed 58% longer surgical times as compared with subjects in the VR-trained group.



GUNNAR AHLBERG, MD. PH.D.

Graduated from Medical School at the Karolinska Institutet in Stockholm 1990. Specialized in General and Pediatric surgery after fellowship in Stockholm. Founded the Simulation training center at the Karolinska University Hospital, implementing VR-based training curricula in resident programs. Chairman of the Swedish laparoscopic society 2003-2008. Served as EAES treasurer 2009-2016. Subsidiary CEO, GHP Specialty Care AB, Stockholm branch office. Specialties: Medical Management, Surgery, Minimal Invasive Surgery, Educational Research in Medicine, Virtual Reality Simulation.

ABOUT SURGICAL SCIENCE

Surgical Science develops and markets virtual reality simulators for evidence based laparoscopic and endoscopic training. Through simulations, students, novice surgeons and medical doctors can improve their psychomotor skills, instrument handling and confidence required to perform advanced medical and surgical procedures.

Through ongoing research and close collaboration with the medical community, Surgical Science continues to provide medical professionals, the tools to improve medical performance in a cost-effective and standardized manner. Training centers and institutes worldwide use our complete systems for practice, validation and certification of students, surgeons, and medical doctors.

If you would like to know more about simulation training, please do not hesitate to contact us.

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