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A random population-based study using a structured telephone questionnaire was undertaken to determine the frequency, duration and prevalence of waking cervical spine pain and stiffness, headache, and aching between the scapulae or in the arm and their relationship to age and gender. Seventy-six per cent of households contacted completed the questionnaire, yielding a total of 812 questionnaires. Subjects most commonly reported waking with scapular or arm pain (27%) followed by headache (19%), cervical pain (18%) and cervical stiffness (17%). The majority of subjects reported that symptoms lasted for more than an hour on one or two occasions during the week. Subjects who reported the presence of one type of waking symptom were significantly more likely to report other waking symptoms. Females were significantly more likely to wake with a headache than males (OR 2.5, 95% CI 1.6 to 4.0), while all subjects aged over 60 years were significantly less likely to wake with a headache than subjects in other age groups (OR 0.6, 95% CI 0.4 to 1.0). Females exhibited a decline in waking cervical pain, stiffness and headache with increasing age. In contrast, males exhibited a peak prevalence of waking cervical pain, stiffness and headache in the 40 to 59 year age group. The prevalence of waking with aching between the scapulae or in the arm behaved differently from the other symptom groups in both genders.

Key words: Age Factors; Cervical Vertebrae; Headache; Neck Pain; Sex Factors


This study was undertaken to establish whether children with myelomeningocele have abnormal kinaesthesia of the hands. Twenty-one children with myelomeningocele and 21 control children aged between six and 12 years were involved in the study. The level of kinaesthetic awareness in the hands was measured by examining the child’s ability to copy hand positions, using visual cueing and kinaesthetic cueing. Both accuracy and speed of copying hand gestures were assessed. Children with spina bifida were significantly less accurate in achieving hand positions than the control group ($\chi^2(1) = 22.60, p < 0.001$), with 73% of the children with spina bifida achieving accurate replications compared with 87% in the control group. Furthermore, children with myelomeningocele were shown to be slower than the controls ($F(1,280) = 15.49, p < 0.001$). The impaired kinaesthetic awareness found in this study is considered to be one of the factors behind the poor hand function observed in children with myelomeningocele.

Key words: Hand; Kinesthesis; Meningomyelocele; Proprioception


This research evaluated two hand-held tools (Superthumb and Kneeshaw device) that have been developed in order to reduce hand pain associated with the performance of manual therapy. Two studies were conducted: one evaluated the ability to perceive elastic stiffness with the devices and the other evaluated physiotherapist and patient comfort when the devices were used to apply a mobilisation to the lumbar spine. In the first study we found that the two tools and the pisiform grip provided equivalent ability to detect small differences in elastic stiffness, however the tools introduced a bias so that the stiffness stimuli felt stiffer than when assessed with the pisiform grip. In the second study we found that the two tools were substantially less comfortable than the pisiform grip, for both patient and therapist, when a therapist applied a Grade III mobilisation to the lumbar spine. The results suggest that neither tool, in its current form, is suitable for clinical practice.

Key words: Equipment Design; Hand; Manipulation, Orthopedic

This study determined the inter-tester and intra-tester reliability of physiotherapists measuring functional motor ability of traumatic brain injury clients using the Clinical Outcomes Variable Scale (COVS). To test inter-tester reliability, 14 physiotherapists scored the ability of 16 videotaped patients to execute the items that comprise the COVS. Intra-tester reliability was determined by four physiotherapists repeating their assessments after one week, and three months later. The intra-class correlation coefficients (ICC) were very high for both inter-tester reliability (ICC > 0.97 for total COVS scores, ICC > 0.93 for individual COVS items) and intra-tester reliability (ICC > 0.97). This study demonstrates that physiotherapists are reliable in the administration of the COVS.

