Cerebral palsy is the commonest physical disability in childhood, occurring in 2.0 to 2.5 per 1000 live births. Although the total number of children with cerebral palsy has remained stable or increased slightly since 1970, there has been a consistent rise in the proportion of cerebral palsy associated with preterm and very preterm births. Known causes of cerebral palsy – whether prenatal, perinatal or postnatal – must be distinguished from risk factors or associations. Much is known about such risk factors which, alone or in combination, may indirectly result in cerebral palsy. Causes and risk factors implicated in cerebral palsy are discussed in detail, together with directions for future research.

Key words: Cerebral Palsy; Infant, Newborn; Perinatology; Pregnancy

The purpose of this study was to assess the effects of weight-bearing and non-weight-bearing exercise on strength, balance, gait and functional performance among older inpatients following hip fracture. Eighty people (mean age 81 years, SD 8) undergoing inpatient rehabilitation after fall-related hip fracture were randomised to receive two-week programs of either weight-bearing or non-weight-bearing exercise prescribed by a physiotherapist. Both groups improved markedly (in the order of 50%) on measures of physical ability. Overall there was little difference between groups in the extent of improvement, however post hoc testing identified some additional strength benefits for the non-weight-bearing group - non-affected leg hip flexion mean difference in extent of improvement was 9.3 N (95% CI 3.7 to 15.0), non-affected leg hip abduction mean difference in extent of improvement was 6.5 N (95% CI 0.1 to 12.9). There were also additional functional benefits for the weight-bearing group - improved ability to complete a lateral step-up on the affected leg with nil or one hand supports (OR 3.4, 95% CI 1.1 to 12.3) and the need for less supportive walking aids ($p = 0.045$). Weight-bearing and non-weight-bearing exercise programs produce similar effects on strength, balance, gait and functional performance among inpatients soon after hip fracture.

Key words: Exercise Therapy; Hip Fracture; Rehabilitation; Weight-Bearing

A significant risk factor for osteoporotic fracture is a previous atraumatic fracture. The objective of this study was to investigate whether patients with Colles fracture from minimal trauma were subsequently identified, assessed and treated for their elevated risk of fracture. Medical records at Sir Charles Gairdner Hospital in Perth, Western Australia, from August 1999 to July 2000 were audited and 111 patients who had sustained a Colles fracture from minimal trauma were identified. Questionnaires were subsequently posted to participants to determine whether any assessment or treatment was undertaken outside the hospital system. According to documentation in the medical records, 9% (10/111) had their bone mineral density assessed, 15% (17/111) were receiving medical therapy for osteoporosis, 7% (8/111) had their falls risk assessed and 51% (58/111) were seen by a physiotherapist. Of the 58 who received physiotherapy, 76% (44/58) received upper limb exercises and 19% (11/58) received lower limb or balance exercises. Follow-up questionnaires one to two years after the fracture were returned by 43% (48/111) of the sample. By this time, 37% (18/48) had BMD assessed and 27% (13/48) were receiving medical therapy for osteoporosis. Thirty-five per cent (17/48) of patients recalled being advised to increase their calcium intake. Of those who reported more than one fall during the past 12 months, 62% (8/13) had been seen by a physiotherapist, 46% (6/13) reported having their balance assessed and 54% (7/13) reported having a home visit for assessment of rails etc. Despite the availability of effective treatments,
a substantial proportion of patients with Colles fracture from minimal trauma are not being identified, assessed or treated for their elevated risk of subsequent osteoporotic fracture.

