

EFFECTS OF HIGH INTENSITY TRAINING ON PAIN, DISABILITY, EXERCISE CAPACITY AND MUSCLE STRENGTH IN PERSONS WITH NONSPECIFIC CHRONIC LOW BACK PAIN: PRELIMINARY RCT RESULTS

VERBRUGGHE J.¹, AGTEN A.¹, STEVENS S.¹, EIJNDE BO.¹, VANDENABEELE F.¹, TIMMERMANS A.¹

¹Hasselt University, REVAL - Rehabilitation Research Centre, BIOMED, Hasselt, Belgium

Background and aims

Nonspecific chronic low back pain (NSCLBP) is a musculoskeletal disorder affecting many people worldwide. Exercise therapy (ET) is an important component of NSCLBP management. However, effect sizes remain low¹. High Intensity Training (HIT) is an effective training method for improving physical fitness and health related parameters in healthy persons as well as for decreasing pain and disability in persons with chronic disorders². The value of HIT in NSCLBP rehabilitation is unclear. The aim of this study is 1) to compare HIT to conventional ET, and 2) to compare the effects of different modes of HIT, with regard to pain, disability, exercise capacity, and muscle strength, in persons with NSCLBP.

Methods

A five-arm parallel RCT (n=150) is carried out consisting of an ET program (24 sessions/12 weeks) organized at REVAL (Hasselt University, Belgium) in persons with NSCLBP. Participants are randomly assigned into one of four intervention groups performing various modes of HIT or a control group performing moderate intensity training resembling conventional care (Figure 1). Participants are measured at baseline and after completing the program. Primary outcome measures are pain intensity (Visual Analogue Scale), functional disability (Oswestry Disability Index), exercise capacity (VO₂max during exercise testing), and abdominal and back strength (Newton/kg during isometric strength testing).

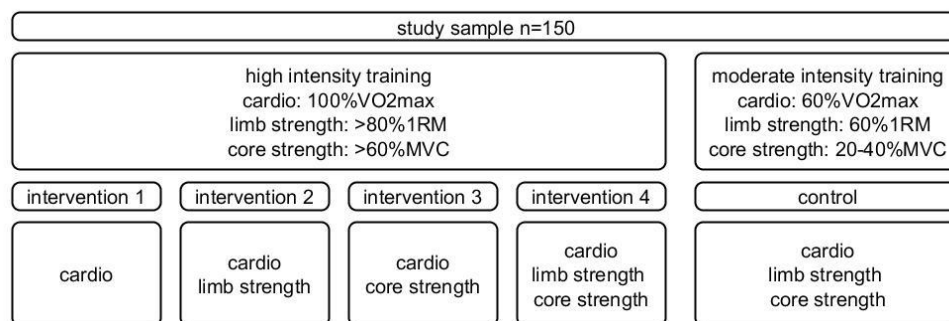


Figure 1: Therapy protocols.

Results

Forty-three persons with NSCLBP have completed the program (group average: n= 9). All outcomes showed time-related improvements in all groups (p>0.001). No between group differences were noted in any outcomes.

Conclusions

Preliminary data of this RCT suggest that HIT has positive effects on pain intensity, functional disability, exercise capacity, and isometric abdominal/back muscle strength, in persons with NSCLBP. Patient recruitment is still ongoing to increase the power of this study and further analyse the differences between HIT groups with specific modalities and conventional therapy.

Keywords

Low back pain, rehabilitation, high intensity training, exercise therapy, therapy modalities

References

1. van Middelkoop M, Rubinstein SM, Verhagen AP, Ostelo RW, Koes BW, van Tulder MW. Exercise therapy for chronic nonspecific low-back pain. Best practice & research Clinical rheumatology. 2010 Apr;24(2):193-204.
2. Gibala MJ, Little JP, MacDonald MJ, Hawley JA. Physiological adaptations to low-volume, high-intensity interval training in health and disease. The Journal of physiology. 2012;590(5):1077-84.