# Heart Rate Variability: an Objective Measure of Mental Stress in Surgical Simulation

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## Background and Aim

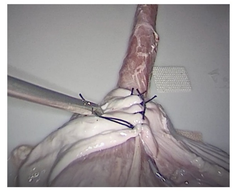
Surgery is a safety-critical profession

The surgical theatre can be a **highly stressful** environment, affecting operative performance and patient outcomes.

**Heart Rate Variability (HRV) monitoring**

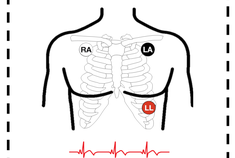
Non-invasive objective measure of mental stress

## Materials and Methods

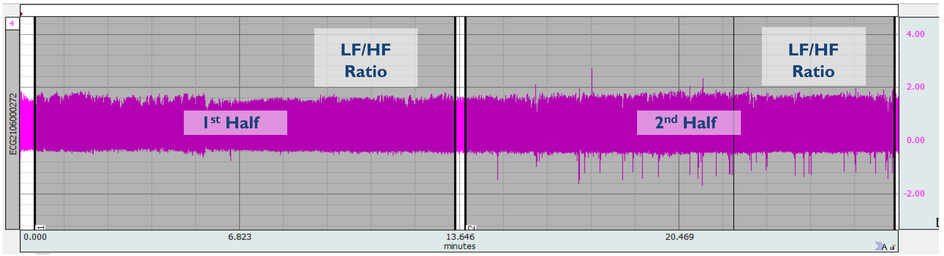


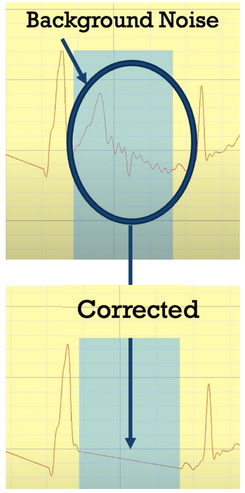
Laparoscopic Nissen Fundoplication






Three Lead ECG Configuration




Artfiact Correction

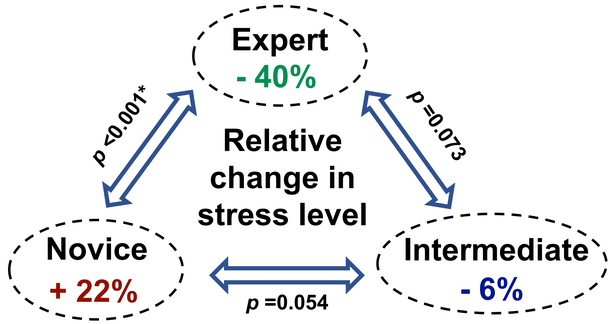
## Results

**17** Novice (PGY 1-2)

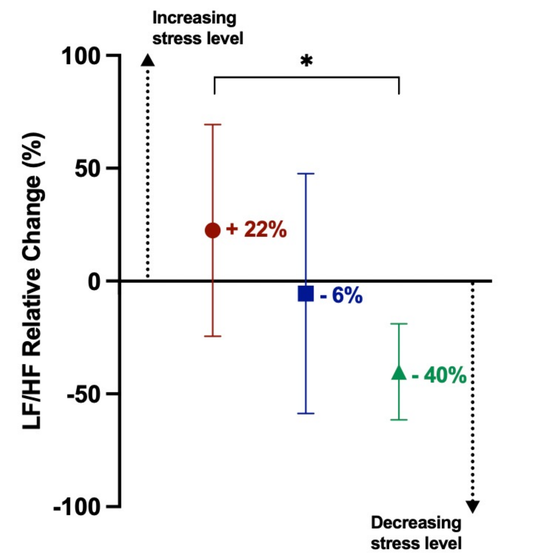
**14** Intermediate (PGY 3-4-5)

**8** Experts (Fellow/Attending)

When **comparing the first and the second half** of the procedure




**Stress Level During Nissen Fundoplication**




## Conclusion

HRV monitoring in surgical simulation is feasible and effective

Objective evaluation of mental stress

Our study **supports the incorporation of HRV monitoring in surgical simulators** to complement objective assessment of technical skills