Pilates Cadillac for chronic low back pain: A pilot study
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INTRODUCTION TO THE PROBLEM

- Chronic low back pain (CLBP) is a significant contributor to loss of work, reduced quality of life, and increased healthcare costs in the industrialized world (Richmond, 2004).
- More than 80% of CLBP is mechanically based (Chiu et al., 2007).
- Contributing factors to CLBP include: muscle dysfunction and weakness of the deep abdominal muscles (transversus abdominis), gluteals and lumbar multifidi; maladaptive postural changes (Costa et al., 2012; Wells, Kolt & Blaiscakewsky, 2012).
- Non-pharmacologic treatment of CLBP include physical therapy, chiropractic and Back School training (Cifuentes, Wiltjets & Waskia, 2011; Jarami, Nemeth, Krizna, Lacza & Betlehem, 2012).

STUDY AIM/OBJECTIVES

- The aim of this study was to determine the effectiveness and feasibility of an equipment-based Protocadillac protocol for workers with CLBP.
- The purpose of this protocol is to improve safety and productivity of industrial workers with low back pain.

PROJECT DESIGN

- A quasi-experimental, one group pre-test post-test pilot study of a supervised 6-week period of Protocadillac exercise for CLBP.
- Convenience sample of injured workers from Occupational Medicine setting.
- Outcome measurement tools: Pain Visual Analog Scale (VAS); Oswestry Disability Index (ODI).
- Scores of each tool recorded before and after the 6-week supervised Protocadillac intervention.
- Analysis with paired t-test using SPSS; Confidence interval set at 95% and Significance was set at P < 0.05.

RESULTS

- 20 were screened for eligibility; 12 participants completed the 6-week Protocadillac protocol.
- 83% female; 75% Caucasian; 41% active Workers Compensation case.
- Subjects were: Nurses, firefighters, Clerical and Administrative roles.

METHODOLOGY

- Kaiser Permanente and Samuel Merritt University IRB approval obtained (February 2014; June 2014).
- Continuous recruitment of subjects Kaiser Folsom Occupational Medicine department by referral and brochure (July 2014-October 2014).
- Eligible if: Low back pain > 3 months, no surgery in previous 12 months, age 20-65, no previous experience with Pilates.
- Measured Pain and Disability at baseline and after 6 week intervention.

- Pre-Intervention
  - VAS: 41.83 ± 13.12
  - ODI: 23.83 ± 16.57

- Post-Intervention
  - VAS: 11.06 ± 19.49
  - ODI: 12.50 ± 12.29

- *Cohen’s d = 0.85 = large effect size

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- Measured Pain and Disability at baseline and after 6 week intervention.
- Visual Analog Scale (VAS): A valid and reliable tool; continuous measure comprised of 100mm vertical line anchored with two verbal descriptors (one for each symptom extreme).
- Oswestry Disability Index (ODI): Valid and reliable tool frequently used to evaluate CLBP; 10 section scale assessing varied levels of function (pain intensity, sitting, sleeping, walking) on a scale from 0-5; categories totaled with percentage of disability calculated (0%= no disability; 100%= complete disability).
- Participant signed informed consent, completed the VAS and ODI pretests prior to the 6-week Pilates intervention.
- The Pilates CLBP protocol consisted of nine Pilates exercises performed with a neutral pelvic posture on the Cadillac exercise machine. Each exercise was included in the protocol based on its usefulness for strengthening the transversus abdominis, lumbar multifidi, and gluteals as well as creating an awareness of spinal stabilization during movement.
- All participants completed two 50-minute Pilates sessions (with one-on-one supervision by the principal investigator, who is a certified Pilates instructor) per week for 6 weeks (12 total sessions).
- Each participant was asked to do 3-30 minute home exercises practice sessions during the 6-weeks with the assistance of a video recorded demonstration of each exercise via “Pilome” link.
- After the 6-week intervention each participant completed the VAS and ODI posttest.
- The pre and post test scores were compared with paired t-test analysis.
- Intervention took place between 7/6/14 - 11/13/14.

CONCLUSIONS

- The Pilates CLBP protocol significantly reduced pain and disability in participants, with the VAS post intervention scores having a dramatic reduction.
- These results indicate that a Pilates exercise program may be an effective therapeutic modality to reduce CLBP, particularly in individuals who do not respond to traditional therapies.
- The participants in the present study included professionals with a high incidence of CLBP, such as firefighters and healthcare workers, who did not respond to traditional therapies administered by the physicians and physical therapists at the Occupational Medicine clinic.
- The intervention in the present study was an effective alternative therapy for management of work-related CLBP, and the significant reductions in pain and disability indicate Pilates training may be an appropriate treatment method for injured workers.
- Results agree with previous published literature demonstrating Pilates reduces pain and disability [16,19,21,22]

REFERENCES