Key words: Colles Fracture; Equilibrium; Osteoporosis


Traditionally, manual hyperinflation has been performed using "rapid release" to promote a fast peak expiratory flow rate (PEFR) but rapid release has not been described. In addition, it has been demonstrated that different resuscitation circuits provide varying degrees of resistance to expiratory flow and it is known that a variety of circuits are used in Australia for manual hyperinflation. The aim of this study was to document current practice, the effect of rapid release, controlling inspiration, different volumes and circuit type on flow rates, and the inspiratory to expiratory flow rate (I:E) ratio during manual hyperinflation. Using a test lung model, 15 physiotherapists performed 11 trials using the Air Viva 2, a Mapleson-C and a Mapleson-F circuit, both with and without rapid release, and delivering two volumes. The order of the trials was randomised. Rapid release produced a faster PEFR irrespective of circuit type or volume delivered. The effect of rapid release, and the absolute PEFR, was less for the Air Viva 2 compared with the Mapleson circuits. Expiratory flow rate was faster for the larger volume. The theoretically optimal I:E ratio to move secretions was achieved delivering the lower target volume with the Mapleson circuits and using rapid release.

Key words: Intensive Care; Pulmonary Ventilation; Physical Therapy; Respiration, Artificial


Regular physical activity prevents chronic disease and moderate to vigorous participation provides additional health benefits. Therefore, adolescents with congenital heart disease risk developing latent diseases due to real or perceived physical activity restrictions. Habitual physical activity levels, psychological determinants and advice received were examined by postal survey of 434 West Australian adolescents aged 12-18 years with congenital heart disease. Survey results (n = 153) were compared with published normative adolescent data. Total activity was classified as vigorous, adequate or inadequate according to metabolic equivalents, reported frequency and duration. Comparable numbers of respondents and healthy peers were active (winter 62% vs 74%; and summer 73% vs 82% respectively, p = 0.27). However, significantly fewer male respondents were classified as vigorously active compared with healthy peers, in both winter (48% vs 67%, p < 0.02), and summer (48% vs 69%, p = 0.04). Similar, but non-significant, trends were found when comparing female respondents with healthy peers and for mild versus severe disease groups. Self-efficacy ratings did not explain differences in physical activity intensity. Congenital heart disease may impact on the intensity of physical activity undertaken by affected adolescents thus denying additional health benefits. Physiotherapists could facilitate these adolescents to achieve more moderate to vigorous physical activity, to offset adult sedentary behaviour.

Key words: Adolescence; Exercise; Heart Defects, Congenital; Heart Diseases


This qualitative study utilised the nominal group technique to identify a typology of the difficult patient in private practice physiotherapy and to determine strategies physiotherapists use, and would like to improve, when dealing with such patients. The two areas physiotherapists found most difficult to manage were behavioural problems of patients and patient expectations. Few differences were evident regarding ranking of difficult patient attributes between the experienced (n = 19) and less experienced (n = 18) physiotherapists except for
the categories of pain and diagnosed psychological problems. While less experienced physiotherapists ranked the pain category highly, experienced physiotherapists did not identify this category. Further, more experienced physiotherapists specifically distinguished between patients with diagnosed psychological problems and patients with psychosocial concerns, while less experienced physiotherapists did not, and placed both these issues into one category. To assist in their interaction with difficult patients, physiotherapists (n = 37) identified that communication skills and behaviour modification techniques were strategies that they would like to learn more about. The results of this qualitative study contribute to the evolving literature relating to physiotherapist-patient interactions and form a useful basis for educational programs directed at improving the therapeutic relationship in private practice physiotherapy.

Key words: Behavior; Communication; Patients; Private Practice


Research suggests that clinical examination of the lumbar spine and pelvis is unable to predict the results of diagnostic injections used as reference standards. The purpose of this study was to assess the diagnostic accuracy of a clinical examination in identifying symptomatic and asymptomatic sacroiliac joints using double diagnostic injections as the reference standard. In a blinded concurrent criterion-related validity design study, 48 patients with chronic lumbopelvic pain referred for diagnostic spinal injection procedures were examined using a specific clinical examination and received diagnostic intraarticular sacroiliac joint injections. The centralisation and peripheralisation phenomena were used to identify possible discogenic pain and the results from provocation sacroiliac joint tests were used as part of the clinical reasoning process. Eleven patients had sacroiliac joint pain confirmed by double diagnostic injection. Ten of the 11 sacroiliac joint patients met clinical examination criteria for having sacroiliac joint pain. In the primary subset analysis of 34 patients, sensitivity, specificity and positive likelihood ratio (95% confidence intervals) of the clinical evaluation were 91% (62 to 98), 83% (68 to 96) and 6.97 (2.70 to 20.27) respectively. The diagnostic accuracy of the clinical examination and clinical reasoning process was superior to the sacroiliac joint pain provocation tests alone. A specific clinical examination and reasoning process can differentiate between symptomatic and asymptomatic sacroiliac joints.


