

Getting Hands On

A critical reflection of the value of immersive simulation with 360° projection for paramedicine students

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Background

There is considerable debate surrounding simulative education. Within paramedic training, high fidelity simulation can be extremely helpful in building confidence and developing skills such as clinical decision making, communication and stress management. However, the benefits of high-fidelity training need to be considered with factors such as cost and potential adverse effects of the high-stress environment. As students, we evaluate our personal experience at Emergency Australia's high fidelity simulation facilities and provide a critical review of the value of high-fidelity training for student paramedics.

Discussion

In general, we found the immersive simulation to be a positive experience and reported that the high-fidelity scenarios created a safe learning environment in which we could apply and enhance our clinical skills. By reproducing the pressures evident on road, the high-fidelity training and debriefing was both exciting and challenging, resulting in improved clinical practice and confidence without any harm to real patients. This conclusion is also reported throughout various trials conducted on nursing, physiotherapy, and medical science students¹. Based on these reports, it can be suggested high fidelity simulation should be applied in any educational facility teaching paramedic students.

Context

We are three bachelor of paramedicine students from first and second years at a Queensland university. We were selected at random to participate for the first time in Emergency Australia's immersive simulation facility, while our physiological responses were measured by Hexoskin and Astroskin biometric shirts. The objectives were to experience immersive simulation while getting feedback on student physiological response to that experience. The high-fidelity simulation facility was equipped with audio system, temperature control, 360-degree projector, advanced patient simulators and professional actors. Combined, this equipment enabled us to become fully immersed in scenarios and experience additional stressors evident in real clinical practice. Additionally, all scenarios were followed by expert debriefing from the Emergency Australia team, allowing for student reflection and evaluation. As students with limited on-road experience, we found the immersive simulation to be both exciting and challenging. It allowed us to apply our clinical knowledge to dynamic, high-pressure environments that extended beyond the scenarios we had run at university, and to develop a deeper understanding of the challenge's paramedics face on road.

