

Non-inferiority trial of virtual reality versus traditional simulation training for Newborn Life Support

- a study protocol

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INTRODUCTION

Simulation-based training has become an important tool in medical education for teaching clinical skills and improving learner knowledge in a safe environment without endangering patient safety. Situations mimicking real life can be re-created, allowing the learner to act in their normal clinical role and be provided feedback on performance.

However, traditional mannikin-based simulation requires a high amount of human, financial and spatial resources, and is reliant on experienced simulation faculty to deliver feedback and debrief. The learner and educator need to be in the same geographical space and, more importantly, the same scenario can be difficult to replicate exactly for each learner. Virtual reality (VR) technology offers a feasible alternative.

What is VR?

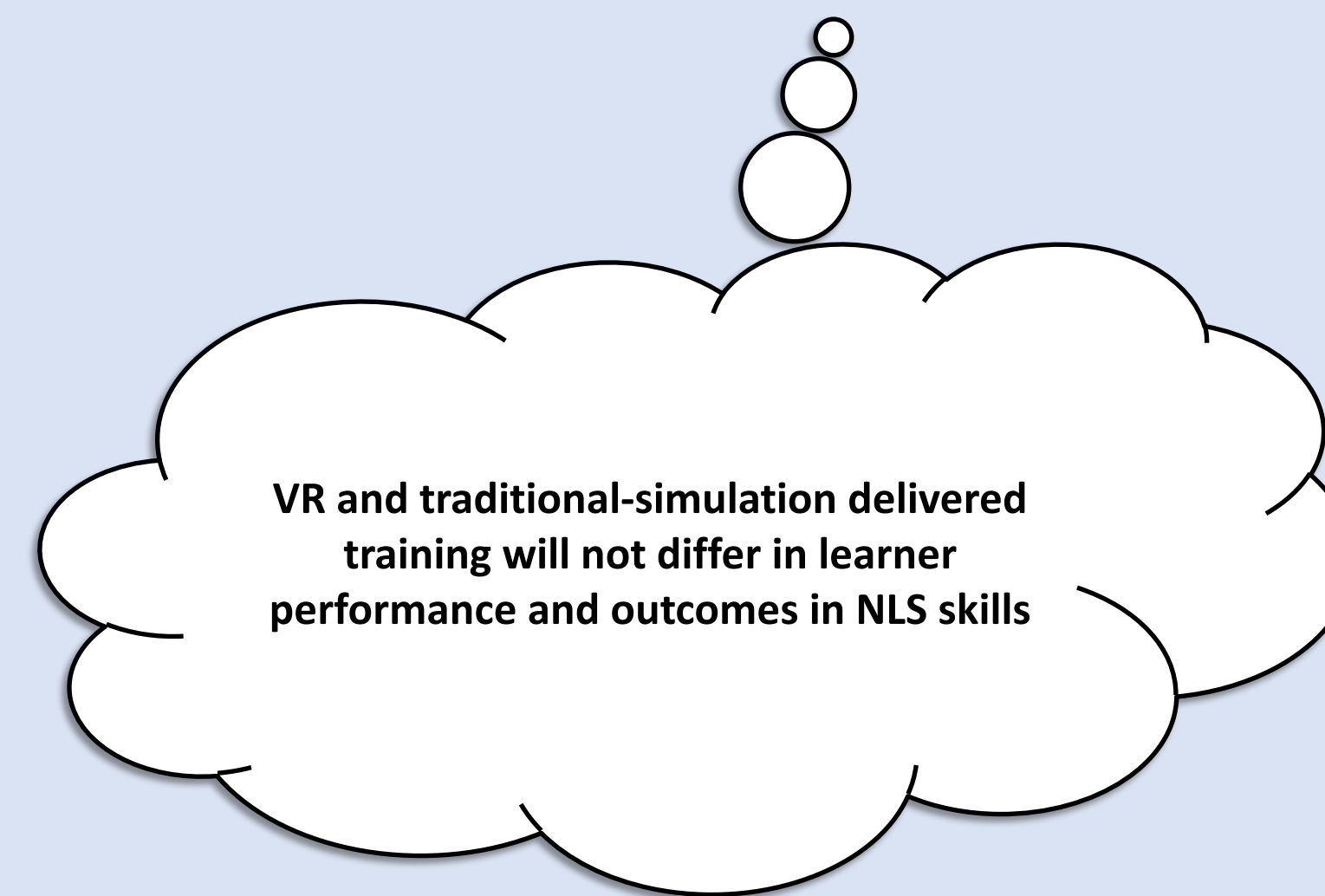
Learners use headsets that make use of specially developed software to place them in a virtual environment that mimics the real-world making users believe they are in a different environment. This technology provides a totally immersive, dynamic and interactive world, and offers both the educator and learner a number of advantages over traditional simulation:

- Hardware and software are straightforward to set-up
- Teaching can be delivered at a reduced cost with fewer resources
- Scenarios can be designed with no requirement for a large number of faculty
- Learners can take part in simulation whenever they like, with no need for the use of large education centers
- Scenarios are repeatable, allowing learning through deliberate practice, and easy to standardize ensuring consistency for each learner