Key words: Brain Injuries; Outcome Assessment (Health Care); Rehabilitation; Reproducibility of Result


Evidence-based practice involves the use of evidence from systematic reviews and randomised controlled trials, but the extent of this evidence in physiotherapy has not previously been surveyed. The aim of this survey is to describe the quantity and quality of randomised controlled trials and the quantity of systematic reviews relevant to physiotherapy. The Physiotherapy Evidence Database (PEDro) was searched. The quality of trials was assessed with the PEDro scale. The search identified a total of 2,376 randomised controlled trials and 332 systematic reviews. The first trial was published in 1955 and the first review was published in 1982. Since that time, the number of trials and reviews has grown exponentially. The mean PEDro quality score has increased from 2.8 in trials published between 1955 and 1959 to 5.0 for trials published between 1995 and 1999. There is a substantial body of evidence about the effects of physiotherapy. However, there remains scope for improvements in the quality of the conduct and reporting of clinical trials.

Key words: Evidence-Based Medicine; Meta-Analysis; Physical Therapy; Randomized Controlled Trials


Evaluating the need for orthotic treatment may include the measure of forefoot-to-hindfoot alignment. This paper describes a table-mounted goniometric device that improves intra-rater reliability and simplifies the measurement of forefoot alignment. Instructions for constructing the device are provided. Use of this device may help clinicians evaluate forefoot alignment when making orthotic correction of the foot.

Key words: Forefoot, Human; Physical Examination; Range of Motion, Articular


(No Abstract Provided)

Much of the research concerning techniques used by physiotherapists has focused upon electrothermal agents, so neglecting fundamental questions concerning practice and differences in technique use. A recent study in England addressed these deficits, and determined that techniques were used in ordered combinations, which differentiate the profession into ‘typologies’ or specialities. The purpose of the present study was to determine whether a similar picture would emerge in Australia, and to determine the type and extent of technique use amongst Australian physiotherapists. This replication study comprised a questionnaire survey of 141 hospital physiotherapists working in Southeast Australia. Information concerning the range and frequency of techniques used over the preceding six months was obtained. Descriptive analyses indicated high frequency use of exercise therapy, manipulation, heat packs, massage and ultrasound. Multidimensional scaling revealed a clear structure concerning combination use of techniques, and a coherent typology based on this usage. Differentiation of the profession according to the typologies supports the specialist areas identified in England, namely respiratory, neurological and orthopaedic/musculoskeletal physiotherapy. A further subdivision of the latter was possible in Australia, with the emergence of both a manipulative speciality and an exercise rehabilitation speciality. While this study confirms the findings of the earlier research, it identifies important differences in practice between Australia and England.

Key words: Exercise Therapy; Methods; Questionnaire; Specialism


Patient outcomes at discharge from acute care after knee arthroplasty were investigated in a prospective observational outcome study at three Melbourne public acute care hospitals during a five-month period from November 1999 to March 2000. The participants were 105 consecutive patients (35 at each hospital), with a mean age of 71 years. Outcome measures were length of stay, destination (home or rehabilitation), knee range of movement, and functional mobility at discharge from the acute care facility. During the study period, mean hospital length of stay across the three hospitals was 6.5 days, more than 30% less than the Victorian average for the preceding year. In that time, 56% of patients had achieved functional independence sufficient for discharge directly home, however only 36% were actually discharged home. The reasons identified for discharge to rehabilitation despite the achievement of sufficient functional independence included pressure on clinicians to decrease length of stay and the need to make decisions regarding discharge early in the post-operative recovery when the eventual patient outcome may still be unclear. Unnecessary discharges to rehabilitation increase the overall length of stay in the health care system and costs per patient. This finding suggests a method of risk screening is required to assist clinical decision making with regard to discharge.