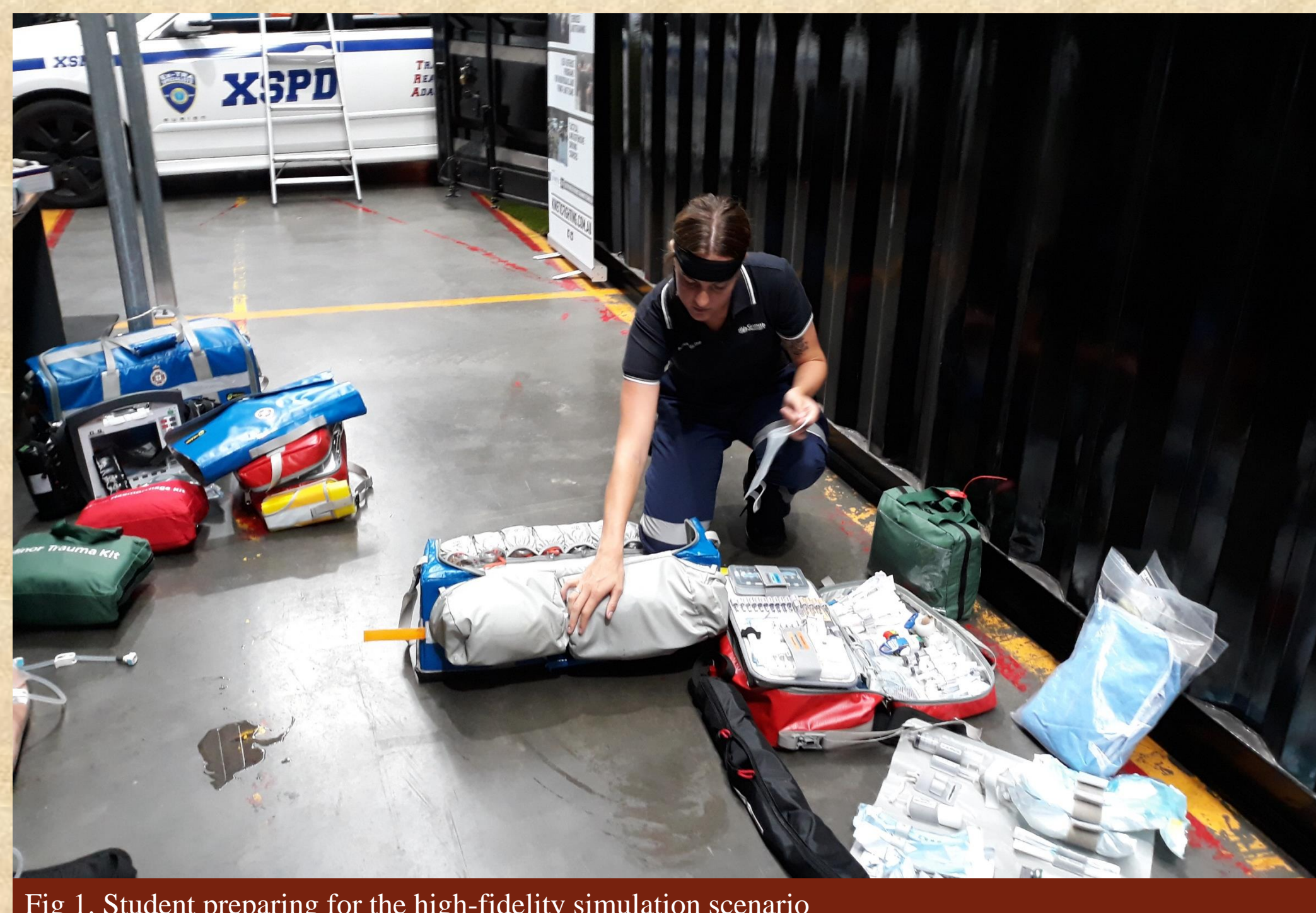


Fig 1. Student preparing for the high-fidelity simulation scenario

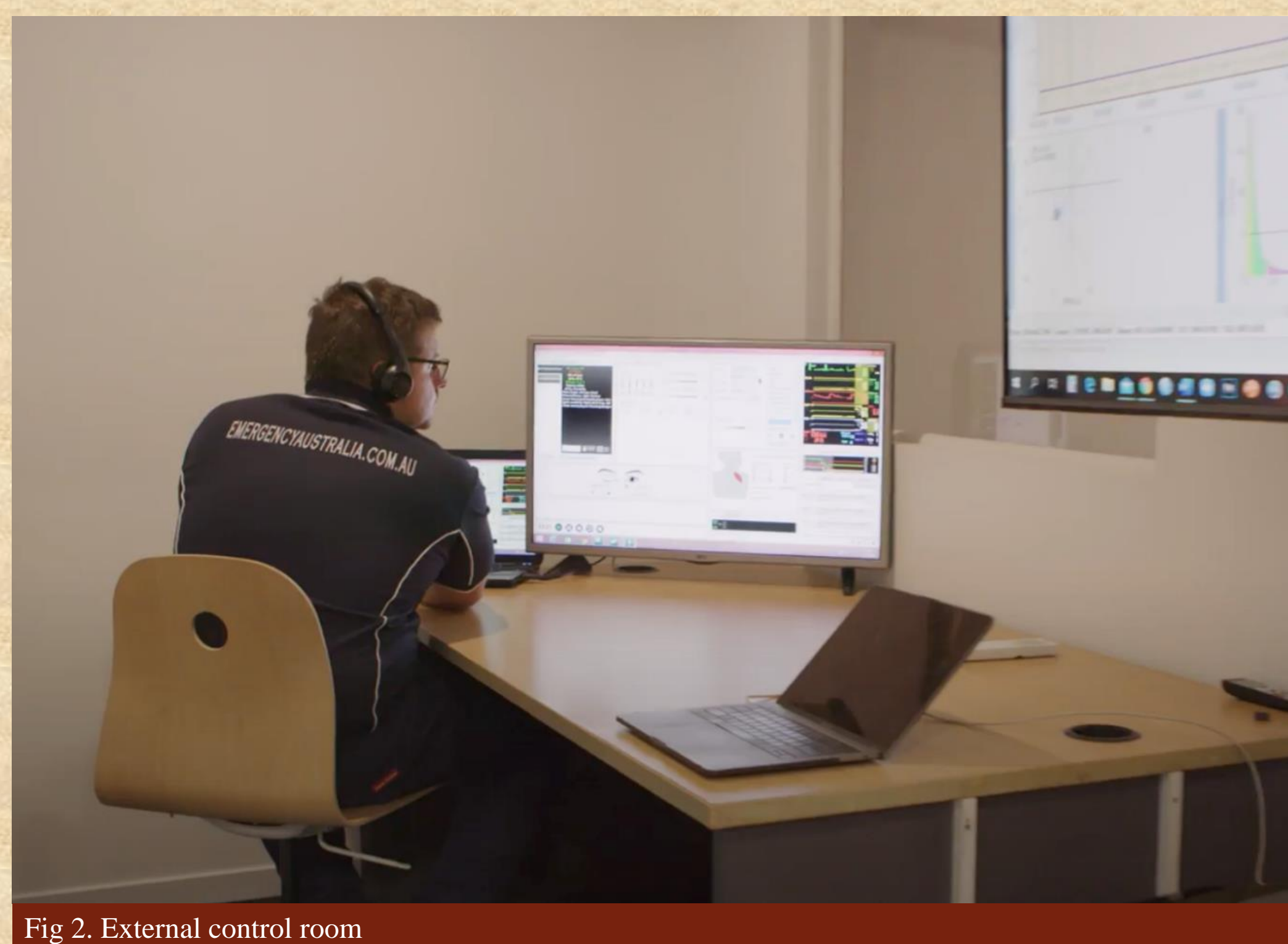


Fig 2. External control room

From the literature, negatives of the immersive simulation can include cost, accessibility, over-confidence, and potential detriments to student's physical and mental health, with some research indicating that this type of training does not always foster improved knowledge and skill compared to medium/low fidelity simulation². While the simulations we were involved in were not evaluated for these negatives, further research is still required to explore these potential adverse outcomes. In particular, to establish a better understanding of the long-term mental and physical effects of high-fidelity simulation, and complications surrounding the practicality of applying immersive simulation in educational facilities.

Conclusion

Despite being a relatively new type of training, high-fidelity simulation is already showing potential for improving student paramedic preparedness for

placement and professional practice, with the simulation facilities at Emergency Australia providing an exciting way forward in terms of paramedic student education. Overall, students found the immersive simulation to be beneficial in enhancing their clinical knowledge and skills in a safe learning environment. However, more research is necessary to determine the effectiveness of high-fidelity simulations in comparison to low/medium-fidelity simulation, with consideration of factors such as cost, over-confidence, and potential adverse effects of such a high-stress environment.

Acknowledgments

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Fig 3. The Simulation Centre

1. Doherty-Restrepo, J., & Tivener, K. (2014). Current Literature Summary: Review of High-Fidelity Simulation in Professional Education. *Athletic Training Education Journal*, 9(4), 190-192. <https://doi.org/10.4085/0904190>

2. Massoth, C., Röder, H., Ohlenburg, H., Hessler, M., Zarbock, A., Pöpping, D. M., & Wenk, M. (2019). High-fidelity is not superior to low-fidelity simulation but leads to overconfidence in medical students. *BMC medical education*, 19(1), 29. <https://dx.doi.org/10.1186/s12909-019-1464-7>

