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PREVENTION & REHABILITATION: PILOT STUDY

The effectiveness of a 6-week Pilates programme on outcome measures in a population of chronic neck pain patients: A pilot study



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KEYWORDS

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Summary Neck pain is becoming increasingly more common and multiple interventions have been advocated in its management. The literature supports the use of a variety of exercises including specific low load endurance exercises, scapular muscle retraining and neck and upper limb strengthening. Pilates is one form of exercise that is developing in popularity. This pilot uncontrolled study investigates whether a 6-week matwork based Pilates programme can change outcome measures in a group of chronic neck pain patients. Thirteen subjects were assessed on self-report tests; neck disability index (NDI), patient specific functional scale (PSFS), numerical rating pain scale (NRPS) and one objective measure; the abdominal drawing in test (ADIT). A statistically significant improvement was obtained in the disability outcomes (NDI and PSFS) at both 6 and 12 weeks. The NRPS also demonstrated statistical improvement at 12 weeks but not at 6. The minimal clinically important difference (MCID) is the score that reflects a change that is meaningful for the patient and this was achieved at 12-weeks for the NDI (>5 points), PSFS (>3 points) and NRPS (>2 points). Only 2 subjects reached normal levels in the ADIT at 12-weeks. The results of this pilot study suggest that Pilates has a role to play in reducing pain and disability in neck pain patients.

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Introduction

Neck pain is becoming increasingly more common in our society. The 12-month prevalence has been reported to be between 30 and 50% (Strine, 2007) and lifetime prevalence as being approximately 70% (Bovim et al., 1994). Combined low back and neck pain costs an estimated \$90 billion per year in the United States (Luo et al., 2004). The prevalence of neck pain increases with age (Bovim et al., 1994) and is more common in females (Fejer et al., 2006). Contributing factors are poorly understood and are usually multifactorial, including poor posture, anxiety, depression, neck strain, and sporting or occupational activities (Binder, 2004).

Multiple interventions have been used in the management of neck pain. A systematic review supports a combination of exercise and manual therapy (Gross et al., 2007). The evidence for exercise alone is conflicting. Some studies demonstrate a long-term effect (>1 year) from exercise (Jull et al., 2002; Evans et al., 2002) while other studies show exercise to be effective in the short-term only (Stewart et al., 2007). A range of different types of exercise have been reviewed including specific low load endurance exercises for the deep cervical flexor muscles, scapular muscle retraining (Jull et al., 2002), neck and upper limb strengthening, high tech MedX rehabilitative exercise (Evans et al., 2002), stretching, aerobic and trunk and lower limb strengthening (Stewart et al., 2007). This huge variety is an indication of the lack of general consensus concerning the most effective exercise in the management of neck pain.

Pilates is a form of exercise that has become more widely used in recent years in both fitness and rehabilitation circles. Based on the teachings of Joseph Pilates (1880–1967) and popular for decades in the dance medicine community, the Pilates method is a type of physical and mental conditioning using well designed and choreographed movements. Pilates pays special attention to the muscles which stabilize the joints, thus encouraging correct body mechanics (Bass, 2005). It therefore strengthens the deep spinal stabilising muscles, lengthens the spine, trains mind-body awareness and improves posture (Herman, 2004). The neuromuscular demands of traditional Pilates are high and therefore the Australian Physiotherapy and Pilates Institute have modified the original 34 classical repertoire of matwork exercises as taught by Joseph Pilates. These modified exercises incorporate the latest research on instability, muscle imbalance and adverse neural tension (APPI, 2012). The key elements of these modified Pilates include activation of the lumbo-pelvic stabilising muscles, correct ribcage/thoracic alignment, scapula-thoracic stabilisation and lateral costal breathing. Pilates also encourages activation of the deep neck flexor muscles by encouraging a neutral position of the cervical spine with slight upper cervical flexion at the cranio-cervical junction.

To date Pilates research is lacking. The effects of Pilates in normals and dancers has been studied and positive effects have been demonstrated in terms of improved flexibility, core stability, posture and strength (Segal and Hein, 2004; Herrington and Davies, 2005; Kuo et al., 2009). With regard to clinical populations, much of the research has concentrated on the effects of Pilates on low back pain. There is some evidence demonstrating a reduction in pain and disability levels although the methodological qualities

of the studies are poor (Rydeard and Leger, 2006; Donzelli et al., 2006). To date there are no studies looking at Pilates as an intervention for chronic neck pain.

The aim of this study is to evaluate the effectiveness of a 6-week Pilates programme on self-report outcome measures in people with neck pain of greater than 6 weeks duration. Results are analysed both at 6 and 12-week follow up.

Methods

This pilot project used a pre and post intervention study design and was approved by the ethics committee of the University College Dublin (UCD).

Subjects

Twelve female subjects and one male subject participated in this study. Subjects were recruited via advertisements in physiotherapy practices, GP surgeries, libraries, sports clubs and a local paper. Following the poster campaign 19 subjects were invited for further assessment. Eighteen subjects were deemed suitable for entry into the pilot study, 4 of whom could subsequently not participate due to other commitments. This left 14 eligible subjects. One subject dropped out after 3 classes (Fig. 1).

Subjects were assessed individually by the principal investigator prior to beginning the programme. A brief explanation of the project and an information sheet were provided. If subjects were happy to proceed, written consent was obtained. Baseline demographics were collected. Information regarding duration of symptoms, nature of onset, distribution of symptoms and any current treatment was also noted. Subjects were screened for inclusion/exclusion criteria. Subjects were included in this study if aged between 18 and 60 years and reported a history of neck pain with or without arm pain, of greater than 6 weeks duration or recurring neck pain consisting of pain for at least one week per

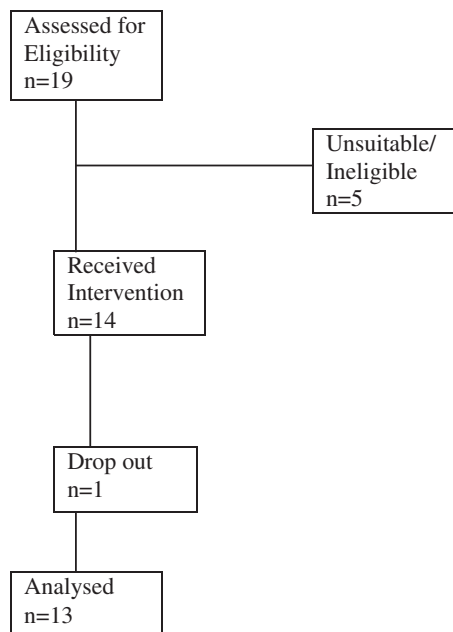


Figure 1 Participation flow and follow-up evaluation.

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