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Original article

A randomised controlled trial comparing graded exercise treatment and usual physiotherapy for patients with non-specific neck pain (the GET UP neck pain trial)

Sionnadh M. McLean [a,*], Jennifer A. Klaber Moffett [b], Donald M. Sharp [b], Eric Gardiner [b]

[a] School of Health and Well Being, Sheffield Hallam University, Broomhall Road, Sheffield S10 2BP, UK
[b] Institute of Rehabilitation, 215 Anlaby Road, Hull, East Yorkshire HU3 2PG, UK

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ABSTRACT

Evidence supports exercise-based interventions for the management of neck pain, however there is little evidence of its superiority over usual physiotherapy. This study investigated the effectiveness of a group neck and upper limb exercise programme (GET) compared with usual physiotherapy (UP) for patients with non-specific neck pain. A total of 151 adult patients were randomised to either GET or UP. The primary measure was the Northwick Park Neck pain Questionnaire (NPQ) score at six weeks, six months and 12 months. Mixed modelling identified no difference in neck pain and function between patients receiving GET and those receiving UP at any follow-up time point. Both interventions resulted in modest significant and clinically important improvements on the NPQ score with a change score of around 9% between baseline and 12 months. Both GET and UP are appropriate clinical interventions for patients with non-specific neck pain, however preferences for treatment and targeted strategies to address barriers to adherence may need to be considered in order to maximise the effectiveness of these approaches.

1. Introduction

Neck pain is a costly problem which affects around 50% of people at some point in their lives (Borghouts et al., 1999; Fejer et al., 2006). The role of different conservative treatments for managing neck pain is not clear. Evidence from systematic reviews supports the use of exercise for managing neck pain (Hurwitz et al., 2008). In particular, general neck and upper limb endurance training, dynamic strengthening programmes and cervical stabilisation exercises appear to be more favourable exercise options than stretching, return to normal activity or no intervention (Jull et al., 2002; Sarig-Bahat, 2003). However, exercise is not superior to other conservative treatment approaches (Viljanen et al., 2003). For example, multimodal treatments such as those usually offered by physiotherapy may also be effective for patients with neck pain (Hurwitz et al., 2008). Usual physiotherapy offers a broad range of treatments which are normally tailored to individual patients needs. Interventions commonly include specifically tailored exercises such as McKenzie exercises in combination with manual therapy, other passive treatments, advice and education (Klaber Moffett et al., 2005).

This study aimed to investigate, at six weeks, six months and 12 months, the effectiveness of a graded neck and upper limb exercise programme, based on stabilisation, endurance and strengthening principles, compared with usual physiotherapy for patients with non-specific neck pain.

2. Methods

2.1. Study design

This multi-centre, pragmatic, randomised controlled trial (RCT) recruited patients with non-specific neck pain. Patients were randomised to either a graded neck and upper limb exercise class (GET) or usual physiotherapy (UP). Ethics approval was gained from Hull & East Riding Research & Ethics Committee.

2.2. Recruitment of participants

Patients were recruited from waiting lists of four secondary care physiotherapy departments in England between February 2004

* Corresponding author. Sheffield Hallam University, School of Health and Well Being, Room 201, 38 Collegiate Crescent, Collegiate Campus, Broomhall Road, Sheffield S10 2BP, UK. Tel.: +44 0114 2252271.
E-mail address: s.mclean@shu.ac.uk (S.M. McLean).

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and July 2005. Patient follow-up proceeded until July 2006. Referral letters were used to identify potentially eligible patients aged 18 years or over, with sub-acute or chronic mechanical neck pain. A letter was sent to potentially eligible patients inviting them to take part in the study. Patients who were happy to be contacted, were telephoned by a trial co-ordinator who explained the study to them. Patients verbally consenting to participate in the trial were given a face-to-face appointment where the trial co-ordinator confirmed the patient's eligibility for the trial. Patients were thoroughly screened by trained assessors and excluded from the study if they had serious neck or upper limb problems or any other potentially serious pathology e.g. systemic disease, progressive or worsening neurological disorders, inflammatory conditions, major trauma which would affect their ability to participate safely in the trial or if they had received physiotherapy for neck pain in the three months prior to trial entry. The aim of screening was to ensure that only patients classified as having non-specific neck pain and who were safe to participate in the GET programme were recruited to the study. Finally, patients who were eligible and consented, completed the self-report baseline questionnaires and were then randomised to one of the interventions.