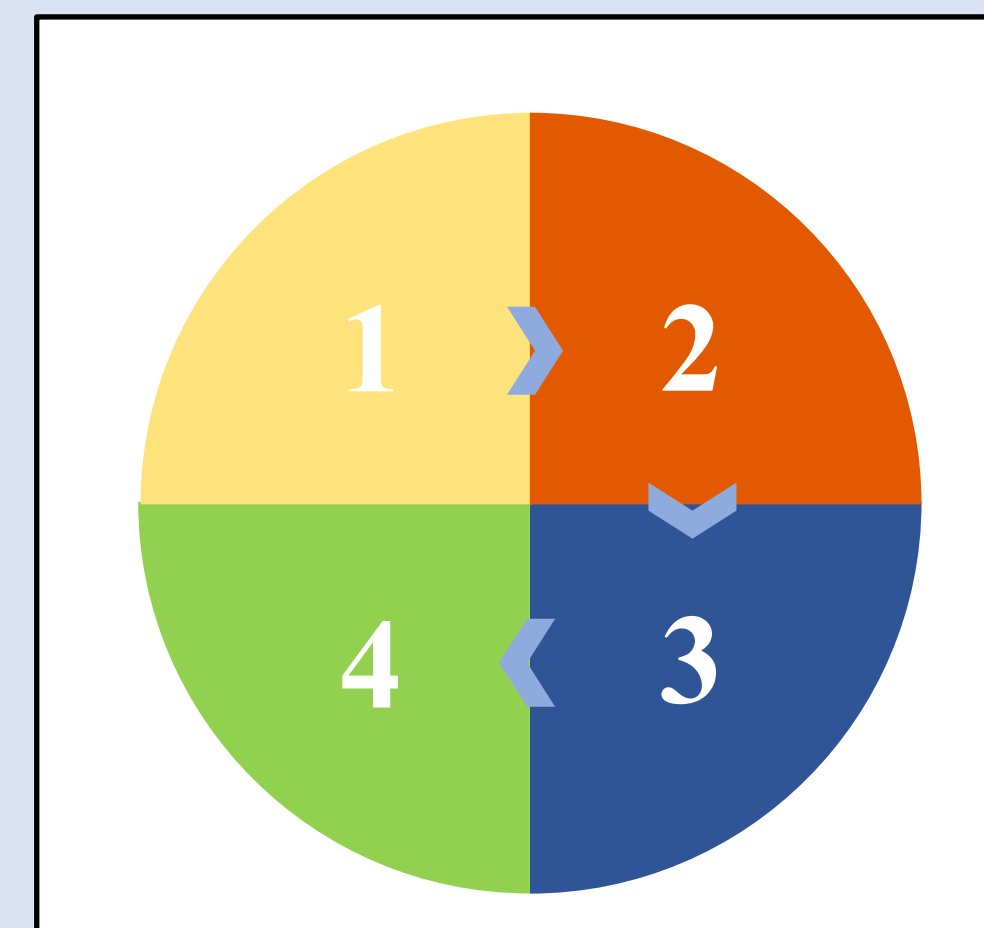
OBJECTIVES

The aim of this study is to determine the **non-inferiority** of VR delivered training for Newborn Life Support (NLS) as compared to traditional mannikin-based simulation training. It has been designed and will be delivered with support from the Medical University of Vienna.

HYPOTHESIS



METHODS



1. Participants randomized into two groups: **Group A** and **Group B**
2. A one-time simulation session will be held. **Group A** will take part in a **VR delivered** simulation while **Group B** will take part in a **traditional mannikin-based** simulation. The scenario is the same for both groups.
3. Two weeks after the initial simulation, both groups will take part in a **second simulation**. This will be a **mannikin-based simulation for both**.
4. After each simulation session, participant performance will be assessed using a **validated NLS score**. Participants will also be asked to complete a **NASA Task Load Index** to assess perceived workload. **Scores will be compared** between both groups, and both simulation sessions.

PARTICIPANTS AND SCENARIOS

Trial participants will be staff who are regularly part of the neonatal resuscitation team- paediatric trainees, neonatal consultants, neonatal nurses, advanced neonatal nurse practitioners and midwives. A questionnaire will collect demographic data and previous experience concerning NLS, simulation training and VR experience.

The same scenario will be delivered for both the VR and traditional simulation groups:

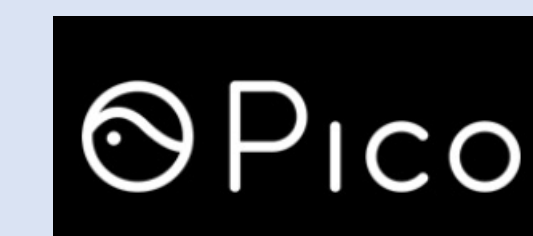
- 34-year old woman presenting at 40+4/40 with antepartum haemorrhage and requiring a c-section
- Baby born with poor tone and no respiratory effort

The same medical equipment will be made available for both study groups.

The NLS Score checklist used to assess participant performance has been developed and validated using a modified Delphi method by Medical University of Vienna. It is a 37-item list covering all steps relevant during neonatal resuscitation according to current guidelines.

EQUIPMENT

The headsets used for VR simulation are the PICO Neo 3 Pro. The scenario to be used has been developed specifically for this project by Soma Reality.



SOMAREALITY

REFERENCES AND FURTHER READING

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