Key words: Arthroplasty; Knee; Patient Discharge; Outcome Assessment (Health Care)


Positioning combined with coughing and huffing is frequently used to promote secretion clearance. Maximum expiratory pressure (MEP) and peak expiratory flow rate (PEFR) have been used as surrogate measures of cough and huff strength. This study investigated the effect of body position on MEP and PEFR. Repeated measures of MEP and PEFR were performed across seven randomised positions (standing, chair sitting, sitting in bed with backrest vertical, sitting in bed with backrest at 45 degrees, supine, side lying, and side lying with head down tilt 20 degrees) on 25 adults with normal respiratory function (NRF) and 11 adults with chronic airflow limitation (CAL). For the NRF group, MEP in standing (143 ±
10cmH₂O, mean ± SEM) was significantly higher than MEP in chair sitting (133 ± 10cmH₂O) which in turn was significantly higher than in the remaining positions. The MEP in head down tilt (108 ± 9cmH₂O) was significantly lower than in all other positions. The PEFR in standing (571 ± 24L/min) was significantly higher and head down tilt (486 ± 23L/min) was significantly lower than in all other positions. For the CAL group, MEP in standing (134 ± 18cmH₂O) was significantly higher, while in head down tilt (96 ± 15cmH₂O) was significantly lower, than in most other positions. For the CAL group, PEFR in standing (284 ± 40ml/sec) was significantly higher, while in head down tilt (219 ± 38ml/sec) was significantly lower, than in most other positions. Body position has a significant effect on MEP and PEFR in NRF and CAL subjects, with the lowest values in the head down position. Thus, to maximise the strength of expiratory manoeuvres during treatments that use the head down position, patients should be encouraged to adopt a more upright position when coughing or huffing.

Key words: Cough; Maximal Expiratory Flow Rate; Peak Expiratory Flow Rate; Posture


This paper reports on a survey regarding physiotherapists' knowledge, use and attitudes to non-steroidal anti-inflammatory drugs (NSAIDs), some of which have recently been re-scheduled to non-prescription dispensing. A written survey instrument was developed and administered to 750 physiotherapists in South Australia, Tasmania and the Australian Capital Territory (50% of the registered physiotherapists). Responses were received from 285 physiotherapists. The survey identified opportunities for patient misuse and misadventures with NSAIDs in conjunction with physiotherapy management. Differences in physiotherapist understanding of the dosage and actions of oral and topical administrations of NSAIDs were highlighted, as were the moral and ethical responsibilities of physiotherapists to patients considering taking NSAIDs. The study identified the need for regular professional updates on quality use of NSAIDs.

Key words: Anti-Inflammatory Agents; Ethics; Legislation, Medical; Questionnaire


This study investigated whether a program of bed exercises increased the effectiveness of a mobility regimen during the acute period of hospitalisation, for patients who had undergone primary hip arthroplasty. Forty-two patients were randomly allocated, using a concealed allocation procedure, to one of two groups. Patients in the control group were mobilised according to a standard post-operative protocol. Patients in the exercise group were also mobilised using this protocol but in addition received a program of bed exercises. Severity of pain, range of active hip flexion and hip abduction, and a functional assessment were measured by a blinded assessor on the third or fourth post-operative day and again on the seventh or eighth post-operative day. Significant improvements were found in all outcome measures from the third or fourth post-operative day to the seventh or eighth post-operative day. No significant differences were seen between groups for any outcome measures at either measurement time. Bed exercises do not appear to be of additional benefit to a mobility regimen during the period of acute hospitalisation after primary hip arthroplasty.

Key words: Arthroplasty; Hip Joint; Outcome Assessment (Health Care); Randomized Controlled Trials


This paper reports results from a qualitative study of physiotherapists in a community-based and family-centred setting in which a growing awareness of the family-centred approach...
accompanied the transition from an institutional structure to a predominantly community-based structure. The goal was to gain insight into how a family-centred philosophy was working and to explore the benefits and dilemmas for physiotherapists in such a setting. Semi-structured interviews were conducted with 10 physiotherapists working with children with disabilities. Analysis of the results against a continuum of family control versus physiotherapist control showed that physiotherapists saw their roles as working with the family to discuss shared goals. However, qualitative analyses showed tensions between the policy of family involvement and another influential policy in physiotherapy: evidence-based practice. Further, there were tensions if the desires of the family could not be matched with available resources. The results show benefits and barriers to working in a community-based, family-centred approach. Barriers included practical dilemmas, policy dilemmas, and career dilemmas. This paper argues that, while family-centred practice is supported by the literature and physiotherapists, significant policy and professional issues need to be addressed before such practice can be fully adopted.

