



Development of a Laparoscopic Simulation Training Hub: An Irish Pilot Study

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- Objective**

To determine the validity of a Regional Laparoscopic Simulation Hub using high and low fidelity trainers in order to develop specific Gynaecological Surgical Skills for trainees in Ireland.

- Design**

The challenges of developing and maintaining Gynaecological surgical skills has now escalated to critical levels with the COVID-19 Pandemic, alongside high service provision in Obstetrics and limited theatre time. Following the publication of the RCOG Gynaecological Surgery Recovery Plan a renewed emphasis in addressing this vital area is emerging including the development of regional training hubs.

Our design process for the development of a regional simulation hub in Dublin began initially with a needs assessment via an anonymous surgery to all O&G trainees in Ireland. The submission of grant applications for funding achieved €30,000 to purchase laparoscopic simulation equipment. A program was then designed and matrixed to development needs identified in the survey and to the Ireland O&G Core Curriculum.

- Study Design and Methods**

Pilot study involving five Basic Specialist (BST/ST1-ST3) O&G Trainees based in Dublin commenced in January 2022. All BST trainees offered opportunity and candidates selected at random to avoid bias. Number limited due to only 5 simulators currently available.

Confidence levels in performing procedures and managing complications assessed via structured survey at the beginning and end of the programme. Confidence levels scored using a 1 - 5 point ranking. Trainees then attended five protected 3 hour training sessions.

Each session structures to include a short directed tutorial at each session by supervising Consultant, time allocation to practice planned skills on the box trainers followed by one 30 minute session per week on the Laparo® Analytic Simulator trainer completing the set modular assessments. Feedback from the Analytica trainer included different parameters such as training time, economy of movement, activity, visibility and smoothness. Progression was tracked throughout the program.

- Results**

None of the trainees taking part had undertaken formal training on a lap trainer before. 60% were not comfortable using any laparoscopic entry before the course.

Following completion of the course. Confidence levels in performing a laparoscopic salpingectomy for ectopic pregnancy and identifying surgical complications improved over the course (Table 1).

Table 1. Confidence Levels (1-10)

Average confidence levels pre and post course		
	Pre Test	Post Test
Performing Lap ectopic	0.4	4
Identifying ureteric injury	1.2	4.2
Identifying any surgical complication	2	5
Intraoperative management uretric injury	0.2	2.75
Intraoperative management bladder injury	0.2	3.75
Intraoperative management vascular injury	0.75	4
Intraoperative management bowel injury	0.2	3.25

- Time to completion of all three tasks on the box trainer and improved between the first and fifth training session (Fig 1).
- Training time and economy of movement (Fig 2) on performing the same modular assessments on the Laparo Analytic® simulator improved through the course for all trainees.
- Conversely there was no improvement on activity, visibility or smoothness.

Figure 1. Low Fidelity Box training tasks –Marbles, Rubber Bands and Thread Manipulation