The purpose of this study was to determine metabolic and haemodynamic changes with and without physiotherapy treatment in haemodynamically stable, intubated and ventilated patients. This was a prospective, randomised cross-over study. Ten intubated, ventilated and haemodynamically stable patients underwent a 20 min physiotherapy treatment and a 20 min period of undisturbed side lying. Mean oxygen consumption (VO2mean) was measured on a minute-to-minute basis by indirect calorimetry. Mean arterial pressure (MAP) was recorded minutely from the indwelling arterial line and cardiac index (CI) was calculated from the indwelling pulmonary artery catheter. Time to recovery to within 5% of resting VO2 was also recorded. The results showed no significant increase in VO2mean with either positioning the patient in side lying or physiotherapy treatment (p = 0.17). Time to recovery to within 5% of baseline VO2 occurred within seven minutes for all patients and there was no significant difference between either physiotherapy treatment or positioning in side lying (p = 0.63). There were no significant differences in CI (p = 0.44) or MAP (p = 0.95) during physiotherapy treatment compared with undisturbed side lying. It is concluded that physiotherapy treatment does not significantly alter VO2mean or MAP and CI in stable intubated and ventilated patients.

We investigated if low level laser therapy (LLLT) of the joint capsule can reduce pain in chronic joint disorders. A literature search identified 88 randomised controlled trials, of which 20 trials included patients with chronic joint disorders. Six trials were excluded for not irradiating the joint capsule. Three trials used doses lower than a dose range nominated a priori for reducing inflammation in the joint capsule. These trials found no significant difference between active and placebo treatments. The remaining 11 trials including 565 patients were of acceptable methodological quality with an average PEDro score of 6.9 (range 5-9). In these trials, LLLT within the suggested dose range was administered to the knee, temporomandibular or zygapophyseal joints. The results showed a mean weighted difference in change of pain on VAS of 29.8 mm (95% CI, 18.9 to 40.7) in favour of the active LLLT groups. Global health status improved for more patients in the active LLLT groups (relative risk of 0.52; 95% CI 0.36 to 0.76). Low level laser therapy with the suggested dose range significantly reduces pain and improves health status in chronic joint disorders, but the heterogeneity in patient samples, treatment procedures and trial design calls for cautious interpretation of the results.


The aims of this study were to determine the rate, anatomical regions, onset, severity, and type of injury in the sport of calisthenics and compare injuries reported by elite and non-elite participants. Prospective reports of injuries were collected over a 12-month period from 550 elite and non-elite calisthenics participants. The participants recorded the number of training sessions, competition, and performances per week, hours of training, and information on any injuries sustained each week during the survey period. Five hundred and fifty participants reported 190 injuries during the survey period, 0.4 injuries per participant year or 0.3 injured participants per participant year. The odds ratio of injury in the elite to the non-elite group was 2.0 (95% CI 1.3 to 2.9). Injuries to the lower back (32.4% of all injuries), hip thigh and groin (25.4% of all injuries) were most common. Activities involving lumbar extension (29.8% of all injuries and 61.0% of lower back injuries) were perceived by participants to have led to injury. In general, injuries were minor and mainly involved soft tissue structures (95.6% of all injuries). Participants had difficulty in identifying why their injuries had occurred. Calisthenics participants did not report high injury rates, but activities that involve lumbar extension are implicated in low back injuries and warrant further attention.