Key words: Client-Centered Care; Quality of Health Care; Research


Manipulation of the cervical spine is one of the few potentially life-threatening procedures performed by physiotherapists. Is it worth the risk? A comparison of risks and benefits indicates that at present, the risks of cervical manipulation outweigh the benefits: manipulation has yet to be shown to be more effective for neck pain and headache than other interventions such as mobilisation, whereas the risks, although infrequent, are serious. This analysis is of particular concern because the conditions for which manipulation is indicated are benign and usually self-limiting. Because physiotherapists have legal and ethical obligations to the community to avoid foreseeable harm and provide optimum care, it may be prudent to determine who in our profession should perform cervical manipulation. That is, the profession could restrict the practice of cervical spine manipulation. Although all registered physiotherapists in Australia are entitled to perform cervical manipulation, few choose to use this intervention. Therefore, it might be feasible to encourage those practitioners who wish to use cervical manipulation to undertake formal education programs. Such a requirement could be embodied in a code of practice that discourages those without formal training from performing cervical manipulation. By taking such measures, we could ensure that our profession exercises wisdom in its monitoring and use of cervical manipulation.

Key words: Cervical Vertebrae; Ethics, Medical; Manipulation, Orthopedic; Spine


The use of cervical manipulation presents concerns because of a risk of devastating side effects of trauma to the vertebral artery. Little is known about the frequency of use of cervical manipulation versus passive mobilisation by physiotherapists. A recent national, multi-centre randomised clinical trial of the physiotherapy management of cervicogenic headache provided an opportunity to gain an insight into practices of a sample of manipulative physiotherapists across Australia. The treatment records for the 100 subjects who received only manipulative therapy, or manipulative therapy with exercise as per the trial protocol, were audited. The results revealed that cervical manipulation was used in 20.2% of the 1090 treatments provided to these subjects but cervical joint mobilisation only was used in the vast majority of treatments (77.6%). Nevertheless, 42% of subjects were treated with cervical manipulation at some time. In most instances, manipulation was accompanied by passive mobilisation in the same treatment session. Patients were manipulated on one to six occasions and this occurred predominantly in the latter half of the 12-treatment program. Cervical manipulation
was used less frequently in the group who also received exercise. The data suggest that the physiotherapists participating in this study used cervical manipulation selectively and relatively conservatively considering the high use of cervical mobilisation techniques. This may reflect their due regard to safety in the treatment of the cervical region.

Key words: Cervical Spine; Manipulation, Orthopedic; Neck; Spine


Taping the scapula has been suggested as a method of improving both scapula position and muscular efficiency of the shoulder girdle. These factors have been linked to neck and arm problems in violinists. The purpose of this study was to evaluate the effects of tapping the scapulae into a position that prevented excessive elevation and protraction whilst playing. Eight professional violinists played three different musical excerpts with and without scapula taping applied in random order. Electromyographic activity was recorded from the upper trapezius, the scapula retractors and the right sternocleidomastoid muscles. Performances were recorded onto videotape and audiocassette, and self-report data collected for later analysis. Compared with the control condition, scapula taping increased electromyographic activity in the left upper trapezius muscle during playing by 49% as an overall effect, with a 60% increase in the most physically demanding piece played. Lower music quality was detected in the same piece by raters blinded to performance conditions. Taping also had significant negative effects on subjects’ reports of concentration and comfort. Short-term application of scapula taping did not enhance selected scapula stabilising muscles during playing and was not well tolerated by professional violinists.

