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VIRTUAL TRAINING, REAL SKILLS

# YOUR LAPSIM **CERTIFICATION PROGRAM™** FROM SURGICAL SCIENCE

## A **VALIDATED CURRICULUM** FOR RESIDENTS IN **GYNECOLOGY**

The LapSim Certification Program™ - Gynecology 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 validated curriculum for gynecology surgery.

Here is why we can make this claim. The British Medical Journal published a study in which Dr. Larsen concluded: Residents who train on Surgical Science LapSim® and follow a pre-defined curriculum demonstrate a proficiency level equivalent to surgeons who have performed 20 - 50 patient procedures.

## SURGICAL SCIENCE HAS **THE ONLY** TRAINING SIMULATOR WITH THE **LAPSIM CERTIFICATION PROGRAM™ GYNECOLOGY**

- 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™ - Gynecology consists of the following courses, included in the LapSim® standard package, and especially designed for residents in gynecology.

| LapSim Certification Program™ Gynecology | Phase | Completion Time |
|---|---|---|
| **Expert Training** 40 tasks | Training | 8-24 hours |
| **Salpingectomy Prep** 2 tasks | Training | 2 hours |
| **Larsen EXAM** 3 tasks | Exam | 2 hours |

LapSim® Expert Training is a robust introduction to the fundamentals of laparoscopic technical skills, and a necessary component of the LapSim Certification Program™ - Gynecology. The Larsen EXAM is based on the study by Christian Rifbjerg Larsen et al, “Effect of virtual reality training on laparoscopic surgery: randomised controlled trial”[1] which showed a direct impact of LapSim® training on outcomes of patient based gynecology procedures.

## CREATE A **WORLD CLASS** RESIDENT PROGRAM

When your residents pass the LapSim Certification Program™ - Gynecology, you know that their technical skills have been taken to a level equivalent to the experience gained after 20-50 patient procedures, and they will enter the operating room with elevated confidence.

*[1]”Effect of virtual reality training on laparoscopic surgery: randomised controlled trial”, Christian R. Larsen et al, British Medical Journal 2009; 338:b1802*

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## **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. 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 Larsen EXAM course on LapSim®.

The time needed to pass the LapSim Certification Program™ - Gynecology may vary 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)

## SALPINGECTOMY PREP

Following the fundamental Expert Training course, the resident brings the newly acquired skills into a full salpingectomy procedure in its real anatomical setting.

EXERCISES INCLUDED

Salpingectomy Prep 1
Salpingectomy Prep 2

## LARSEN EXAM

The Larsen EXAM contains the exercises used in the study by Christian R. Larsen et al (reference above) where he verified that virtual reality training improves surgeon performance in the operating room. The LapSim Certification Program™ - Gynecology and its settings are based on the ones used in the study, indicating that when a resident passes the certification program, he/she will have reached the same level of technical skills as surgeons who have completed 20 - 50 patient procedures.

### EXERCISES INCLUDED IN LARSEN EXAM

Larsen Lifting + Grasping
Larsen Cutting
Larsen Salpingectomy

*"Training in proficiency based skills should be incorporated in a comprehensive surgical training and assessment curriculum for all residents."*

*Christian Larsen, 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. Residents in the test group were instructed to train on pre-selected training courses on the LapSim® until they achieved expert level. This was designed by Dr. Larsen. This LapSim® expert level was determined in a previous study by senior gynecologic consultants who had carried out more than 100 advanced operations during the preceding year[2].

The number of attempts to pass Dr. Larsen's Exam have been reported to range from 8 to 99 repetitions, and 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. Larsen's Exam, they entered the operating room and performed their first individual right sided salpingectomy, under supervision by a senior colleague familiar with the purpose of the trial. Two independent and blind observers assessed the recorded operations. To evaluate the performance levels of the residents in the patient operations, a previously validated general and task specific rating scale (inspired by the widely used standard Objective Structured Assessment of Technical Skills scale, OSATS, developed by Martin et al and Reznick et al during the 1990s) was used[3].

## **DR. LARSEN'S** RESULTS

The main outcome measures were: 1) technical performance according to the salpingectomy OSATS rating scale, 2) duration surgeon spent operating on the patient. Regarding technical performance, simulator trained residents scored at the same level as surgeons who had carried out 20 - 50 patient procedures. At the same time, the operation time was reduced by 50% compared to the control group (from 24 to 12 min). In other words – by training on a simulator to a predefined and proficiency based level, the beginner resident level of technical skills can be fast tracked by pre selected simulation training and expensive operating room time can be reduced.

*[2]Larsen CR, Grantcharov T, Aggarwal R, Tully A, Sorensen JL, Dalsgaard T, et al. Objective assessment of gynecologic laparoscopic skills using the LapSimGyn virtual reality simulator. Surg Endosc 2006;20:1460-6.*
*[3]Larsen CR, Grantcharov TP, Schouenborg L, Soerensen JL, Ottosen C, Ottesen BS. Objective assessment of surgical competence in gynaecological laparoscopy: development and validation of a procedure specific rating scale. Br J Obstet Gynaecol 2008;115:908-16.*

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## 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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