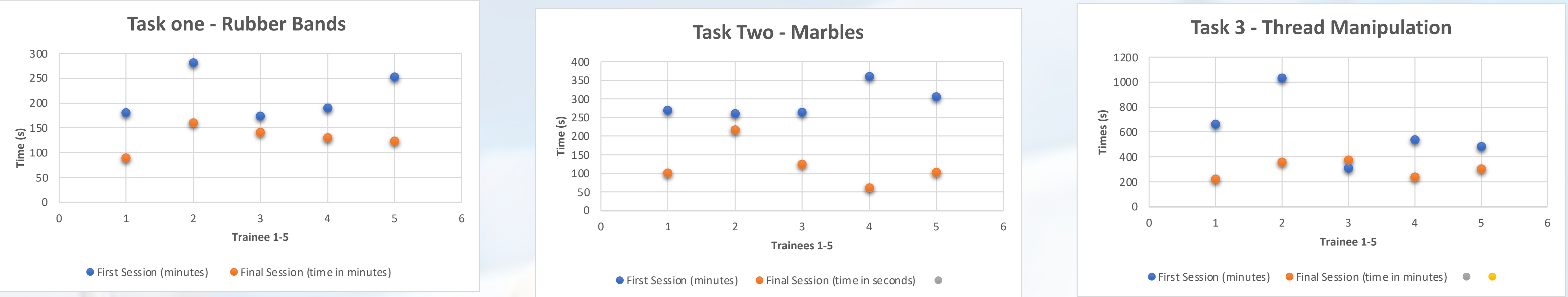
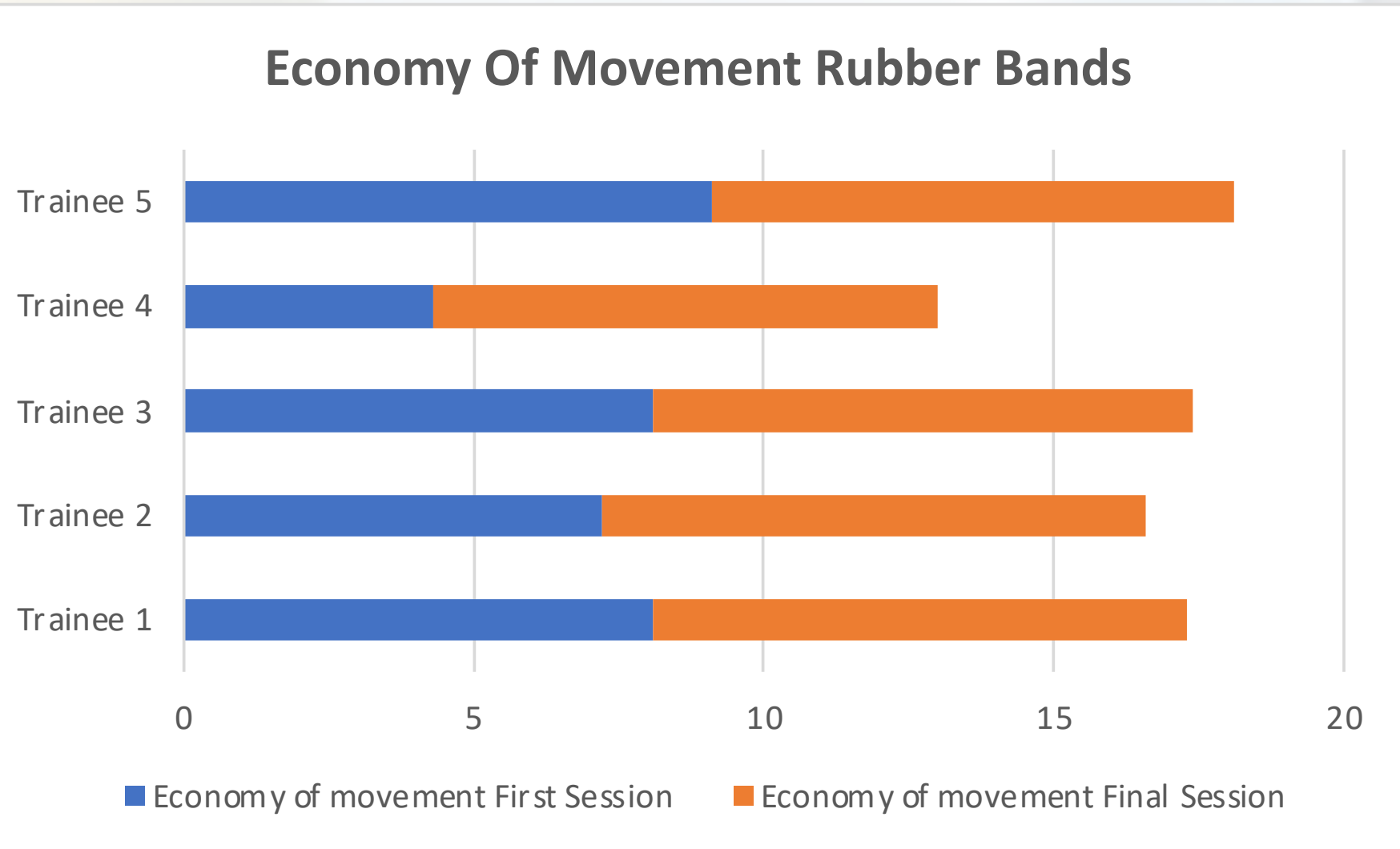


**Figure 2. Analytica simulator trainer – Rubber bands
Measurement of Economy of Movement Scores**



- Conclusions and Programme Implications**

Structured laparoscopic gynaecology simulation training hubs can provide both objective and subjective improvements to surgical skills and confidence. Analysis limited due to study number size. However, this pilot hopes to advocate that development and resourcing of these regional hubs should be endorsed throughout Ireland in order to support our trainees and improve patient care.