Key words: Electromyography; Music; Scapula


Coughing and huffing have been shown to be effective airway clearance techniques and some authors have anecdotally reported that a huff requires less energy than a series of coughs commencing and finishing at the same lung volume. The aim of this study was to determine whether there is a difference in the energy expenditure between periods of huffing and directed voluntary coughing commencing from the same initial lung volume in young asymptomatic subjects. Energy expenditure was measured using open-circuit indirect calorimetry equipment. Twenty-four non-smoking asymptomatic subjects (12 male, 12 female, aged 18-24 years), without any form of disease and within 10% of their predicted pulmonary function, completed the study. Energy expenditure was measured over three 10min, randomly ordered sessions of huffing, directed coughing and rest. The forced expiratory sessions comprised a single huff or double-barrel cough (both starting at total lung capacity) at the end of every two minutes. Each session was separated by a 5min washout period. No significant difference in energy expenditure was found between the huffing and directed coughing periods (mean difference 0.003 mL/kg/min (95% CI -0.160 to 0.114) and both produced significantly greater energy expenditure than rest (rest and huff mean difference 0.309 mL/kg/min (95% CI 0.080 to 0.549) and rest and cough mean difference 0.306 mL/kg/min (95% CI 0.074 to 0.508)). The suggested benefits of huffing versus coughing in terms of energy conservation are yet to be shown.

Key words: Cough; Energy Metabolism; Lung Volume Measurement; Respiratory Disorders

Progressive resistance training has positive effects on the health of elderly people, however exercise programs for seniors frequently focus on other forms of exercise. This study is a randomised trial with a blinded assessor comparing a community based progressive resistance training program (n = 20) with a flexibility program (n = 20), both one hour twice weekly for 10 weeks. Outcomes were strength, gait, balance and quality of life. Progressive resistance training had a greater effect than flexibility training on right sided quadriceps strength (mean difference between groups = 7.7%; 95% CI 3.6-11.8%, \(p<0.003\) MANOVA), left sided quadriceps strength (mean difference = 9.9%; 95% CI 5.6-14.2%, \(p<0.003\) MANOVA), left sided biceps strength (mean difference = 15.2%; 95% CI 11.7-19.2%, \(p<0.003\) MANOVA), functional reach (mean difference = 11.7%; 95% CI 7.1-16.3%, \(p<0.003\) MANOVA) and step test (mean difference = 8.6%; 95% CI 3.8-13.4%, \(p<0.003\) MANOVA). Neither group had improvements in SF36 quality of life measures. Results suggest progressive resistance training produces greater strength, gait and balance improvements in elderly people than a flexibility exercise program.

Key words: Aged; Exercise; Physical Fitness; Quality of Life


We retrospectively analysed 219 consecutive treatment plans submitted to a large New South Wales workers’ compensation insurer for workers coded by the insurer as suffering from back pain. The purpose was to (i) describe the quality of goals of treatment provided to insurers by physiotherapists for workers with back pain using guidelines provided by the WorkCover Authority of New South Wales (WorkCover); (ii) compare the physiotherapists’ prognoses against prognoses indicated in clinical practice guidelines; and (iii) make recommendations about the communication system between physiotherapists and insurers. The back pain of most treated workers was classified as acute and the majority of physiotherapists estimated that treatment would be of short duration, which is concordant with current treatment guidelines. However, most physiotherapists did not provide precise, measurable or time-specific treatment goals, despite this being emphasised by WorkCover. We propose ways of improving communication practices between physiotherapists and insurers.

Key words: Communication; Low Back Pain; Patient Care Planning; Workers’ Compensation


This paper outlines a practical approach to assist physiotherapists to interpret the results of diagnostic or screening tests. Diagnostic tests are used during clinical assessment to increase or decrease the clinician’s estimate of the likelihood that a client has a particular condition. A negative result for a test that is 100% sensitive can rule a condition out (SnOUT), and a positive result for a test that is 100% specific can rule a condition in (SpIN). However, tests are rarely 100% accurate, and false positive and false negative results can occur. The examining therapist needs to estimate the probability that a client has a particular condition (the pre-test probability), then estimate the extent to which they are more or less certain given a positive or negative test result (the post-test probability). The likelihood ratio, which combines the information provided by a test’s sensitivity and specificity, is the most useful tool for the clinical interpretation of test results.

