



# The ASSESS Trial

## - Benchmarking the Fundamentals of laparoscopic Surgery -

F. Oehme<sup>1,2</sup>, L. Weber<sup>1,2</sup>, J.P. Bereuter<sup>1,2</sup>, A.C. Selbmann<sup>1,2</sup>, J. Runge<sup>1,2</sup>, J. Weitz<sup>1, 2</sup>, M. Distler<sup>1,2</sup>, Assess Trial Collaboration Group, F. von Bechtolsheim<sup>1,2</sup>

<sup>1</sup> Department of Visceral, Thoracic and Vascular Surgery, University Hospital Carl Gustav Carus, Technische Universität Dresden, Dresden, Germany.  
<sup>2</sup>Surgical Skills Lab Dresden, University Hospital Carl Gustav Carus, Technische Universität Dresden, Dresden, Germany.



### INTRODUCTION

Training in **minimally invasive surgery (MIS)** is essential to master the **steep learning curve** and build confidence for real procedures. Dry lab concepts like the “**Fundamentals of Laparoscopic Surgery**” (FLS) provide valuable structure.

### AIM

**The Problem:** FLS exercises, central to US board certification, lack benchmark criteria in Germany, limiting comparability and motivation, especially as MIS training can be challenging and frustrating.

The **ASSESS-Trial** is a prospective study that aims to establish the **first benchmark dataset for the FLS curriculum**, enabling comparability within peer groups and across centers, and supporting national performance feedback.

### METHOD

This prospective, multi center trial included students and physicians working at surgical clinics (visceral-, thoracic-, pediatric surgery, gynecology, urology) in Germany between 10/2023 and 09/2024. Participating centers were visited individually:

- Standard laparoscopic set-up** was brought (tasks, ForceSense, TrEndo – Motion sensors, laparoscopic instruments)
- Fundamentals of laparoscopic Surgery tasks** were performed (*PEG-transfer, Precise Cutting, Intracorporeal Surgical Knot*)
- A personal questionnaire** collected data on training level, surgical experience, and current position in the clinic.
- A questionnaire specific to each clinic** collected data on the structure, size (number of beds), and number of surgeons employed.



365 days



> 50 hospitals



> 650 datasets

### RESULTS I

The ASSESS trial was conducted across **54 centers** over **12 months**, including 104 students (15.5%) and 558 physicians (84.5%).

Of all participants, 180 (32.3%) were female, 280 (50.2%) male, and 87 (15.6%) undisclosed. Among physicians, 254 (45.9%) were junior residents, 88 (15.9%) senior residents, 126 (22.8%) consultants, 58 (10.5%) senior consultants, and 27 (4.9%) heads of department.

Distinct **benchmark criteria** were identified for each group, with **significant differences (p < 0.001)** in time, motion, and force parameters across all tasks. Notably, heads of department were fastest in precise cutting and intracorporeal knot tying but applied **0.5–1 N more force**.