Subjects with chronic obstructive pulmonary disease (COPD) have difficulty performing arm exercise, particularly if the arms are unsupported and elevated. The purpose of this study was to evaluate the effect of arm position on static lung volumes in COPD and healthy subjects. Lung volumes were measured by plethysmography in nine COPD subjects (mean age ± SD = 67.3 ± 10.3 years; % pred FEV1 ± SD = 39.7 ± 10.9%) and nine healthy subjects (mean age ± SD = 55.8 ± 8.8 years; % pred FEV1 ± SD = 102.9 ± 12.2%) with the arms below 90 degrees shoulder flexion, at 90 degrees shoulder flexion and above 90 degrees shoulder flexion. In all subjects a significant increase in functional residual capacity (FRC) and reduction in inspiratory capacity (IC) was shown with arms above 90 degrees shoulder flexion when compared with both arms below 90 degrees shoulder flexion (mean increase in FRC
(95% CI) was 0.17 L (0.06 to 0.27) for COPD and 0.29 L (0.11 to 0.47) for healthy subjects; mean reduction in IC (95% CI) was 0.24 L (0.1 to 0.38) for COPD and 0.45 L (0.22 to 0.68) for healthy subjects and arms at 90 degrees shoulder flexion (mean increase in FRC (95% CI) was 0.15 L (0.01 to 0.29) for COPD and0.22 L (0.11 to 0.34) for healthy subjects; mean reduction in IC (95% CI) was 0.14 L (0.01 to 0.26) for COPD and was0.29 L (0.17 to 0.42) for healthy subjects). These changes may alter lung mechanics and, in COPD subjects, may affect their ability to perform arm exercise above shoulder height.


Research suggests that clinical examination of the lumbar spine and pelvis is unable to predict the results of diagnostic injections used as reference standards. The purpose of this study was to assess the diagnostic accuracy of a clinical examination in identifying symptomatic and asymptomatic sacroiliac joints using double diagnostic injections as the reference standard. In a blinded concurrent criterion-related validity design study, 48 patients with chronic lumbopelvic pain referred for diagnostic spinal injection procedures were examined using a specific clinical examination and received diagnostic intraarticular sacroiliac joint injections. The centralisation and peripheralisation phenomena were used to identify possible discogenic pain and the results from provocation sacroiliac joint tests were used as part of the clinical reasoning process. Eleven patients had sacroiliac joint pain confirmed by double diagnostic injection. Ten of the 11 sacroiliac joint patients met clinical examination criteria for having sacroiliac joint pain. In the primary subset analysis of 34 patients, sensitivity, specificity and positive likelihood ratio (95% confidence intervals) of the clinical evaluation were 91% (62 to 98), 83% (68 to 96) and 6.97(2.70 to 20.27) respectively. The diagnostic accuracy of the clinical examination and clinical reasoning process was superior to the sacroiliac joint pain provocation tests alone. A specific clinical examination and reasoning process can differentiate between symptomatic and asymptomatic sacroiliac joints.


The purpose of this study was to determine metabolic and haemodynamic changes with and without physiotherapy treatment in haemodynamically stable, intubated and ventilated patients. This was a prospective, randomised cross-over study. Ten intubated, ventilated and haemodynamically stable patients underwent a 20 min physiotherapy treatment and a 20 min period of undisturbed side lying. Mean oxygen consumption (VO2mean) was measured on a minute-to-minute basis by indirect calorimetry. Mean arterial pressure (MAP) was recorded minutely from the indwelling arterial line and cardiac index (CI) was calculated from the indwelling pulmonary artery catheter. Time to recovery to within 5% of resting VO2 was also recorded. The results showed no significant increase in VO2mean with either positioning the patient in side lying or physiotherapy treatment (p = 0.17). Time to recovery to within 5% of baseline VO2 occurred within seven minutes for all patients and there was no significant difference between either physiotherapy treatment or positioning in side lying (p = 0.63). There were no significant differences in CI (p = 0.44) or MAP (p = 0.95) during physiotherapy treatment compared with undisturbed side lying. It is concluded that physiotherapy treatment does not significantly alter VO2mean or MAP and CI in stable intubated and ventilated patients.

