
Eight abdominal strengthening exercises were investigated in order to evaluate their ability to promote stabilisation of the lumbar spine. Twenty-three healthy volunteers aged between 18 and 32 participated in the study. During each of the selected exercises, surface electromyography was used to measure the level of motor unit activity in the right upper rectus abdominis, the right lower rectus abdominis, the right oblique abdominis and right lumbar paravertebral muscles. A formula, based on the relative importance of each muscle in the proposed stability pattern was devised and used to give a single 'stability' score in order to compare each of the eight exercises tested. Results indicated that the exercises which involved applied rotatory resistance to the trunk appeared to activate a more appropriate stability pattern for the lumbar spine.

Keywords: Abdominal Wall; Backache; Electromyography; Exercise Therapy; Lumbosacral Region; Muscle Performance, trunk


The aim of this study was to determine the mean value for the fraction of inspired oxygen (FiO₂) in normal subjects at oxygen flow rates of 2L/min, 4L/min and 6l/min during mouthpiece nebulisation. The FiO₂ was defined as the fractional extraction of oxygen at the mouth. The variation in the FiO₂ during normal and deep breathing was also studied in order to assess whether a significant difference in the FiO₂ occurred. Breathing at a normal tidal volume, the values of the FiO₂ were 27.5 per cent, 30.8 per cent and 34.9 per cent respectively. The values during deep breathing were 24.4 per cent, 27.9 per cent and 31.3 per cent respectively. It was clearly evident that the FiO₂ during deep breathing was approximately 3 per cent less than that during normal tidal breathing.

Keywords: Administration, inhalation; Lung Volume Measurements; Nebulizers and Vaporizers; Oxygen; Respiratory Therapy


Physiotherapists need to be informed about the nature of HIV infection and AIDS, both as care providers and in terms of occupational health and safety. An overview of the natural history of the human immunodeficiency virus and the consequences of infection is given. Safety procedures are outlined and the contribution that physiotherapists can make to the health maintenance of HIV infected patients is briefly described.

Keywords: Acquired Immunodeficiency Syndrome; Cross Infection; HIV; Physical Therapy


This study used a questionnaire to determine the reasons students gave for enrolling in the course for Bachelor of Applied Science in Physiotherapy at the South Australian Institute of Technology, and the sources of information students had received about the profession.

The most common reason given was that students felt the work would be interesting, satisfying and worthwhile; job availability and security, and a desire to help others also rated highly. Very few students had enrolled on the advice of parents, teachers or career guidance counsellors, although
almost one-third had spoken to a counsellor. Working conditions were more important to the male students, while female students gave slightly more import to the desire to work with others. The age of the students had little effect on their reasons for entering the course. It is possible that some students did not have a full appreciation of the work of physiotherapists, or their working conditions. Such a lack of knowledge may lead to students withdrawing from the course when they are enlightened.

Keywords: Physical Therapy; Schools, health occupations; Students, health occupations; Vocational Guidance


Immobilised non-weightbearing joints show significant loss of proteoglycan. It is unclear whether this is due to a lack of compression, a lack of movement, or both. Evidence suggests that movement alone is insufficient to maintain proteoglycan levels. To investigate this problem, 20 sheep were divided into four groups and the right forelegs subjected to (1) normal weightbearing and movement, (2) movement without weightbearing, (3) weightbearing without movement and (4) non-weightbearing without movement. After one month, full thickness core samples of cartilage taken from the radiocarpal joints of both forelegs were analysed for glycosaminoglycan (GAG) content. Immobilised non-weightbearing joints showed a significant loss of GAG compared with the other groups. More importantly, movement alone without weightbearing was sufficient to maintain GAG content, as was weightbearing without movement.

