The World Confederation for Physical Therapy (WCPT) is the sole international organization representing physical therapists worldwide. This international conference occurs every 4 years and was recently held in Amsterdam.

Next conference will be held in Vancouver, Canada and would be a wonderful opportunity for newly graduated physiotherapists to attend this international conference.

Staff who attended, presented or contributed to the 16th International Congress of the World Confederation for Physical Therapy were Prof Garry Allison, Assoc Prof Kathy Briffa, Dr Chris Pickard, Anne Andrews, Assoc Prof Di Hopper.

A number of our doctoral students who have recently completed or have submitted their doctoral thesis presented their research at this World Physical Therapy conference.

Here is a summary of these platform and poster presentations.

The abstracts are listed below.

**Platform presentations**

Sophie Coleman received an award for:

“Outstanding abstract and presentation award in the special interest platform category” for;

**AN OSTEOARTHRITIS OF THE KNEE SELF-MANAGEMENT EDUCATION PROGRAM DELIVERED BY MULTIDISCIPLINARY HEALTH PROFESSIONALS: A RANDOMISED CONTROLLED TRIAL**

Coleman S.1, Rose J.2, McQuade J.2, Carroll G.3, Inderjeeth C.4, Briffa N.K.1

Angela Dieterich presented part of her PhD research;

**M-MODE ULTRASOUND IMAGING OF THE ONSET OF GLUTEUS MINIMUS AND MEDIUS ACTIVATION**

Dieterich A.V.1, Pickard C.1, Deshon L.2, Strauss G.1, Allison G.T.3, Gibson W.1, McKay J.2

Kauthar Al Busaidi presented her research report on;

**THE PREVALENCE OF URINARY INCONTINENCE IN WOMEN IN OMAN**

Briffa N.1,2, Al Busaidi K.1,2, Center J.3,4

Axel Schäfer presented his research report on;

**SENSORY FUNCTION DIFFERS BETWEEN SUBGROUPS OF PATIENTS WITH LOW BACK RELATED LEG PAIN FOLLOWING MANUAL THERAPY**

Schäfer A.1, Hall T.2,3, Rolke R.4, Treede R.-D.5, Lüdtke K.6, Mallwitz J.6, Briffa N.K.3
Posters presentations

Garry Alison’s Research Report Poster Display
CORE PROMISES - THE "TRANSVERSUS FEEDFORWARD CORSET" HYPOTHESIS IN SPINAL STABILITY EXPLAINED BY THE PUSH - THROW MOTOR CONTROL CONTINUUM?
Morris S.1,2, Allison G.2,3

&

RISK ASSESSMENT PREDICTION TOOL VALIDATED FOR LENGTH OF STAY IN SHORT STAY ARTHROPLASTY WARD
Allison G.1,2, Buchanan J.2,3, O’Brien R.4

Suad Al-Obaidi’ Research Report Poster Display
ASSESSMENT OF SELECTED PHYSICAL AND BIO-BEHAVIORAL OUTCOME MEASURES BEFORE AND AFTER MCKENZIE TREATMENT INTERVENTION
Al-Obaidi S., Hassan N.1, Ben Nakhi H.2, Al-Mandeel M.3

&

CHARACTERISTICS OF DOPPLER ULTRASONOGRAPHY FOLLOWING REPETITIVE MCKENZIE LUMBAR FLEXION AND EXTENSION EXERCISES IN HEALTHY YOUNG VOLUNTEERS
Al-Obaidi S., Asbeutah A.1, Hassan N.2, Boben S.2

Robyn Fary’s Research Report Poster Display
IS PULSED ELECTRICAL STIMULATION A VIABLE TREATMENT OPTION IN MANAGING PAIN FROM OSTEOARTHRITIS OF THE KNEE?
Fary R.1, Carroll G.J.2, Briffa T.G.3, Briffa N.K.1
OSTEOARTHRITIS OF THE KNEE; SELF-MANAGEMENT UTILISING MULTIDISCIPLINARY HEALTH PROFESSIONALS OR LAY LEADERS?