We investigated if low level laser therapy (LLLT) of the joint capsule can reduce pain in chronic joint disorders. A literature search identified 88 randomised controlled trials, of which 20 trials included patients with chronic joint disorders. Six trials were excluded for not irradiating the joint capsule. Three trials used doses lower than a dose range nominated a priori for reducing inflammation in the joint capsule. These trials found no significant difference between active and placebo treatments. The remaining 11 trials including 565 patients were of acceptable methodological quality with an average PEDro score of 6.9 (range 5-9). In these trials, LLLT within the suggested dose range was administered to the knee, temporomandibular or zygapophyseal joints. The results showed a mean weighted difference in change of pain on VAS of 29.8 mm (95% CI, 18.9 to 40.7) in favour of the active LLLT groups. Global health status improved for more patients in the active LLLT groups (relative risk of 0.52; 95% CI 0.36 to 0.76). Low level laser therapy with the suggested dose range significantly reduces pain and improves health status in chronic joint disorders, but the heterogeneity in patient samples, treatment procedures and trial design calls for cautious interpretation of the results.


The aims of this study were to determine the rate, anatomical regions, onset, severity, and type of injury in the sport of calisthenics and compare injuries reported by elite and non-elite participants. Prospective reports of injuries were collected over a 12-month period from 550 elite and non-elite calisthenics participants. The participants recorded the number of training sessions, competition, and performances per week, hours of training, and information on any injuries sustained each week during the survey period. Five hundred and fifty participants reported 190 injuries during the survey period, 0.4 injuries per participant year or 0.3 injured participants per participant year. The odds ratio of injury in the elite to the non-elite group was 2.0 (95% CI 1.3 to 2.9). Injuries to the lower back (32.4% of all injuries), hip thigh and groin (25.4% of all injuries) were most common. Activities involving lumbar extension (29.8% of all injuries and 61.0% of lower back injuries) were perceived by participants to have led to injury. In general, injuries were minor and mainly involved soft tissue structures (95.6% of all injuries). Participants had difficulty in identifying why their injuries had occurred. Calisthenics participants did not report high injury rates, but activities that involve lumbar extension are implicated in low back injuries and warrant further attention.


Subjects with chronic obstructive pulmonary disease (COPD) have difficulty performing arm exercise, particularly if the arms are unsupported and elevated. The purpose of this study was to evaluate the effect of arm position on static lung volumes in COPD and healthy subjects. Lung volumes were measured by plethysmography in nine COPD subjects (mean age ± SD = 67.3 ± 10.3 years; % pred FEV1 ± SD = 39.7 ± 10.9%) and nine healthy subjects (mean age ± SD = 55.8 ± 8.8 years; % pred FEV1 ± SD = 102.9 ± 12.2%) with the arms below 90 degrees shoulder flexion, at 90 degrees shoulder flexion and above 90 degrees shoulder flexion. In all subjects a significant increase in functional residual capacity (FRC) and reduction in inspiratory capacity (IC) was shown with arms above 90 degrees shoulder flexion. In all subjects a significant increase in functional residual capacity (FRC) and reduction in inspiratory capacity (IC) was shown with arms above 90 degrees shoulder flexion and above 90 degrees shoulder flexion. In all subjects a significant increase in functional residual capacity (FRC) and reduction in inspiratory capacity (IC) was shown with arms above 90 degrees shoulder flexion when compared with both arms below 90 degrees shoulder flexion (mean increase in FRC (95% CI) was 0.17 L (0.06 to 0.27) for COPD and 0.29 L (0.11 to 0.47) for healthy subjects; mean reduction in IC (95% CI) was 0.24 L (0.1 to 0.38) for COPD and 0.45 L (0.22 to 0.68) for healthy subjects.
healthy subjects) and arms at 90 degrees shoulder flexion (mean increase in FRC (95% CI) was 0.15 L (0.01 to 0.29) for COPD and 0.22 L (0.11 to 0.34) for healthy subjects; mean reduction in IC (95% CI) was 0.14 L (0.01 to 0.26) for COPD and was 0.29 L (0.17 to 0.42) for healthy subjects). These changes may alter lung mechanics and, in COPD subjects, may affect their ability to perform arm exercise above shoulder height.