Keywords: Cartilage, articular; Glycosaminoglycans; Immobilisation; Movement; Weightbearing


A retrospective study of 87 total knee replacement (TKR) operations at the Royal Brisbane Hospital was undertaken in order to assess the effect of continuous passive mobilisation (CPM) of the knee on the postoperative course of the patients undergoing arthroplasty. Two mixed groups of patients with rheumatoid arthritis and osteoarthritis were compared. Forty-eight cases in which patients received CPM during their post-operative course were compared with 39 cases in which CPM was not used. Choice of treatment protocol was at the discretion of the surgeon in each case. The two groups did not differ significantly with regard to pre-operative or post-operative range of knee flexion, length of inpatient stay, or delay before the commencement of knee flexion after surgery. The CPM group was significantly older and this may have masked any beneficial effect of CPM on the measured outcomes. These results suggest that the use of CPM as applied in this study does not significantly alter the postoperative course or the range of movement on discharge. This finding is consistent with those of other studies. The difficulties inherent in this review and the possibilities for further prospective studies are discussed.

Keywords: Arthritis, rheumatoid; Arthroplasty; Knee prosthesis; Movement; Osteoarthritis; Physical Therapy

The case records of 22 patients who presented with severe and persistent cervicobrachial pain were reviewed. The onset of their pain followed the performance of a forceful activity (lifting, pulling or pushing) using one or both arms in the outstretched position. Their symptoms and the findings on physical examination were both consistent with stretch-induced damage to neural tissues related to the painful upper limb. The predominant site of painful neural pathology appeared to be within the cervical spine.

Keywords: Arm Injuries; Brachial Plexus; Cervicobrachial Neuralgia; Nerve Tissue; Pain


Length indices of the erector spinae, abdominal, gluteal, iliopsoas, rectus femoris and hamstring muscles were measured in 103 adolescent females. Means and standard deviations were calculated and the 95 per cent confidence intervals for the population and the 95 per cent individual tolerance limits were derived for each index. Analysis of the interrelationships of the muscle length indices using multiple correlation analysis revealed significant positive correlations between the lumbar erector spinae and iliopsoas and rectus femoris indices, between the abdominal and gluteal indices and between the iliopsoas and hamstring indices. Significant negative correlations exist between the lumbar erector spinae and gluteal indices, between the iliopsoas and abdominal indices and between the rectus femoris and hamstring indices.

Keywords: Adolescence; Backache; Lumbosacral Region; Muscles; Pelvis; Spine


Lateral elbow pain in 25 patients with chronic tennis elbow was reproduced by passive extension-adduction (EA) tests. Standard EA tests were performed with the addition of passive wrist flexion and extension and also with the forearm in the pronated position. These modifications were chosen in order to evaluate the effect on pain of a change in the lateral articular and extra-articular tissues. Performing the EA test in pronation rather than supination produced no significant change. However, both wrist flexion and extension produced significant increases in pain. These results suggest increased tension in lateral structures relevant to tennis elbow and point to a useful addition to the standard EA test. The increase in elbow pain on wrist extension suggests that abnormalities of neural tension may contribute to pain. The results also indicate that a good comparable sign may be demonstrated with the forearm either pronated or supinated.

Keywords: Biomechanics; Elbow Joint; Tennis Elbow


A pedal goniometer was designed to measure the range of inversion of the ankle joint in 42 degrees of plantar flexion about an axis aligning more closely to that of the subtalar joint. The reliability of this instrument in assessing ankle inversion was examined. Repeated measurements of the full active range of movement of ankle inversion were made on 30 subjects. The values of the Pearson
Correlation Coefficient for intra-tester and inter-tester reliability were \( r = 0.96 \) and \( r = 0.91 \) respectively. The high reliability demonstrated by this pedal goniometer will allow its use in areas such as assessment of joint position sense and evaluation of the effects of treatment modalities in rehabilitation.

