Results for the Study: Development of a device to decrease needle pain: Phase 5 - temperature, pressure, and vibration combination

Introduction
This study took place between June and August 2013. If you participated in this study, we would again like to thank you, and share what we found.

Background
This project was the fifth in a series to design and develop a device that decreases the pain of medical needle pricks and injections. Needle pain associated with immunizations can be quite painful, especially for infants, children and people with a needle phobia (extreme fear of needles). People also remember previous painful experiences and learn to anticipate upcoming painful events, leading to pre-procedure anxiety. Further, the pain response to a needle injection is higher in anxious compared to non-anxious people. We were hoping to discover ways to decrease needle pain by doing a series of tests that applied a combination of pressure, vibration, and warming to the skin before pushing a plastic “mock needle” against the shoulder.

Results
We studied 21 healthy adults, ranging in age from 21-60 years. We determined that pressure was the single most effective way to increase the average baseline (no-treatment) force on the plastic needle tolerated by participants, with vibration next best. All combinations were significantly better than baseline. Pressure had a P-value, the probability that a difference is due to chance alone, of less than 0.1%, meaning it is very significantly better than baseline; pressure-and-vibration and pressure-and-vibration-and-warming were better than pressure alone (P < 0.5%), but not statistically different from each other.

Conclusion
Our results show that combining pressure and vibration allowed participants to tolerate the largest amount of force from the mock needle before achieving a pain scale of 3/10.

If you have any questions, please feel to contact us.

Sincerely,
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