2.3. Randomisation and blinding

Patients were randomised to the interventions using consecutively numbered, sealed, opaque envelopes compiled by a statistician who was not involved in subject recruitment or data collection. The two interventions were randomised in blocks of three and four. Patients were stratified by treatment centre and high or low Northwick Park Neck Pain Questionnaire (NPQ) scores, where high scores were $\geq$15 and low scores were $\leq$14. Allocation of patients was concealed from trial co-ordinators until after the end of the recruitment process when baseline data questionnaires had been completed.

Blinding of patients and therapists was not possible, however, to maintain a position of equipoise, patients were made aware that both interventions were considered active physiotherapy treatments and that neither treatment was known to be better than the other. Treating physiotherapists were not involved in recruitment of subjects, data collection or analysis. To ensure assessor blinding, baseline data was collected through patient-completed questionnaires by trial co-ordinators who remained independent of data analysis processes. Thereafter follow-up data was collected via the postal system and data was anonymized and scanned electronically into computer software using an independent data scanning service.

2.4. Treatment protocols

2.4.1. Graded exercise treatment (GET)

Patients randomised to GET were asked to attend a minimum of six and a maximum of 12 sessions over a six week period; on average they attended six sessions (range 0–11). Sessions took place in the physiotherapy departments of participating hospitals and class sizes ranged from six to 10 patients. The exercise class consisted of warm-up exercises, range of movement exercises for neck, trunk and upper limb and endurance training for the upper limb, trunk and lower limbs. Patients began each session with warm-up exercises and range of movement exercises. In this phase patients learned how to control compensatory spinal movement patterns in various postures and activities e.g. controlling trunk lateral flexion or flexion when pedalling a stationary bike or controlling chin poke when elevating the upper limbs through flexion or abduction. The protocol for the exercise class, examples of possible compensatory strategies employed by patients and possible corrections are outlined in a supplementary electronic file. Varying levels of physical ability and confidence were expected, so patients were encouraged by the physiotherapist to progress to the endurance phase of training when the patient felt ready. In this phase there were eight simple exercises which were conducted for 1 min each (one set), with a weight of the patients choice, at a speed of the patient's choosing. With support from the physiotherapist, patients progressed from one set of endurance exercises to a maximum of three sets as they felt able. Each session varied between 30 and 60 min as the patient's individual ability allowed, but patients were encouraged to gradually increase the amount and intensity of exercise over the six week period. Within the framework of the class structure, physiotherapists were encouraged to provide advice regarding progression, regression or modification of all exercises as necessary to allow patients to perform exercise in a pain-free manner and to respond to any patient's individual queries and concerns.

The treating physiotherapists were volunteers who stayed with this treatment arm through the course of the trial. They received standardised training of three 2 h training sessions which included practical and theoretical principles of employing cervical stabilisation within the exercise class, training about the phases and purpose of the exercise class and observation of a class to check fidelity of the treatment delivery. Further adhoc sessions at each centre were an opportunity to further check the fidelity of the treatment and an opportunity for physiotherapists to ask questions informally.

2.4.2. Usual physiotherapy (UP)

Usual physiotherapy interventions were at the discretion of the treating physiotherapist. Possible options included manual therapy, neural and muscle treatments, modalities, individualised exercise, advice and education. Table 1 provides a breakdown of actual treatments delivered. Assessment sessions lasted between 40 and 60 min and follow-up treatment lasted 20–30 min. On average patients were seen approximately six times (range 0–13). Patients randomised to UP were not eligible to participate in GET.

Table 1
Components of usual physiotherapy treatment.

Treatment	Specific	No. of patients who received this treatment
Home exercise	McKenzie exercises	31
	Neck strengthening	0
	Stretches	25[a]
	Cervical stabilisation	24
	Upper limb strengthening	4
	Other specific exercises	33[b]
	General exercise	3
Manual Therapy	Manipulation	0
	Mobilisation	42
	Neural biased	4
	Muscle biased	20
	Massage	1
Modalities	Traction	3
	Shortwave diathermy	7
	Ultrasound	3
	Interferential	0
	TENS	2
	Acupuncture	4
	Ice/heat	15
	Collar	1
	Taping	1
	Ergonomic advice	1

[a] Stretches were either active range of motion exercises or muscle stretches.
[b] Other specific exercises included scapular, thoracic, postural exercises, relaxation etc.