THESIS ABSTRACT

EFFECT OF LUMBOSACRAL ORTHOSIS ON POSTURAL CONTROL IN PATIENTS WITH CHRONIC LOW BACK PAIN

Fatemeh Azadinia

Department of Orthotics and Prosthetics, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran.

Email: azadinia.f@iums.ac.ir
Supervisor: Dr. Ismail Ebrahimi Takamjani
Degree program: PhD

ABSTRACT

Low back pain (LBP) is known as a central factor contributing to physical activity limitation in patients younger than 45 years and is the second-most common cause of referral to a physician in this population. Direct health service costs and indirect costs associated with disability and sick leave because of LBP impose considerable economic burden on society. Therefore, various therapeutic methods have been developed to treat and prevent symptom recurrence. Most treatment methods have focused on improving outcomes such as pain ratings, functional disability, range of motion, and muscle strength and endurance. Although impaired postural control has been frequently proven to be associated with LBP, a few clinical trials have assessed the efficacy of treatment at improving postural control. As impaired postural control may play an important role in chronicity and recurrence of LBP symptoms and can predict the future incidence of LBP, it seems that monitoring changes in postural control should be prioritized during the course of treatment. To date, no studies have examined effectiveness of rehabilitation modalities on the dynamic structure of center of pressure (COP) signals, so it is not known whether the conventional interventions can restore the normal behaviour of the postural control system.

OBJECTIVE(S)

To investigate the effect of lumbosacral orthosis (LSO) vs routine physical therapy on postural control using traditional and non-linear analysis techniques in patients with nonspecific CLBP.

METHODOLOGY

Forty-four patients with nonspecific chronic low back pain, aged 20 to 55 years, were randomly allocated to the experimental and control groups. Both groups received 8 sessions of physical therapy twice weekly for 4 weeks. The experimental group received non-extensible LSO, in addition to routine physical therapy. Pain intensity, functional disability, fear of movement/ (re)injury, and postural stability from the traditional/linear and non-linear dynamic point of view, in 3 levels of postural difficulty task were measured before and after 4 weeks of intervention.

REFERENCES


COPYRIGHT

Author(s) are the copyright holders of their original contributions and grant the Canadian Prosthetics & Orthotics Journal (CPOJ) a license to publish the thesis abstract or Poster. This work is licensed under a Creative Commons Attribution 4.0 International License.

KEYWORDS

Disability, Back pain, Lumbosacral orthosis, Chronic low back pain, LSO, center of pressure (COP).
FINDINGS
The LSO and control groups displayed a significant reduction in traditional/linear postural sway parameters at the most difficult postural task conditions. However, non-linear dynamic structure of center of pressure did not change significantly after 4 weeks of intervention. Both groups exhibited improvement in pain intensity, Oswestry Disability Index, and Tampa Scale of Kinesio-phobia. A significant difference between groups was found only for functional disability, with greater improvement in the orthosis group.

CONCLUSIONS
Both routine physical therapy and lumbosacral orthosis significantly reduced traditional postural sway parameters, whereas could not change dynamic structure of COP signal immediately after 4 weeks of intervention. It seems LSO and routine physical therapy are not effective in restoring the behaviour of the motor control system.

ACKNOWLEDGEMENT
We would like to thank Aspen Medical Products, Inc., Irvine, CA, USA, for donating the lumbosacral orthoses that were used in this study.

AUTHOR SHORT SCIENTIFIC BIOGRAPHY
Fatemeh Azadinia completed a PhD in Orthotics and Prosthetics at Iran University of Medical Sciences. She is an assistant professor in School of Rehabilitation Sciences, Iran University of Medical Sciences. Fatemeh is a researcher in musculoskeletal domain by special focus on spinal disorders and motor control.