Key words: Diagnosis; Intervention Studies; Likelihood Functions; Sensitivity and Specificity

After stroke, up to 81% of individuals develop shoulder subluxation, a condition frequently associated with poor upper limb function. Recently, electrical stimulation has been applied to shoulder muscles to treat shoulder subluxation. The purpose of this meta-analysis was to examine the efficacy of surface electrical stimulation for the prevention or reduction of shoulder subluxation after stroke. A meta-analysis of all eligible randomised or quasi-randomised trials of electrical stimulation for the treatment of shoulder subluxation identified by computerised and hand searches of the literature was carried out. The primary outcome measure of interest was subluxation. Seven (four early and three late) trials met the inclusion criteria. The mean PEDro score out of 10 for quality of the methods was 5.8 for the four early trials and 4.3 for the three late trials. Data were pooled when subluxation was measured in millimetres. Analysis found that, when added to conventional therapy, electrical stimulation prevented on average 6.5mm of shoulder subluxation (weighted mean difference, 95% CI 4.4 to 8.6) but only reduced it by 1.9mm (weighted mean difference, 95% CI -2.3 to 6.1) compared with conventional therapy alone. Therefore, evidence supports the use of electrical stimulation early after stroke for the prevention of, but not late after stroke for the reduction of, shoulder subluxation.

Key words: Cerebrovascular Disorders; Electrical Stimulation Therapy; Meta-Analysis; Shoulder Dislocation


Physiotherapists are exposed to many risk factors in their work environment. Their general health status is largely unknown, and conflicting studies suggest possible adverse reproductive effects of electromagnetic radiation to which they may be exposed. As part of a larger study, a systematic sample of one in four physiotherapists on a state register (N = 824) was surveyed. Each subject completed an eight page questionnaire, answering questions about musculoskeletal and general health, exposure to risk factors, exposure to electrophysical agents and reproductive outcomes. The response rate was 67.8%. The incidence of congenital malformations and miscarriage among physiotherapists was lower than that in the general community. However, physiotherapists who performed hydrotherapy were more likely to report dermatitis, rashes and fungal skin infections. The prevalence of these conditions increased with the number of hours spent doing hydrotherapy. These findings suggest that physiotherapists are unlikely to have an increased risk of negative reproductive outcomes because of their exposure to electrophysical agents. Physiotherapists who perform hydrotherapy, however, have an increased risk of skin complaints.

Key words: Hydrotherapy; Occupational Health; Radiation Effects; Skin Diseases


Manual therapy, exercise and education target distinct aspects of chronic low back pain and probably have distinct effects. This study aimed to determine the efficacy of a combined physiotherapy treatment that comprised all of these strategies. By concealed randomisation, 57 chronic low back pain patients were allocated to either the four-week physiotherapy program or management as directed by their general practitioners. The dependent variables of interest were pain and disability. Assessors were blind to treatment group. Outcome data from 49 subjects (86%) showed a significant treatment effect. The physiotherapy program reduced pain and disability by a mean of 1.5/10 points on a numerical rating scale (95% CI 0.7 to 2.3) and 3.9 points on the 18-point Roland Morris Disability Questionnaire (95% CI 2 to 5.8) , respectively. The number needed to treat in order to gain a clinically meaningful change
was 3 (95% CI 3 to 8) for pain, and 2 (95% CI 2 to 5) for disability. A treatment effect was maintained at one-year follow-up. The findings support the efficacy of combined physiotherapy treatment in producing symptomatic and functional change in moderately disabled chronic low back pain patients.

