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Peripheral venous simulator development for medical training

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INTRODUCTION & AIM

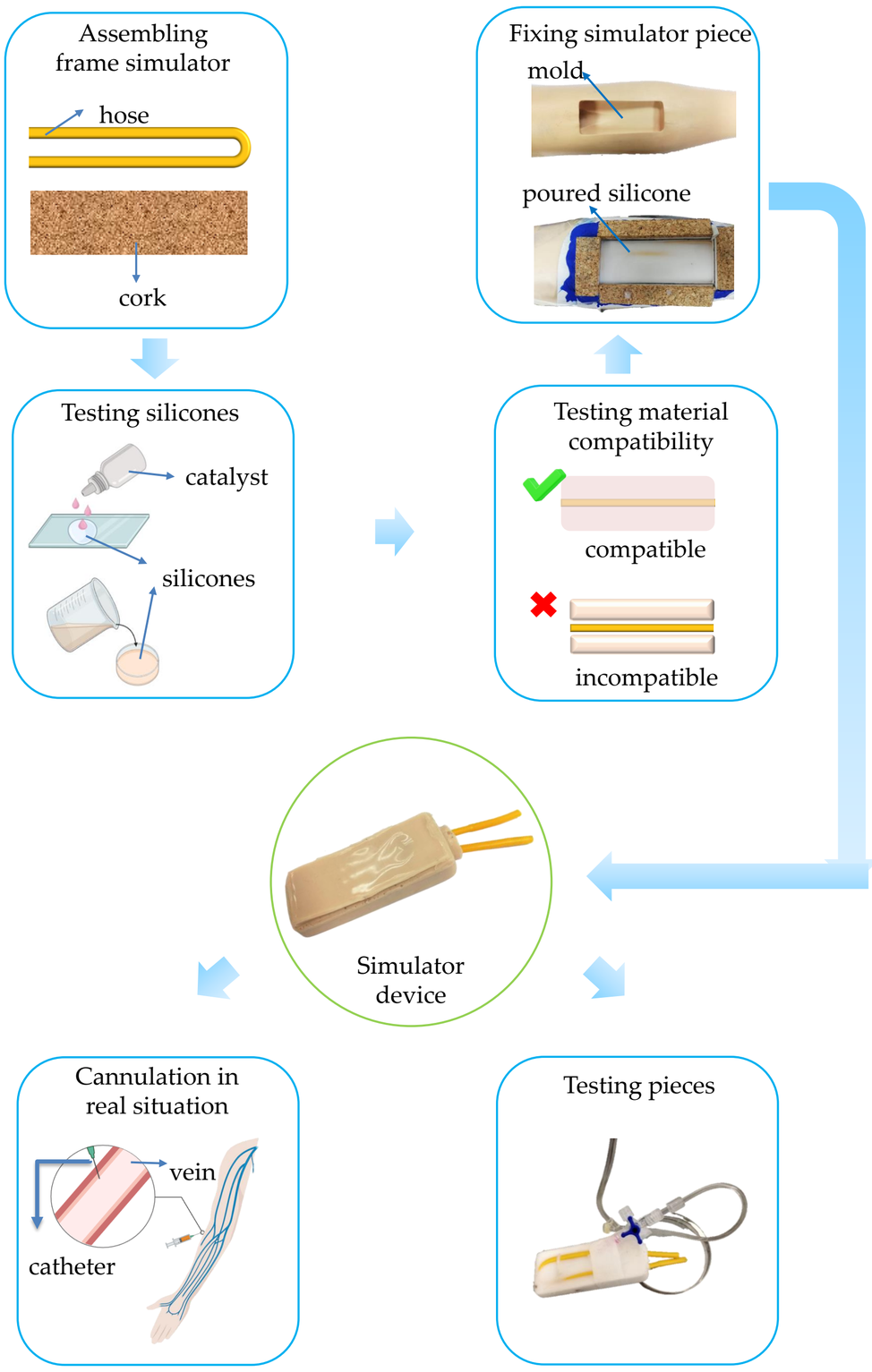
Brief story about medical simulators

1938 First plastic skeleton made by founders of Medical Plastics Laboratory.
1958 Laerdal begins research and development for mouth-to-mouth mannequin.
1964 Howard Barrows introduces "Programmed Patient," providing first description of SPs in medical education.
1967 First report of vfib resuscitation out of the hospital.
1985 University of Michigan publishes first catalog of patient simulations.
1986 CASE developed as standard precursor of CAE-Link simulator.
1988 CAE-Link patient simulator born in Palo Alto.
1993 Rhythm and Pulse 2.0 update released.
1998 Anesoft Hemodynamic and Sedation Simulators introduced.
2000 Laerdal SimMan begins beta testing.
2001 METI releases Emergency Care Simulator.

The need to develop skills in medical training, from basic procedures like sutures and venipunctures to complex surgeries, has driven the innovation of simulators using materials that mimic human body characteristics. This work created forearm simulator pieces for venipuncture and peripheral venous cannulation with Artesyl Shore 20 silicone. Three polymer combinations (PDMS, food-grade silicone, and Artesyl Shore 20 silicone) were tested before selecting the most suitable material.

