



## The Role of Distraction in Paediatric burns

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### Introduction

The path to complete recovery following a burn is long, with ongoing debridement, dressing changes and scar management often an ongoing source of distress for the patient.

On both a physiological and emotional level, children are the most vulnerable cohort, with poor pain management having lasting repercussions

While distraction techniques utilizing virtual reality (VR) have proved itself as a beneficial complement to drug therapy, not all services are able to make use of this technology. Evidence regarding non-VR based distraction techniques is not as well established.

### Aim

To review the literature and assess efficacy of non-VR distraction techniques in the management of paediatric burns.

### Methods

A comprehensive search of MEDLINE, EMBASE and Google Scholar databases was conducted to identify clinical articles from inception until July 2019.

Clinical studies describing ‘distraction techniques’ or ‘attention’, ‘infant or child or paediatric’ and ‘burns’ were identified and assessed.

Studies not available in English or full text, non-clinical studies, studies describing VR-related distraction techniques or articles unrelated to distraction techniques in specifically a burns wounds setting were excluded

Table 1: Summary of articles

Author	Year	Design	Patients	Distraction Technique	Outcome
Brown	2013	RCT	75	Ditto = A hand-held multi-modal distraction device that provides procedural and sensory information (stories and games) prior to medical intervention	Ditto demonstrated burn wound re-epithelialization on average 2 days faster than standard practise Ditto significantly reduced anxiety and heart rate in patients
Nader	2017	RCT	30	Computer Tablets during hydrotherapy for burns	Significantly less pain for tablet distraction group c/w standard care No significant difference regarding self-reported pain Decreased anxiety with c/w control
Green	2018	Qualitative	N/A	Discussion with medical professional's on experience using iPad as a distraction during dressing changes	iPads and other distraction techniques were perceived as useful in delivering burns care. Lack of training and confidence in their use translated to decreased use
Miller	2010	RCT	80	Multimodal distraction techniques VS Standard distraction VS Video Game Distraction	Multi-modal distraction techniques reduce pain scores during dressing changes c/w SD practice
Miller	2011	RCT	40	Multi-Modal distraction compared with standard distraction	Significant reduction in pain and intensity as well as distress scores c/w SD
Sil	2013	Case Report	1	Videogame distraction techniques VS Baseline distraction session	Interactive videogame distraction techniques results in lower behavioural distress, greater co-operation

### Results

- 6 clinical articles met the inclusion criteria for use in the final review
- 2 articles described the use of standard table software (Ipad, Samsung tablet, etc. ), 1 described the use of video games and a 3 articles employed the use of self-made distraction tools.
- All articles reported benefits with the use of complementary distraction techniques during the management of various stages of burns as an adjunct to standard pharmacological care.
- Multi-Modal distraction techniques demonstrate greater efficacy compared with standard distraction techniques

### Conclusion

Our review supports the use of distraction techniques, in particular multi-modal distraction techniques, in the management of burns within the paediatric population.

Further large RCTs are required in order to determine the most efficacious form of distraction technique.

Wollgarten-Hadamek, I., et al., *Do burn injuries during infancy affect pain and sensory sensitivity in later childhood?* Pain, 2009. **141**(1-2): p. 165-72.  
 Wollgarten-Hadamek, I., et al., *Do school-aged children with burn injuries during infancy show stress-induced activation of pain inhibitory mechanisms?* Eur J Pain, 2011. **15**(4): p. 423 e1-10.  
 Scapin, S., et al., *Virtual Reality in the treatment of burn patients: A systematic review.* Burns, 2018. **44**(6): p. 1403-1416.  
 Brown, N.J., et al., *Play and heal: randomized controlled trial of Ditto intervention efficacy on improving re-epithelialization in pediatric burns.* Burns, 2014. **40**(2): p. 204-13.  
 Burns-Nader, S., L. Joe, and K. Pinion, *Computer tablet distraction reduces pain and anxiety in pediatric burn patients undergoing hydrotherapy: A randomized trial.* Burns, 2017. **43**(6): p. 1203-1211.  
 Green, E., J. Cadogan, and D. Harcourt, *A qualitative study of health professionals' views on using iPads to facilitate distraction during paediatric burn dressing changes.* Scars Burn Heal, 2018. **4**: p. 2059513118764878.  
 Miller, K., et al., *Multi-modal distraction. Using technology to combat pain in young children with burn injuries.* Burns, 2010. **36**(5): p. 647-58.  
 Miller, K., et al., *A novel technology approach to pain management in children with burns: A prospective randomized controlled trial.* Burns, 2011. **37**(3): p. 395-405.  
 Sil, S., L.M. Dahlquist, and A.J. Burns, *Case study: videogame distraction reduces behavioral distress in a preschool-aged child undergoing repeated burn dressing changes: a single-subject design.* J Pediatr Psychol, 2013. **38**(3): p. 330-41.