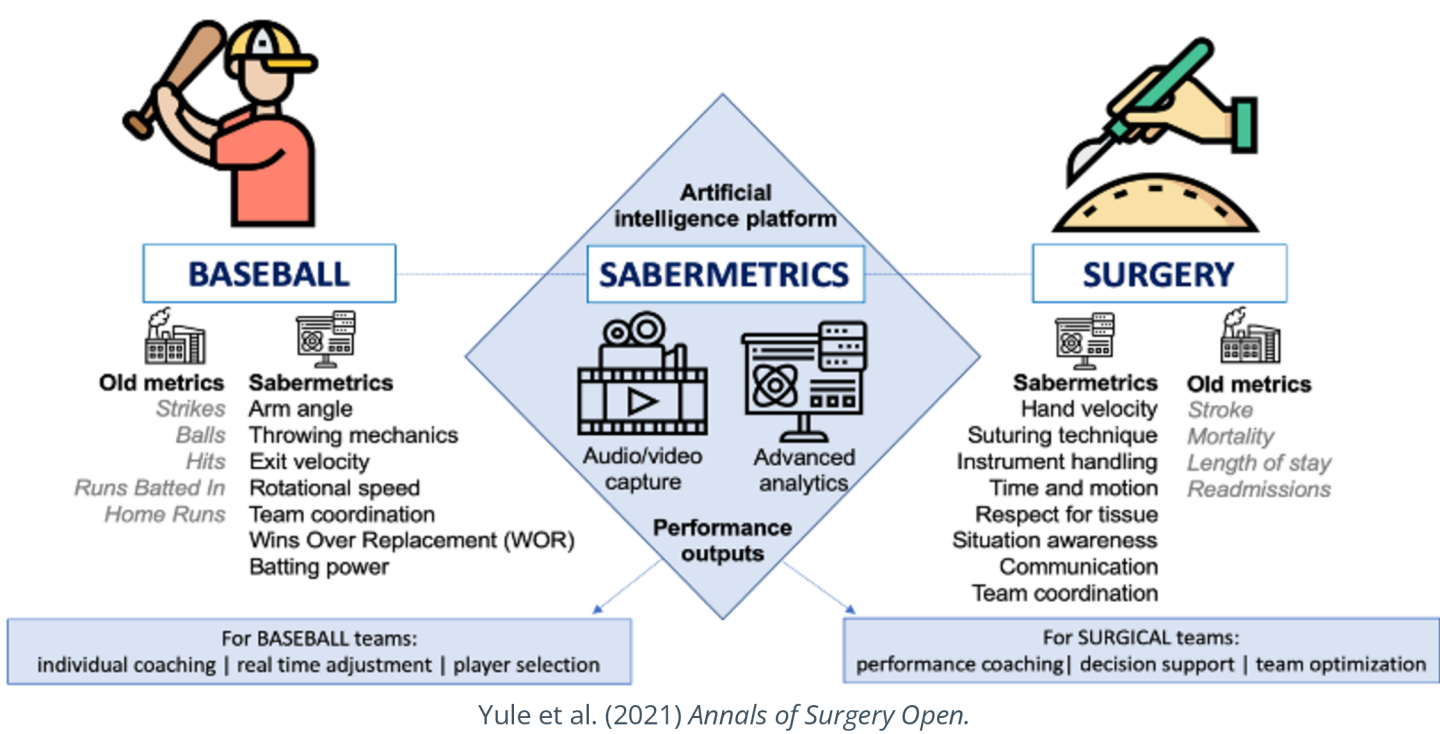


# Surgical Sabermetrics Centre for Medical Informatics



SaberLab **investigates surgical performance** by measuring cognitive load, analysing video data, and using wearable sensors—drawing inspiration from elite sports and behavioural science.

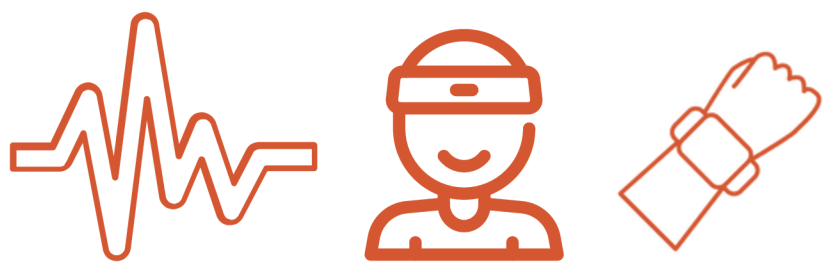
Interdisciplinary collaboration enables SaberLab to develop tools and insights to **inform training, optimise performance, and enhance patient safety** in high-stakes clinical environments.



## RESEARCH THEMES

### Effect of cognitive load on surgical performance, safety, and decision-making

Assessment of mental workload and stress using physiological and neurocognitive sensors (e.g. HRV, EEG, EDA).



**AIM:** Detect cognitive overload in surgery and simulation to enhance system safety, support clinicians, and sustain performance under pressure.

### Leveraging advanced video analytics for performance feedback

Annotation of surgical video, detecting key actions and integrating video data with sensor streams to build a multimodal understanding of surgical flow.



**AIM:** Enable accessible surgical video analysis to advance objective, scalable performance feedback to improve surgical technique and non-technical skills.

### Application of elite sporting principles to surgery

Investigation of the psychological and physiological drivers of elite athletic performance, and application to surgical training.



**AIM:** Adopt performance analytics to evaluate surgical skill, team dynamics to improve clinical performance and patient outcomes.

### Enhancing team performance in extreme, high-stakes environments

Identification of behavioural markers of resilience and decision-making under pressure through use of wearable sensors and real-time physiological data.



**AIM:** Enhance advanced training protocols for air-crew and operational units in extreme environments.