The effect of a functional work-conditioning programme on subacute and chronic low back injured patients.

Zirogiannis, Katerina,[1] Groeller, Herbert[2] and Tawse, Haydn[3]
[1]*Exercise Science and Rehabilitation Centre, University of Wollongong, Wollongong, AUSTRALIA.*
[2]*School of Health Sciences, University of Wollongong, Wollongong, AUSTRALIA.*
[3]*Australian Health Management, Wollongong, AUSTRALIA.*

Introduction

Graded physical activity and functional work conditioning programmes have been shown to have some effect on improving physical function and reducing sick days lost in subacute and chronically injured non-specific low back pain patients[(1,2)]. In this investigation we monitored the effect of a functionally based workers compensation rehabilitation exercise programme over a 2.5 year period between 2005-2007 in low back injured subjects.

Methods

Sixty five male and female subjects with subacute or chronic low back pain 569 ±110 days after date of injury, voluntarily signed a written informed consent prior to participation in the rehabilitation programme. Each subject was assessed for the impact of pain and level of disability using a Quebec back pain, Orebro musculoskeletal pain screening and Oswestry disability questionnaire. Physical status was assessed for endurance (step test), lift capacity relative to occupational demands, grip, horizontal push and squat strength. Return to work status, was ranked on a six point scale, unfit for work, suitable duties restricted hours, suitable duties full hours, pre-injury duties restricted hours, pre-injury duties full hours and permanently modified duties. A paired t-test was used to analyse changes due to the rehabilitation intervention. Significance was set at $P<0.05$, and all data are displayed as mean ±standard error.

Results

Upon completion of the initial phase of the exercise rehabilitation programme (11 ±0.28 rehabilitation sessions for a total treatment time of 10.6 ±0.3 hours over 7.8 ±0.5 weeks) a significant and minimum clinically detectable decline in reported pain and disability measured by Orebro (31%) and Oswestry (28%) questionnaires was observed (Table 1). Quebec back pain although statistically significant did not achieve a minimum clinically detectable change of 15% (12%). Lift capacity improved 98% following the rehabilitation intervention meeting the occupationally specific lift demand load for the subjects. Similarly lower limb, grip, upper limb strength and predicted VO_2max increased 30%, 7%, 33% and 7.7% respectively. Upon completion of program 26% of subjects remained at full pre-injury status, 60% upgraded with a significant 51% (n=28) increase in subjects returning to full time pre-injury duties.

Table 1: Reported pain, disability and physical status.

Variable	Pre-intervention	Post-intervention
Orebro musculoskeletal pain questionnaire	103.7 (4.66)	82.07 (4.95)*
Oswestry disability questionnaire	24.1 (2.4)	17.3 (2.1)*
Quebec back pain disability scale	33.6 (2.9)	21.5 (2.6)*
Lift capacity (kg)	11.35 (1.8)	22.57 (1.8)*
Squat (repetitions)	23.3 (1.9)	30.4 (2.1)*
Grip strength combined (kg)	33.7(1.6)	36.1 (1.8)*
Horizontal push (kg)	48.1 (3.2)	64.0 (3.4)*

* denotes significance $P<0.05$

Discussion/Conclusion

Within the constraints of this research design, it appears that a functionally based rehabilitation programme can be effective in reducing reported pain and disability, while simultaneously increasing physical status, which combined appear to provide some assistance to workers returning to full time pre-injury duties.

References

1. Schonstein. E., Kenny D.T. *et al*. (2007) The Cochrane Colloboration Issue 3 (p1-43).
2. Hayden J.A., van Tulder M. *et al.* (2005) Annals of Internal Medicine 142 (9), p765.