Coleman S.1, Rose J.2, McQuade J.2, Carroll G.3, Inderjeeth C.4, Briffa N.K.1
1Curtin University of Technology, Physiotherapy, Bentley, Australia, 2Arthritis Western Australia, Wembley, Australia, 3Fremantle Hospital, Department of Rheumatology, Fremantle, Australia, 4University of Western Australia, Geriatric Medicine and Rheumatology, Nedlands, Australia

Purpose: To compare two 6-week self-management (SM) programs for people with OA knee. We have developed a disease specific self-management education program (OAK), for people with OA of the knee. OAK includes specific education and exercise advice designed for delivery by multidisciplinary health professionals (HP's) utilising their knowledge and expertise. We compared this program with the Arthritis Self-Management Program (ASMP). ASMP is scripted for delivery by lay leaders and is generic in content. There is little evidence to support one approach in preference to the other.

Relevance: ASMP is widely used in USA, UK and Australia yet there is unequivocal evidence to support it. We hypothesised that the disease specific OAK would lead to better outcomes than ASMP.

Description: This study is a two-group randomised, controlled, repeated measures study design comparing the disease specific osteoarthritis of the knee self-management program delivered by multidisciplinary health professionals with the generic Arthritis Self-Management program delivered by lay leaders. Differences between groups were examined using an intention to treat analysis with repeated measures ANOVA. P-values are single tail. Chi-square test was used to examine the effect of the treatment, in terms of the proportion of Minimal Clinically Important Improvements (MCII) and responders.

Evaluation: OAK had greater improvements compared to ASMP in almost all the methods used to measure pain with WOMAC and VAS pain reflecting similar improvements. During the intervention VAS pain decreased more in the OAK group; mean (SE) 5.51 (0.25) to 4.57 (0.25) compared to the ASMP group, 5.12 (0.24) to 4.71 (0.25) (group x time p=0.04). OAK had significantly greater improvements compared to ASMP from pre-intervention to twelve months in WOMAC physical function and total scores. In both groups, participants response to treatment were demonstrated in SF-36, however there were few significant between group differences over time. OAK achieved more responder and MCII's than ASMP, however not all were statistically significant. Neither SF36 MCS nor PCS changed significantly (time p>0.08). There were no significant differences between groups in secondary outcomes.

Conclusions: OAK demonstrated more significant improvements compared to ASMP in pain and WOMAC domains, however both groups demonstrated improvements in most outcomes over time. It is difficult to determine whether the small differences between groups are clinically meaningful or are of minor clinical value. This information is relevant when planning SM models for use in OA considering the additional costs incurred employing HP's.

Implications: Further research is necessary to determine the optimal self-management model for people with OA knee.

Key-words: 1. Osteoarthritis of the knee 2. health professionals 3. self-management

Funding acknowledgements: Arthritis Australia.

Ethics approval: Curtin University of Technology Human Research Ethics Committee (HR12).

Session name: Musculoskeletal: rheumatology 2

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Rheumatology

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
M-MODE ULTRASOUND IMAGING OF THE ONSET OF GLUTEUS MINIMUM AND MEDIUS ACTIVATION

Dieterich A.V.1, Pickard C.1, Deshon L.2, Strauss G.1, Allison G.T.3, Gibson W.1, McKay J.2
1Curtin University, School of Physiotherapy, Perth, Australia, 2Curtin University, Department of Medical Imaging, Perth, Australia, 3Curtin University, Health Sciences - Research & Graduate Studies, Perth, Australia

Purpose: To determine the onset of gluteus minimus (gmin) and medius (gmed) activation by M-mode ultrasound (US), to validate M-mode onset measurements against EMG onset measurements and to determine the prevalent sequence of activation.

Relevance: A delayed onset of activation of deep lying muscles is assumed to be an important source of joint dysfunction. The evidence for a depth dependent sequence of activation onset is controversial and limited to few muscles with small samples. These limitations are based on the restricted use of fine-wire EMG (fwEMG). Surface EMG (sEMG) is applicable on only 10 % of the human muscles. The non-invasive M-mode imaging opens new perspectives for assessing the activation of deep and superficial muscles.

Participants: FwEMG study: 10 asymptomatic volunteers (3 female, mean age 40 y); sEMG study: 18 asymptomatic volunteers (11 females, mean age 31.8 y)

Methods: Repeated measures of M-mode and EMG onset of isometric abduction in supine: three repetitions of 40 and 60% MVIC, self-selected speed. Gmin and the deep level of gmed were measured by fwEMG and M-mode (one occasion), the superficial gmed by sEMG and M-mode (two occasions within one week). Onset was determined visually. Different synchronization methods were used.

Analysis: The differences between M-mode and EMG onset and between deep and superficial onset were calculated with means and confidence intervals (CI). Pearson correlation of US and EMG onset was performed with log-transformed data to reduce the influence of the skewed distribution.

