

## FREE PAPERS – continued

innervated muscles of able-bodied individuals are well understood, little is known about the most effective way to increase the strength of the partially paralysed muscles in people with spinal cord injuries. The aim of this single blind randomised controlled trial was to determine the effectiveness of an 8-week program of progressive resistance training. Thirty-two spinal cord injured patients with between grade 1/5 and grade 4/5 muscle strength in the wrist extensor or flexor muscles were recruited. Participants were randomly allocated to the experimental (strength training) or control (no training) group. The wrist muscles of one hand of experimental subjects were trained three times a week for 8 weeks. The control group received no intervention. The primary outcome was maximal voluntary strength. The secondary outcomes were endurance and the Canadian Occupational Performance Measure. Measurements were taken at the commencement and end of the eight-week treatment period by a blinded assessor. The mean treatment effect (95% confidence interval) of progressive resistance training was 0.2 Nm (95% CI -0.4 to 0.8). Eight weeks of progressive resistance training does not increase strength in the partially-paralysed wrist muscles of people with spinal cord injuries.

### The effectiveness of electrical stimulation for increasing muscle strength in people with neurological conditions: a systematic review

Glinsky J,<sup>1</sup> Harvey L<sup>1</sup>  
and Van Es P<sup>2</sup>

<sup>1</sup>Rehabilitation Studies Unit, Faculty of Medicine,  
University of Sydney, Sydney <sup>2</sup>School of Physiotherapy,  
Faculty of Health Science, Maastricht University,  
Netherlands

Weakness in partially paralysed muscles is a disabling impairment for people with neurological conditions. Strength-training programs are widely administered to address this impairment. There is a common belief that the effectiveness of strength-training programs can be enhanced by the addition of electrical stimulation. The purpose of this systematic review was to assess the efficacy of electrical stimulation for increasing voluntary strength in people with neurological conditions. Eligible randomised trials of electrical stimulation were identified by searches of computerised databases. The search yielded 11267 abstracts of which 63 were retrieved. Two assessors independently reviewed full text versions of these articles. Eighteen studies satisfied the inclusion criteria. These studies involved participants with spina bifida (n = 1), cerebral palsy (n = 1), peripheral nerve lesion (n = 1), multiple sclerosis (n = 1), spinal cord injury (n = 3) and stroke (n = 11). The mean (SD) PEDro score for trial quality was 5 (1) out of 10. Meta-analyses of studies involving similar patients were not done because of insufficient data or lack of homogeneity. The results of all studies were analysed individually. Several studies suggest a modest beneficial effect of electrical stimulation in patients who had had a stroke. It is not clear whether patients with other types of neurological disabilities benefit from electrical stimulation in the same way.

### The relationship between quality of life and ICF components of function and disability for people with spinal cord injury

Barker R,<sup>1,2</sup> Pershouse K,<sup>1</sup> Kendall M<sup>1</sup> and Amsters D<sup>1</sup>

<sup>1</sup>Spinal Outreach Team, Queensland Spinal Cord Injuries Service,  
Brisbane <sup>2</sup>James Cook University, Townsville

The purpose of this study was to investigate the relationship between quality of life and ICF components of function and disability across the lifespan, for people with spinal cord injury in Queensland, Australia. A cross-sectional analysis of the first year of data in a longitudinal study on spinal cord injury was undertaken. A random sample of 270 individuals who sustained spinal cord injury during the last 60 years was surveyed using a guided telephone interview format. The sample was drawn from the Princess Alexandra Hospital Spinal Injuries Unit archival records. Quality of life was measured using the WHO QoL-8. Impairment was measured according to the ASIA classification and the Secondary Condition Surveillance Instrument. Activity limitations were measured using the Clinical Outcome Variables Scale. Participation restrictions were measured using the Community Integration Measure. Lifespan was considered in terms of age and time since injury. Regression analyses were employed to determine the relationship between quality of life and components of disability across the lifespan. The results revealed that perceived quality of life was not significantly different according to age or time since injury. The single most important predictor of quality of life was the presence of secondary conditions while the second most important predictor was the extent of participation. These findings suggest that rehabilitation services must focus on minimising secondary conditions and enhancing societal participation in order to optimise quality of life across the lifespan for people with SCI in Queensland.

### The relationship between clinical measures of handgrip limitation and impaired pinch grip force control following stroke

Blennerhassett JM,<sup>1,2,3</sup> Carey LM<sup>2,3</sup> and Matyas TA<sup>2</sup>

<sup>1</sup>Austin Health: Royal Talbot Rehabilitation Centre, Melbourne <sup>2</sup>  
La Trobe University, Melbourne <sup>3</sup>National Stroke Research Institute,  
Melbourne

This study aimed to explore whether handgrip limitation measured by clinical tests related to impaired pinch grip force control measured by laboratory tests post-stroke. Handgrip ability for 45 people with stroke who had residual grip ability was contrasted to that of 45 healthy adults matched for age, gender and hand dominance. Handgrip ability was measured using items from the Jepsen Hand Function Test, Motor Assessment Scale, Functional Independence Measure (FIM) and a custom-designed self-report of hand use during daily tasks. The laboratory-based investigation of pinch grip, lift and hold revealed that impaired pinch grip force control following stroke could be represented by two principal components: Pre-