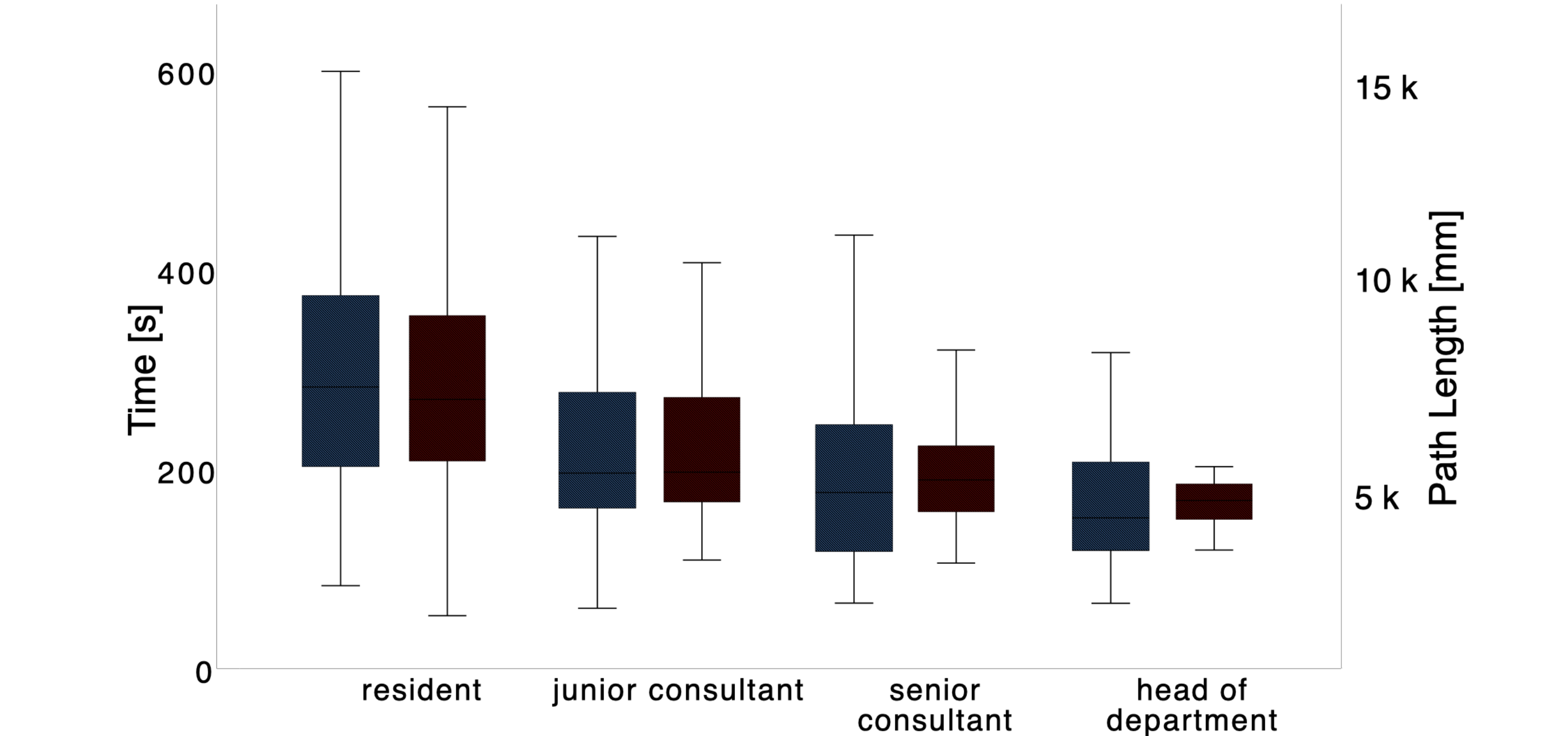


Figure 1: Time and Path length in Intracorporeal Knot between different groups of seniority  
Significant differences can be seen between all groups, both in terms of time and path length. With increasing seniority, movements become more efficient and faster.

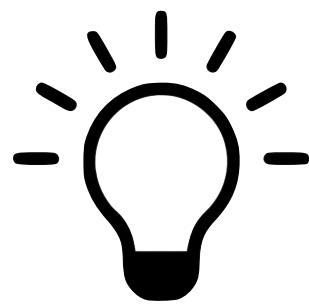
### RESULTS II



**Volume of motion** and **path length** proved **valuable** for **differentiating peer groups** and establishing clear benchmark standards.

The **idea** that **surgical seniority** means gentler tissue handling **is a myth**: in all tasks, **heads of department applied more force** than **junior consultants** (PEG +8%, precise cutting +22%, intracorporeal knot +21%).

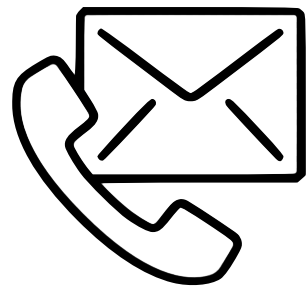
### CONCLUSIONS



This is the first multicenter benchmark dataset for the FLS, allowing MIS training centers and dry labs to compare performance across peer groups. The data show that performance in FLS tasks does not simply improve linearly with seniority (e.g. from resident to consultant to head of department).

More complex parameters such as force exertion and motion volume provide a clearer, more nuanced distinction between groups. This dataset significantly enhances dry lab training by improving comparability and boosting motivation.

### CONTACT INFORMATION



PD Dr. med. Florian Oehme

Mail: [florian.oehme@ukdd.de](mailto:florian.oehme@ukdd.de)

Online: <https://tu-dresden.de/med/mf/useit3>



Surgical Skills  
Lab Dresden