Results: The correlation between M-mode and EMG onset was 0.99, 0.86 and 0.93 / 0.98 for gmin, the deep gmed and the superficial gmed on occasion 1 / 2, respectively. The differences and CIs between M-mode and EMG onset were 4 ± 7.6 ms for gmin, -1.9 ± 12.5 ms for the deep gmed and 123 ± 32 / 133 ± 34 ms for the superficial gmed on occasion 1 / 2. M-mode onset of gmin preceded the deep gmed by 26.4 ± 10.3 ms in the fwEMG study, and by 12.5 ± 5.7 / 11.2 ± 6 ms on occasion 1 / 2 of the sEMG study. FwEMG onset of gmin preceded the deep gmed by 28 ± 22.8 ms. The deep level of gmed activated before the superficial level by 32.5 ± 20.2 ms in the fwEMG study and by 26.5 ± 10.6 ms / 18 ± 7.3 ms in the sEMG study.

Conclusions: M-mode measures the mechanic and EMG the electric aspect of muscle activation. These aspects correlate highly but with increasing discrepancies for the later activating muscle levels. This divergence indicates that the mechanic and the electric pathways of propagation differ. The prevalent pattern of abductor activation is sequential and starts in gmin. The large difference between M-mode and sEMG onset indicates bias by the synchronization method.


Funding acknowledgements: Unfunded research, supported by loan of US equipment from Toshiba Australia and Siemens Western Australia.


Session name: Imaging & diagnostics

Programme track/theme: Professional Practice - IMAGING & DIAGNOSTICS

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
THE PREVALENCE OF URINARY INCONTINENCE IN WOMEN IN OMAN

Briffa N.1,2, Al Busaidi K.1,2, Center J.3,4
1School of Physiotherapy, Curtin University, Perth, Australia, 2Curtin Health Innovation Research Institute, Curtin University, Perth, Australia, 3Garvan Institute of Medical Research, Sydney, Australia, 4St Vincent's Hospital, University of New South Wales, Sydney, Australia

Purpose: The purpose of this study was to determine the prevalence of urinary incontinence (UI) in Omani women, the impact it has on their lives and whether they seek care for this condition.

Relevance: Urinary incontinence is common among women worldwide, however, most data is from white women in developed nations. Prevalence and risk factors in Oman are unknown. In Oman the role of physiotherapists in relation to continence and women’s health is not widely recognized despite good evidence that physiotherapy treatments are effective for UI. Establishing the prevalence of UI among Omani women and the impact it has on their daily lives will inform and justify the development of health education and treatment programs including physiotherapy.

Participants: 800 community dwelling Muslim women aged 18 years and above; mean age . The sample included women from urban and rural areas.

Methods: This study was cross-sectional in design. Participants were recruited door-to-door using a stratified household-based sampling method that incorporated all eight regions of the country. Data were collected using a valid and reliable questionnaire developed for the study. Interviews were used in preference to self-completion of the questionnaire as a substantial proportion of women in Oman are illiterate. Participants were interviewed in English or Arabic according to their preference.

Analysis: Data were summarized using descriptive statistics.

Results: Response rate was 99%. Forty-three percent of the women did not understand the term UI until it was explained. Overall, 43% had UI; 23% stress UI; 3% urge UI and 17% mixed UI. In those affected, symptoms were moderate to severe in 25% and bothersome in 65% but only 20% sought care. Reasons for failing to seek care were lack of awareness it could be treated (53%); embarrassment (17.5%) or that it was not considered a big problem (12.5%).

Conclusions: There was a high prevalence of UI among Omani women. Although the majority of those affected found the condition bothersome, the level of care seeking was low.

Implications: At present in Oman continence physiotherapy services are very limited and only available in the capital city Muscat. The scope of the problem of UI identified in this study suggests the need for more physiotherapy services specializing in this area and better health education about UI so that more women are aware that this disabling condition can be treated effectively.

Key-words: 1. Urinary incontinence 2. Women’s health 3. Prevalence

Funding acknowledgements: United Nations Population Fund, Sultan Qaboos University.

Ethics approval: The study was approved by the Human Research Ethics Committee (HR 41/2007) at Curtin University.