The aim of this study was to establish whether removal of breathing exercises from a regimen including early mobilisation changes the incidence of post-operative pulmonary complications for patients after cardiac surgery. Two hundred and thirty patients undergoing open heart surgery at Monash Medical Centre, Melbourne, were enrolled in this randomised controlled trial. All patients received physiotherapy treatment pre-operatively and post-operatively for three days. Patients were mobilised as soon as possible after surgery. Breathing group (control) patients performed a set routine of deep breathing exercises at each physiotherapy visit while those in the intervention group did not perform this routine. Other than the breathing exercises, patient management was similar between groups in terms of assessment, positioning and mobility. The incidence of postoperative pulmonary complications, post-operative length of stay, oxyhaemoglobin saturation and pulmonary function were measured pre-operatively and post-operatively. Intention-to-treat analysis was performed for post-operative pulmonary complications and length of stay. Other data were analysed using t-tests, chi square and repeated measures analysis of variance. There were no significant differences between the groups in the primary dependent variables. It is concluded that removal of breathing exercises from the routine physiotherapy management of open heart surgery patients does not significantly alter patient outcome.


The aim of this assessor-blind randomised controlled trial was to determine the effect of four weeks of 30 minute stretches each weekday on extensibility of the hamstring muscles in people with recent spinal cord injuries. A consecutive sample of 16 spinal cord-injured patients with no or minimal voluntary motor power in the lower limbs and insufficient hamstring muscle extensibility to enable optimal long sitting were recruited. Subjects’ legs were randomly allocated to experimental and control conditions. The hamstring muscles of the experimental leg of each subject were stretched with a 30 Nm torque at the hip for 30 minutes each weekday for four weeks. The hamstring muscles of the contralateral leg were not stretched during this period. Extensibility of the hamstring muscles (hip flexion range of motion with knee extended, measured with a 48 Nm torque at the hip) of both legs was measured by a blinded assessor at the commencement of the study and one day after the completion of the four-week stretch period. Changes in hamstring muscle extensibility from initial to final measurements were calculated. The effect of stretching was expressed as the mean difference in these changes between stretched and non-stretched legs. The mean effect of stretching was 1 degree (95% CI -2 to 5 degrees). Four weeks of 30 minute stretches each weekday does not affect the extensibility of the hamstring muscle in people with spinal cord injuries.

The purpose of this single blinded randomised controlled trial was to investigate the effects of soft tissue massage on range of motion, reported pain and reported function in patients with shoulder pain. Twenty-nine patients referred to physiotherapy for shoulder pain were randomly assigned to a treatment group that received six treatments of soft tissue massage around the shoulder (n = 15) or to a control group that received no treatment while on the waiting list for two weeks (n = 14). Measurements were taken both before and after the experimental period by a blinded assessor. Active range of motion was measured for flexion, abduction and hand-behind-back movements. Pain was assessed with the Short Form McGill Pain Questionnaire (SFMPQ) and functional ability was assessed with the Patient Specific Functional Disability Measure (PSFDM). The treatment group showed significant improvements in range of motion compared with the control group for abduction (mean 42.2 degrees, 95% CI 24.1 to 60.4 degrees), flexion (mean 22.6 degrees, 95% CI 12.4 to 32.8 degrees) and hand-behind-back (mean 11.0 cm improvement, 95% CI 6.3 to 15.6 cm). Massage reduced pain as reported on the descriptive section of the SFMPQ by a mean of 4.9 points (95% CI 2.5 to 7.2 points) and on the visual analogue scale by an average of 26.5 mm (95% CI 5.3 to 47.6 mm), and it improved reported function on the PSFDM by a mean of 8.6 points (95% CI 4.9 to 12.3 points). We conclude that soft tissue massage around the shoulder is effective in improving range of motion, pain and function in patients with shoulder pain. The mechanisms behind these effects remain unclear.