Key words: Education, Exercise, Low Back Pain, Randomized Controlled Trials


Thirteen intubated, high dependency patients with neurological injuries were studied in order to investigate the short term respiratory effects of neurophysiological facilitation and passive movement on tidal volume (VT), minute ventilation (VE), respiratory rate (VR) and oxygen saturation (SpO2). The subjects were studied under four conditions: no intervention (control) and during periods of neurophysiological facilitation, passive movement and sensory stimulation. All periods were standardised to three minutes duration and all parameters were recorded before and after each intervention. Neurophysiological facilitation produced significant increases ($p < 0.01$) in VE and SpO2 ($p < 0.05$) when compared with control values, with an overall mean increase in VE of 14.6%. Similarly, passive movement increased VE ($p < 0.01$) by an average of 9.8% and also increased SpO2 ($p < 0.01$). In contrast, sensory stimulation produced significant increases ($p < 0.01$) in SpO2 with control levels, with no significant change in VT or VE. There was no significant difference in VR with all treatments. This study provides preliminary evidence of improved short term ventilatory function following neurophysiological facilitation, independent of generalised sensory stimulation, which has not been previously examined in the literature, supporting its use in the management of high dependency neurological patients.

Key words: Head Injuries, Closed; Physical Stimulation; Physical Therapy; Respiratory Mechanics


The purpose of this study was to determine the impact of increased physical activity and cessation of smoking on the natural history of early peripheral arterial disease. We conducted a randomised controlled trial in Perth, Western Australia, involving 882 men with early peripheral arterial disease identified via population-based screening using the Edinburgh Claudication Questionnaire and the ankle:brachial index. Members of the control group (n = 441) received "usual care" from their general practitioner while members of the intervention group (n = 441) were allocated to a "stop smoking and keep walking" regime - a combined community-based intervention of cessation of smoking (where applicable) and increased physical activity. Postal follow-up occurred at two and 12 months post-entry into the trial. The main outcome of interest was maximum walking distance. There were no statistically significant differences in the characteristics of the “intervention” and “usual care” groups at recruitment. Follow-up information at two and 12 months was available for 85% and 84% of participants, respectively. At 12 months, more men allocated to the intervention group had improved their maximum walking distance (23% vs 15%; 2 = 9.74, df = 2, $p = 0.008$). In addition, more men in the intervention group reported walking more than three times per week for recreation (34% vs 25%, $p = 0.01$). Although not statistically significant, more men in the intervention group who were smokers when enrolled in the trial had stopped smoking (12% vs 8%, $p = 0.43$). It is concluded that referral of older patients with intermittent claudication to established physiotherapy programs in the community can increase levels of physical activity and reduce disability related to peripheral arterial disease. A combination of simple and safe interventions that are readily available in the community through physiotherapists and general practitioners has the potential to improve early peripheral arterial disease.

Key words: Exercise; Peripheral Vascular Diseases; Randomized Controlled Trials; Smoking Cessation
A systematic review of randomised clinical trials was conducted to assess the effect of spinal manipulative therapy on clinically relevant outcomes in patients with chronic low back pain. Databases searched included EMBASE, CINAHL, MEDLINE and PEDro. Methodological assessment of the trials was performed using the PEDro scale. Where there was sufficient homogeneity, a meta-analysis was conducted. Nine trials of mostly moderate quality were included in the review. Two trials were pooled comparing spinal manipulative therapy and placebo treatment, and two other trials were pooled comparing spinal manipulative therapy and non-steroidal anti-inflammatory drugs (NSAIDs). Spinal manipulative therapy reduced pain by 7mm on a 100mm visual analogue scale (95% CI 1 to 14) at one month follow-up when compared with placebo treatment, and by 14mm (95% CI -11 to 40) when compared with NSAIDs. Spinal manipulative therapy reduced disability by 6 points (95% CI 1 to 12) on a 100-point disability questionnaire when compared with NSAIDs. It is concluded that spinal manipulation does not produce clinically worthwhile decreases in pain compared with sham treatment, and does not produce clinically worthwhile reductions in disability compared with NSAIDs for patients with chronic low back pain. It is not clear whether spinal manipulation is more effective than NSAIDs in reducing pain of patients with chronic low back pain.

Key words: Low Back Pain; Manipulation, Orthopedic; Meta-Analysis; Spine