Session name:
Women’s health 1

Programme track/theme:
Professional Practice - WOMEN’S HEALTH

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
SENSORY FUNCTION DIFFERS BETWEEN SUBGROUPS OF PATIENTS WITH LOW BACK RELATED LEG PAIN FOLLOWING MANUAL THERAPY

Schäfer A.1, Hall T.2,3, Rolke R.4, Treede R.-D.5, Lüdtke K.6, Mallwitz J.5, Briffa N.K.3
1HAWK University of Applied Sciences and Arts, Degree Programmes for Occupational Therapy, Speech and Language Therapy & Physiotherapy, Hildesheim, Germany, 2Manual Concepts, Perth, Australia, 3Curtin University, Curtin Innovation Health Research Institute, Perth, Australia, 4Johannes Gutenberg University of Mainz Medical Center, Klinik und Poliklinik für Neurologie, Mainz, Germany, 5Ruprecht-Karls University, Medical Faculty, Mannheim, Germany, 6Rückenzentrum am Michel, Hamburg, Germany

Purpose: To investigate differences between subgroups of patients with low back related leg pain (LBRLP) in changes of sensory function pre- to post manual therapy intervention and thereby provide evidence for or against the predictive validity of a new classification system.

Relevance: While LBRLP is a common and costly problem, diagnosis remains difficult in spite of advanced diagnostic technology. Therefore a pathomechanism based classification system was introduced, differentiating patients with LBRLP in four subgroups: 1) neuropathic pain with sensory sensitization (NS), 2) denervation with marked neurological deficits (D), 3) predominant peripheral nerve sensitization (PNS) without signs of NS and D, and 4) referred pain (M) from somatic structures. The purpose of this classification system is to direct patient management on the basis of pathomechanisms.

Participants: 77 subjects (18-75 years) with unilateral LBRLP of more than 6 weeks duration were recruited from a multidisciplinary pain clinic. Exclusion criteria were: History of lower quadrant surgery or trauma within the past 6 months, nerve root block within the past four weeks, history of other neuropathic pathology, history of vascular disease in the lower extremities and inflammatory arthropathies.

Methods: A comprehensive quantitative sensory test (QST) battery was used to explore sensory function over the lower back, foot and hand. QST was measured prior to manual therapy intervention and after 7 treatment sessions. Treatment consisted of passive neural mobilisation techniques as well as a home program to replicate the intervention.

Analysis: One-way Analysis of Covariance (ANCOVA) was used for data analysis. Dependent variables were difference scores from pre- to post treatment for QST parameters. Baseline values of the respective dependent variables were entered as covariates in the model. Other covariates were baseline parameters of pain intensity, disability and anxiety, as these were significantly different between groups at baseline. Significant between group differences were followed up with post-hoc pairwise comparisons (LSD method).

Results: 74 subjects completed the study. ANCOVAs revealed significant between groups differences for warm detection (F3,70=3.1, p=0.033), cold pain (F3,70=3.2, p=0.034), pressure pain thresholds (F3,70=2.9, p=0.037) and temporal summation of pin prick stimuli (F3,70=3.8, p=0.045). Post hoc tests showed that improvement of warm detection over the affected foot (MD=-1.03°C, SD=2.5), decreased sensitivity to cold pain over the hand (MD=-2.57°C, SD=3.98) and inhibition of temporal summation over the back (MD=-0.2/10, SD=1.24) was most pronounced in group PNS (p<0.05). In contrast, group NS showed a loss of warm detection (MD=0.81°C, SD=1.25) and increased pressure pain sensitivity (MD=-40.3 kPa, SD=146) from pre to post intervention over the back (p<0.05).

Conclusions: Following treatment, sensory function and pain sensitivity improved in group PNS while in group NS sensory function decreased and pain sensitivity increased. These findings could indicate increased central nociceptive drive in group NS in contrast to inhibited central pain processing in group PNS.

Implications: The findings support predictive ability of the classification system for two of the four subgroups. By implementing the classification system for LBRLP it may be possible to improve treatment of patients in clinical practice and to recruit homogenous patient samples more likely to respond to distinct interventions in research settings.

Key-words: 1. Sciatica 2. Quantitative Sensory Testing 3. Classification

Funding acknowledgements: No funding was received.

Ethics approval: Ethical approval for this study was obtained from the Human Research Ethics Committee, Curtin University of Technology, Perth, Western Australia.

Session name: Musculoskeletal: spine 5

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Spine

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
CORE PROMISES - THE "TRANSVERSUS FEEDFORWARD CORSET" HYPOTHESIS IN SPINAL STABILITY EXPLAINED BY THE PUSH - THROW MOTOR CONTROL CONTINUUM?