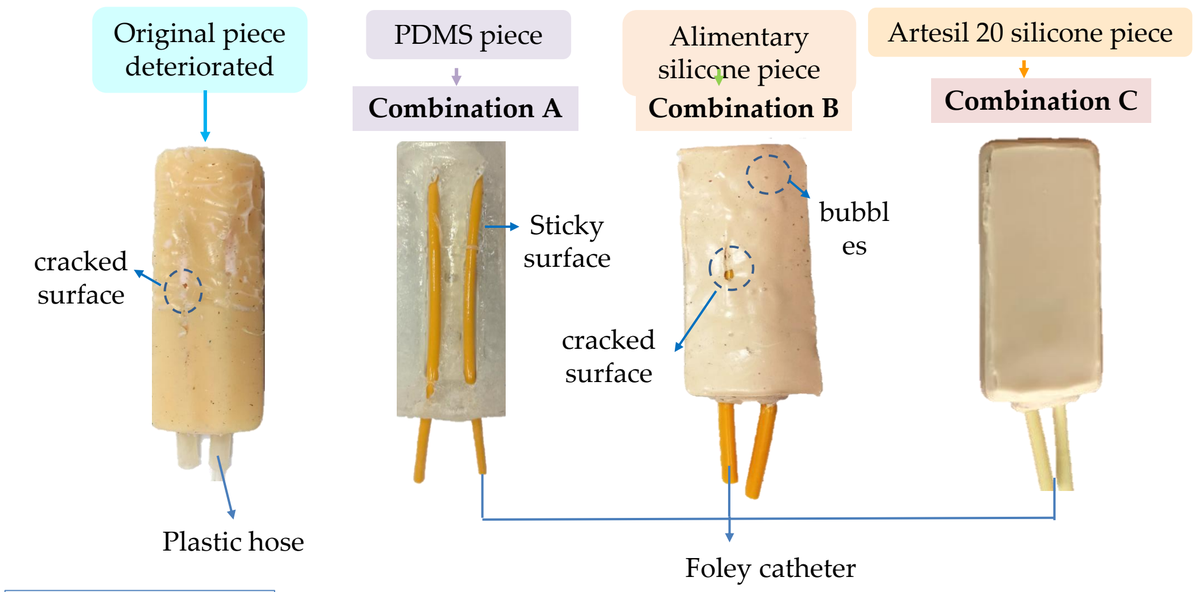
METHOD

Fabrication sequence

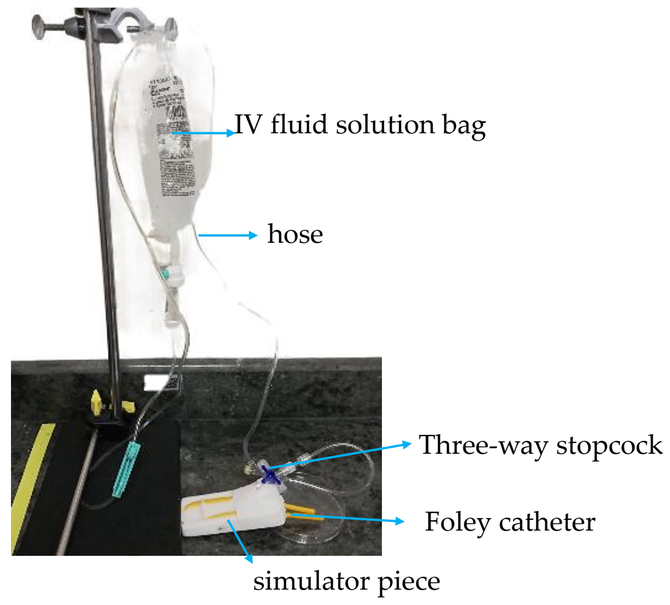


RESULTS & DISCUSSION

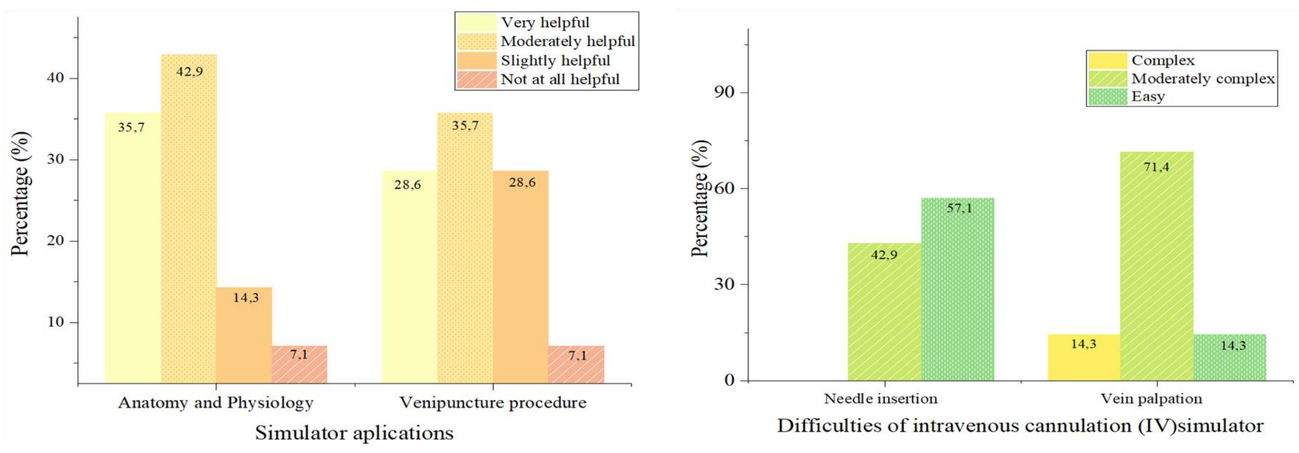
Compatibility of material evaluation



Device testing



Conformity assessment by the students



CONCLUSION

- A peripheral venous arm simulator was created using accessible materials like silicone, demonstrating material compatibility as essential for functional medical training tools.
- The simulator was effective for venoclysis and venous cannulation, though exploring more flexible materials with properties similar to skin is suggested.
- This low-cost fabrication method supports efficient medical training, with potential improvements using silicone paste and alginates in future studies.

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