Developing technical skills alongside non-technical skills: a Pilot simulation Teaching Programme for early-years trainees in Trauma & Orthopaedics

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BACKGROUND

Simulation-based surgical training (SBST) must develop both '**technical**' (TS) and '**non-technical**' skills (NTS).

AIMS

We have developed a multi-modal SBST programme, the theme being **management of acute tibia fractures**. TS were targeted through simulated surgical procedures (limb **external fixator** application), whilst NTS were addressed through **immersive simulated-patient scenarios**. This study aimed to assess the programme's feasibility, learner experience and cognitive load using SURG-TLX. The feedback showed that the programme is feasible, enjoyable, and does not cause excess cognitive demand on participants, whilst improving TS and NTS.

THE PROGRAMME

INTENDED LEARNERS

Registrars in their first 2 years of training

THEORETICAL TUTORIALS

Revise & build on existing knowledge

SAWBONE WORKSHOP

- Low fidelity simulated surgical skills
- High trainer: trainee ratio
- Formative feedback

IMMERSIVE STIMULATION (fig.1, fig.4)

- Applying clinical & communication skills
- Prebrief & debrief

FEEDBACK & DEVELOPMENT

- Analysis of participants feedback
- Development & expansion beyond pilot programme

Fig.1. Simulated patient

RESULTS

Fig.2. Participants' self-assessment on their preparedness before and after the programme increased for both TS and NTS (n=5)

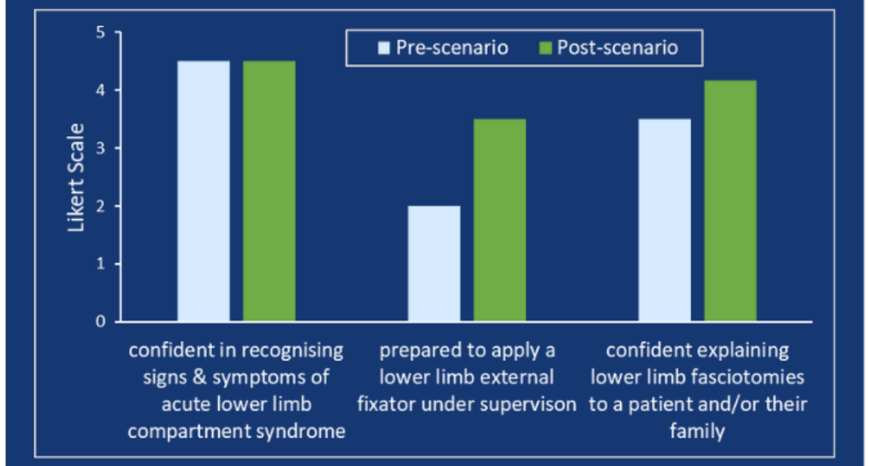
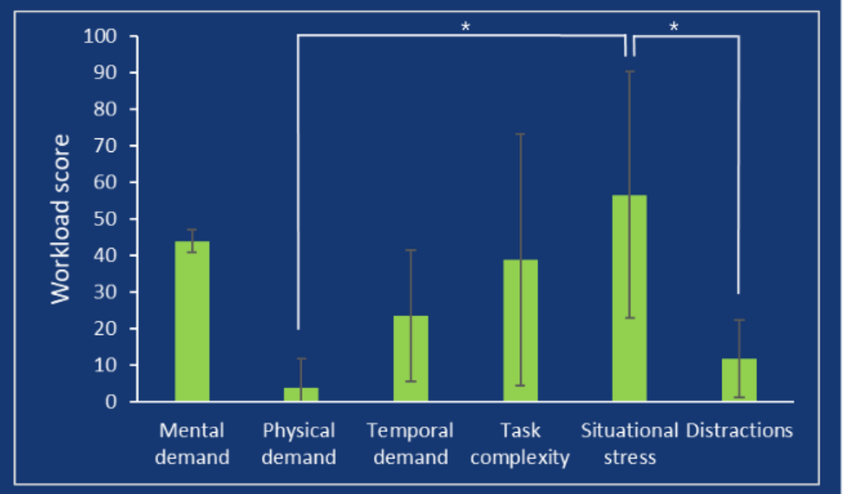


Fig.3. Across all participants, 'situational stress' was perceived as significantly greater than 'physical demand' and 'distractions' (mean workload scores = 56.5, 3.6, 11.6, respectively, *p<0.05)



"very well organised, realistic, involved all members of the group, and used relevant clinical scenarios"

Fig.4. Immersive simulation scenario

CONCLUSIONS

- All participants found the programme **enjoyable** & **useful**
- Both mean self-assessed **preparedness** score to apply an external fixator and **confidence** in explaining lower limb fasciotomies increased following the programme (fig.2).
- Using SURG-TLX to self-asses, across all participants '**situational stress**' was perceived as significantly greater than 'physical demand' and 'distractions' (fig.3).
- For those that participated in the immersive simulation scenario (n=3), there was no difference in dimension workload scores compared to those that just observed (n=2) (179.3 vs 175.5, p=0.96).
- Future developments include incorporating more practical procedures and utilising more complex immersive cases.
- In conclusion, a 'multi-modal' SBST programme is **feasible** and **relevant** to clinical practice.

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