The aim of this study was to identify the qualities of a ‘good’ physiotherapist and to ascertain the characteristics of good and bad experiences in private practice physiotherapy from the patients’ perspective. The nominal group technique was implemented with separate groups of patients (n = 26) and revealed that communication ability, professional behaviour and organisational ability, and characteristics of the service provided were the main qualities of a ‘good’ physiotherapist. In particular, communication ability of the physiotherapist was ranked first or second in importance by all groups of patients. Good experiences in physiotherapy were most often attributed to effective communication by the physiotherapist, while bad experiences most often related to dissatisfaction with the service followed by poor physiotherapist communication. Based on the findings from this study, we suggest physiotherapists should actively seek to involve patients in their management. To do this effectively, physiotherapists would benefit from further training in communication skills to ensure that they can successfully adopt a patient-centred approach and to optimise the physiotherapist-patient interaction in private practice physiotherapy.


In the Netherlands, clinical practice physiotherapy guidelines are mainly implemented by using passive implementation strategies. It is well known that these strategies are not effective in establishing changes in behaviour of health care professionals. Therefore, a new implementation strategy was developed for the physiotherapy guidelines on low back pain. This paper describes the method for the design of this strategy. A survey was conducted of 100 physiotherapy practices to identify perceived barriers to implementation of the guidelines and the most important discrepancies between current practice and recommendations of the guidelines. The strategy was further developed using a model for changing professionals’
behaviour and systematic reviews on the effectiveness of implementation interventions. The most frequently reported barriers for implementation of the guidelines are related to a lack of knowledge or skills of physiotherapists. The most frequently reported discrepancies between physiotherapy practice and guidelines recommendations were related to the focus of the diagnostic process on impairments, the common use of passive physiotherapeutic interventions, the frequent use of a paincontingent approach, and the expectations of the patient. The new implementation strategy consisted of multiple interventions, namely education, discussion, role-playing, feedback and reminders. The strategy addressed perceived barriers and discrepancies between current practice and the recommendations of the guidelines.


The aim of this study was to establish whether the mobilisation technique selected by the treating physiotherapist is more effective in relieving low back pain than a randomly selected mobilisation technique. Two manipulative physiotherapists and 140 subjects suffering non-specific low back pain participated. Baseline measurements were taken before treatment allocation; the therapist then assessed subjects and nominated the preferred treatment grade, spinal level to be treated and mobilisation technique to be used. The subjects were then randomly allocated to one of two groups. One group received the preferred mobilisation technique as selected by the therapist; the other group received a randomly assigned mobilisation technique. All mobilisation treatments were applied to the nominated spinal level using the nominated treatment grade. Follow-up measures were taken immediately after intervention. Two-way ANOVA was used to analyse the data; the first factor was the treatment group and the second factor was the direction of the patient’s most painful movement. The choice of mobilisation treatment had no effect on any outcome measure investigated in this study; however, post hoc tests revealed that mobilisation treatment applied to the lower lumbar levels had a greater analgesic effect than when applied to upper lumbar levels. The results of this study confirm that lumbar mobilisation treatment has an immediate effect in relieving low back pain, however the specific technique used seems unimportant.


The aim of this study was to determine whether differences exist between physiotherapists with work-related thumb pain and physiotherapists without thumb pain. Twenty-four physiotherapists with work-related thumb pain (Pain Group) and 20 physiotherapists without thumb or wrist pain (Non-pain Group), who were working at least 20 hours per week in an outpatient musculoskeletal setting, were compared on a number of attributes: generalised joint laxity, hand and thumb strength, height, weight, working environment, hand position and force applied during mobilisation, mobility at individual thumb joints, extent of osteoarthritis at the thumb and radial-sided wrist joints, and demographic data including age, gender and years of experience. All physiotherapists in the Pain Group reported their thumb pain was related to and initially caused by the performance of manual techniques, and 88% had altered their manual techniques because of pain in the thumb. There was extreme variability in hand position and force applied during mobilisation, and a slightly high prevalence of osteoarthritis (22.7%) considering the mean age of the total sample (38.6 years). Statistically significant differences between groups included increased right carpometacarpal joint laxity (6.4%, 95% CI 0.19 to 12.6), decreased right tip pinch strength (0.84 kg, 95% CI 0.01 to 1.68), and lower body mass index (2.0, 95% CI 0.11 to 3.9) for the Pain Group. Other factors were not statistically different between groups. These results indicate that work-related thumb pain
affects physiotherapists’ ability to administer manual treatments, and suggest that decreased stability and strength of the thumb may be associated with work-related thumb pain.