Keywords: Ankle Joint; Joint Instability; Proprioception; Subtalar Joint


A Kin-Com dynamometer was used to evaluate trunk extensor and flexor strength in 11 elite female field hockey players. Average torques during maximal concentric and eccentric muscle actions through a range of movement from 25 degrees of extension to 30 degrees of flexion were measured at angular velocities of 30 degrees.s\(^{-1}\) and 60 degrees.s\(^{-1}\).

Strength curve shape, average torque values and derived eccentric/concentric and trunk extensor/flexor ratios were analysed. The strength curves displayed greatest torques in the lengthened position for both muscle groups.

Statistical analysis revealed no significant difference in strength between first and second test occasions (\( p = 0.9920 \)). Muscle action (eccentric versus concentric) and group (extensors versus flexors) were significant main effects (\( p = 0.0001 \)). There was no significant difference between torques at 30 degrees.s\(^{-1}\) and 60 degrees.s\(^{-1}\).

The trunk extensor/flexor ratio approximated 1.75 for eccentric muscle action and 1.82 for concentric muscle actions. Gravity correction did not affect strength data but did affect strength curve shape. The results can be utilised to design individual prophylactic exercise programs for back pain.

Keywords: Hockey; Muscles; Sports Medicine


This study compared the motor performance of preschool-aged children who had undergone surgery for congenital heart disease with that of a group of children matched for age, sex, preschool experience, racial and socio-economic background.

Analysis of the results indicated that the performances of the children with congenital heart disease were significantly immature compared to the performances of the control children on the total assessment and in the areas of gross motor, muscle strength, fine motor, tone and postural reactions. Sex, age at first surgical intervention and presence of a cyanotic heart defect did not influence the performances of the study group children: Age at assessment and socio-economic background were found to influence motor performances. The need for physiotherapists to be involved in the follow-up of children with congenital heart disease is supported.

Keywords: Child Development; Heart Defects, congenital; Heart Surgery; Motor Skills


This study investigated some of the effects of back care education. Four classes of students aged from 10 to 12 years were given three lessons structured to teach acceptable sitting posture, safe
lifting techniques and sports injury prevention procedures. Data on the students' sitting postures and lifting skills were collected over a period of six weeks. The results of the study indicate that lessons on aspects of back care can have an immediate impact on students' sitting and lifting behaviours. Further research along the present lines is indicated to determine whether continued instruction and feedback over a longer interval would produce more durable changes.

Keywords: Back; Health Education; Posture; Schools


This study aimed to examine ownership and usage frequencies of electrotherapeutic modalities typically found in private physiotherapy practices in Brisbane. The survey included 73 practices, representing 70 per cent of the selected sample. Results revealed that ultrasound units were used more "frequently" than any other modality. Transcutaneous electrical nerve stimulation and interferential units were also used extensively. Short-wave diathermy units were found in more clinics than any other heating modality. Transcutaneous electrical nerve stimulation was the only modality to demonstrate a significant difference ($< 0.05$) in "frequent" usage between practitioners aged under 31 and those 31 and older. Overall, the majority of respondents (77.5 per cent) trained at The University of Queensland, a fact which may have influenced the identified trends.

Keywords: Electric Stimulation Therapy; Physical Therapy; Short-wave Therapy; Transcutaneous Electric Nerve Stimulation; Ultrasonic Therapy


Counterforce bracing is considered to change the mechanical origin of the forearm extensors, thereby decreasing the force of internally generated muscle tension. A clinical study was conducted of 19 tennis players complaining of elbow pain. Seventeen had previously used some form of counterforce bracing for symptomatic pain relief. In those with symptomatic arms, no significant difference in grip strength with or without the brace was identified. Similarly, no significant differences were recorded in the non-symptomatic arms, with or without the brace. There was also no significant difference between the symptomatic and non-symptomatic arms, when grip strength was compared with and without the brace.

The frequent use of counterforce bracing suggests bracing may subjectively reduce symptoms of pain. However, the results of this study demonstrate that it has no effect on objective measures of grip strength.

Keywords: Braces; Elbow Joint; Tennis; Tennis Elbow