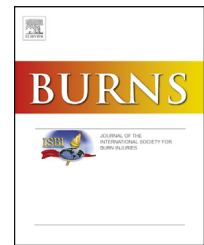


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Review

Resistance training for rehabilitation after burn injury: A systematic literature review & meta-analysis

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ABSTRACT

Background/aim: Resistance training is beneficial for rehabilitation in many clinical conditions, though this has not been systematically reviewed in burns. The objective was to determine the effectiveness of resistance training on muscle strength, lean mass, function, quality of life and pain, in children and adults after burn injury.

Methods: Medline & EMBASE, PubMed, CINAHL and CENTRAL were searched from inception to October 2016. Studies were identified that implemented resistance training in rehabilitation. Data were combined and included in meta-analyses for muscle strength and lean mass. Otherwise, narrative analysis was completed. The quality of evidence for each outcome was summarised and rated using the GRADE framework.

Results: Eleven studies matched our inclusion criteria. Primary analysis did not demonstrate significant improvements for increasing muscle strength (SMD 0.74, 95% CI -0.02 to 1.50, $p=0.06$). Sensitivity analysis to correct an apparent anomaly in published data suggested a positive effect (SMD 0.37, 95% CI 0.08-0.65, $p=0.01$). Psychological quality of life demonstrated benefit from training (MD=25.3, 95% CI 3.94-49.7). All studies were rated as having high risk of bias. The quality of the evidence was rated as low or very low.

Conclusion: Further research with robust methodology is recommended to assess the potential benefit suggested in this review.

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1. Introduction

People recovering from a burn injury will experience a range of challenges throughout their recovery. It has been reported that physical dysfunction and quality of life continue to be adversely affected up to three years after the initial burn injury [1-3]. Survivors are also challenged by long term reductions of muscle mass and strength [4-8], which can limit their ability to perform activities of daily living and participate in physical activity. Whilst a traumatic injury such as a burn

will instigate this catabolic processes, bed rest and inactivity have been shown to amplify catabolism of skeletal muscle [9]. In these circumstances, it would appear that early and intensive rehabilitation likely matters to an individual's physiological profile and functional recovery.

The aim of rehabilitation is ultimately the return of a person's physical capability and independence. In burns, modes of rehabilitation vary widely between facilities, as no evidence based consensus on best practice rehabilitation has been established. The American College of Sports Medicine recommend resistance training (RT) as a mode of exercise to

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