Ankle exercises are commonly used to facilitate venous return in the lower extremity and to prevent deep vein thrombosis. Moreover, the respiratory cycle affects venous return. This study examined the effects of ankle exercise combined with deep breathing on the blood flow velocity in the femoral vein. Twenty healthy males (mean age 21.3 years), who had no medical history of lower extremity disease, were recruited for this study. The blood flow velocity in the femoral vein was measured while performing four exercise protocols: quiet breathing while resting (QR), deep breathing (DB), ankle exercise with quiet breathing (AQB), and ankle exercising combined with deep breathing (ADB). Using a Doppler ultrasound with an 8 MHz probe, peak blood flow velocities were collected for a 20 second period at the start of the inspiration phase in each protocol, three times. There were statistically significant differences in the peak blood flow velocity in the femoral vein with the four protocols \((p < 0.001)\). The mean (SD) peak blood flow velocity in the femoral vein was as follows: QR 10.1 (4.2) cm/sec, DB 15.5 (3.9) cm/sec, AQB 20.7 (6.6) cm/sec, and ADB 26.5 (9.4) cm/sec. Post hoc analyses revealed significant differences between each of the four protocols \((p_{adj} < 0.01)\). The mean peak blood flow velocity in the femoral vein was greatest with the ADB protocol, which implies that the ADB protocol may be useful to prevent the blood stasis in patients at risk of deep vein thrombosis.


Central nervous system performance is disrupted by pain and by the threat of pain. It is not known whether disruption caused by the threat of pain is dependent on the likelihood of pain occurring. We hypothesised that when a painful stimulus is possible but unpredictable central nervous system performance is reduced, but when the pain is predictable and unavoidable it is not. Sixteen healthy subjects performed a reaction time task during predictable and unpredictable conditions (100% and 50% probability of pain, respectively). Group data showed increased reaction time with the threat of pain by 50 ms (95% CI 16 to 83 ms) for the predictable condition and 46 ms (95% CI 12 to 80 ms) for the unpredictable condition \((p < 0.01\) for both), but there was no difference between predictable and unpredictable conditions \((p = 0.41)\). However, individual data showed that there was a differential effect in 75% of subjects \((p < 0.05\) for all) and that there was a greater effect of predictable pain for some subjects and a greater effect of unpredictable pain for others. Reaction time was related to reported anxiety \((r = 0.49, p = 0.02\) for both conditions). The predictability of a painful stimulus may have a differential effect on central nervous system performance within individuals, but anxiety about the impending pain appears to be important in determining this effect.


Respiratory therapy has historically been considered the primary role of the physiotherapist in neonatal intensive care in Australia. In 2001 a survey was undertaken of all level three neonatal intensive care units in Australia to determine the role of the physiotherapist and of
respiratory therapy in clinical practice. It appears that respiratory therapy is provided infrequently, with the number of infants treated per month ranging from 0 to 10 in 15 of the 20 units who provide respiratory therapy, regardless of therapist availability. The median number of respiratory treatments per month during the week was three, and on weekends it was one. Respiratory therapy was carried out by physiotherapists and nurses in 54.6% of units, by physiotherapists only in 36.4% of units, and by nurses only in the remaining 9% of units surveyed. There was also a diminution of the role of respiratory therapy in the extubation of premature infants. A review of the literature shows that overall the use of respiratory therapy reflects current evidence. The question remains whether it is possible to maintain the competency of staff and justify the cost of training in the current healthcare economic climate. It seems probable that the future role of physiotherapists in neonatal intensive care unit may be in the facilitation of optimal neurological development of surviving very low birth weight infants.