Morris S.1,2, Allison G.2,3
1Curtin University, School of Physiotherapy, Perth, Australia, 2Curtin Health Innovation Research Institute, Perth, Australia, 3Curtin University, Faculty of Health Sciences, Perth, Australia

Purpose: To examine how movement patterns influence the feedforward activation patterns of trunk and lower limb muscles during different spinal perturbations.

Relevance: There is widespread belief system that the bilateral activation of Transversus abdominis (TrAb) occurs before perturbations of the spine from any direction of the arm movement. This has been used to explain core stability programs and a cause of chronic low back pain. This presentation provides evidence for a need to re-interpret the role of the TrAb in core stability training.

Participants: Normal pain free volunteers.

Methods: A total of 10 participants had bilateral and surface and finewire EMG (2kHz) recordings taken during upper limb perturbations under different experimental conditions. 7 had full 3D inverse kinetic analysis of the trunk to determine magnitudes and direction of the trunk perturbations. Participants performed unilateral and bilateral upperlimb rapid movements to generate a range of rotation torques on the lumbopelvic region. Analysis of EMG signal amplitudes and onsets in the feedforward window were examined under different conditions.

Analysis: Repeated measures ANOVA and multivariate analyses were undertaken to document the changes in EMG profiles (amplitudes in set epochs) under different kinetic perturbations. Principle components analysis was undertaken to examine the clusters of muscles under a wide range of kinetic loadings.

Results: The data reveals that: unilateral Trab activation patterns are more closely related to patterns of the ipsilateral Internal Oblique and the contralateral biceps femoris than the opposite TrAb; the activation pattern of TrAb in the feedforward window relates to the direction and magnitude of the upper limb perturbation; there is little symmetry in the Left and Right TrAb activation patterns in the presence of rotation torques and finally when TrAb is activated symmetrically this occurs relatively later (i.e. delayed).

Conclusions: These findings dismiss the common belief that normally TrAb acts symmetrically in a corset like action well before the onset of the deltoid (feedforward activation). During perturbations to the trunk, muscles respond according to their fibre orientation. Unilateral TrAb is part of a diagonal sling synergy that stiffens the trunk in response to (pending) rotation perturbations.

Implications: A wide range of research theses and rationale for specific core exercises are based on the assumption that TrAb (Left and Right) has a unique action and pre-movement activation pattern, that acts bilaterally (like a corset) to protect the spine and this protection occurs independently of the direction of the perturbation. This is not what was observed in normal subjects. The behaviour of the muscles responding to rotation (Trab) can be altered by altered selection of motor patterns. In particular this can be explained by the push-throw continuum. Individuals with LBP may have altered selection strategies towards a pushing pattern than a throwing pattern and therefore brace to avoid rotation prior to moving. The selection of this bracing maneuver may nullify any need for the ipsilateral TrAb to pre-activate. This apriori behaviour explains delays observed in this population and also delayed onsets associated with anxiety and pain.


Funding acknowledgements: Study supported from Dora Lush NHRMC Scholarship (SLM) , Research Fellowship AIS (GTA).

Ethics approval: Institutional Human Research Ethics Committee approval was obtained for data used in this presentation.

Session name: MUSCULOSKELETAL: Spine 4

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Spine

All authors, affiliations and abstracts have been published as submitted.
Published in partnership with Elsevier publishers and the Physiotherapy journal.
RISK ASSESSMENT PREDICTION TOOL VALIDATED FOR LENGTH OF STAY IN SHORT STAY ARTHROPLASTY WARD

Allison G.1,2, Buchanan J.2,3, O'Brien R.4
1Curtin University, Faculty of Health Sciences, Perth, Australia, 2Curtin Health Innovation Research Institute, Perth, Australia, 3Royal Perth Hospital, Physiotherapy, Perth, Australia, 4Royal Perth Hospital, Perth, Australia

Purpose: The Risk Assessment Prediction Tool (RAPT) was designed to identify individuals who may be transferred to a rehabilitation ward following lower limb arthroplasty. The purpose of this study was to determine if this instrument is valid in a short length of stay (LOS) setting and if it predicts extended LOS.

Relevance: This study provides level one evidence for a prognostic study risk of increased LOS following arthroplasty.

Participants: 528 consecutive arthroplasty patients from a public hospital.

Methods: A prospective cohort study of consecutive patients who received hip (202) and knee (325) replacements was undertaken. Risk assessments were undertaken by a senior physiotherapist prior to surgery and LOS (time to discharge) were documented from hospital records. The primary RAPT tool is a 7 question scoring system resulting in an integer score between 1 and 12. Thresholds for High and low risk were <6 and >9 points respectively.

Analysis: Median (IQR) of LOS were determined for the total group and hip and knee subgroups. Non-parametric analysis was undertaken for between group comparison for joint and also low medium and high RAPT risk scores. Subject who had a LOS of greater than the population upper quartile were classified as extended LOS. The RAPT high and low risk threshold values were used to determine the sensitivity and specificity of the high/low risk score resulting in an extended LOS. From this analysis odds ratios were determined for high and low threshold as well as additional threshold values.

Results: 99.7% of data sets were complete and no LOS difference existed for the type of joint (U = 0.79 , p = 0.43) The RAPT scores of High, Medium and Low risk were found to have different LOS for arthroplasty. Each of the risk grouping varied by 1 day Median (IQR) : 7 (5-9), 6 (5-7) and 5(4-6) respectively. These pair wise comparison met statistical differences (Man U < 3.1, P <.0016). Individuals with a high risk RAPT score were 2.0 [95% CI 1.35 to 2.96] more likely to have an extended stay. Individuals with a low score were 2.3 [95% CI 1.5 to 3.6] of NOT having an extended LOS. Changing the original threshold for high and low risk ratings of the RAPT did not alter the odds substantially.

Conclusions: The RAPT risk system was designed to determine which patients were likely to need transferring into a Rehabilitation ward. The tool was developed when the LOS for arthroplasty was 9 - 14 days. We conclude that the elements assessed in the RAPT are also critical in modern rapid through put of LOS in public hospital systems. These elements are therefore robust and valid within this new context.

Implications: The study provides LEVEL ONE evidence with clinical meaning. This 2 minute questionnaire has clinical validity and can play an important role in controlling social factors when examining peri-operative factors contributing to extended LOS. It also has implications for targeted workforce management and allocation of day of surgery.

Key-words: 1. Length of stay 2. Arthroplasty 3. knees

Funding acknowledgements: None.

Ethics approval: This research project was granted institutional human ethics research committee approval.

Session name: MUSCULOSKELETAL: Orthopaedics 1

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Orthopaedics

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
CHARACTERISTICS OF DOPPLER ULTRASONOGRAPHY FOLLOWING REPETITIVE MCKENZIE LUMBAR FLEXION AND EXTENSION EXERCISES IN HEALTHY YOUNG VOLUNTEERS

Al-Obaidi S., Asbeutah A.1, Hassan N.2, Boben S.2
1Kuwait University, Department of Radiological Sciences, Kuwait, Kuwait, 2Kuwait University, Department of Physical Therapy, Kuwait, Kuwait

Purpose: To investigate the cardiovascular responses following two commonly prescribed McKenzie exercises; extension in lying (EIL) and flexion in lying (FIL) on the basic clinical cardiovascular parameters; and to determine their effects on the aortic diameter and blood flow velocity following 3 sets of exercise repetition (10, 15, and 20 repetitions) of each exercise, in healthy young volunteers utilizing doppler ultrasonography.

Relevance: It has been previously demonstrated that McKenzie FIL and EIL exercises commonly, used in the management of low back pain are associated with increased myocardial demand in proportion to increased exercise repetitions specifically, following 15 and 20 repetitions. However, the effect on aortic diameter (AD), peak systolic velocity (PSV) and the end diastolic velocity (EDV), and resistive index (RI), has not been explored.

Participants: Twenty five subjects aged 21 to 34 years (mean 28.32, SD= 3.42) without a history of cardiovascular or cardiopulmonary disease participated in the study.

Methods: Each participant performed three sets of exercise repetitions (10, 15 and 20) of FIL, with a 5 minute rest between each set. The subject then performed EIL in the same manner. Heart rate (HR), and blood pressure (BP) were recorded before, after a 5 minute rest interval, and immediately after each set of repetitions. A doppler ultrasound machine equipped with curvi-linear 5-2 MHz transducer was used to measure the abdominal aorta diameter 2cm above the bifurcation and to measure PSV, EDV, and RI on the same site. Color Doppler was used to visualize the flow patterns within the aorta.

Analysis: Descriptive statistics, One-way Analysis Of Variance (ANOVA) for repeated measures was used to compare the dependent measurements obtained after performing the assigned exercises following 10, 15, and 20 repetitions. Scheffe multiple-comparison post hoc analysis was used to determine which set of repetitions in a given exercise significantly differed from the others. The level of significance was set at 0.05. Paired t-tests were used to compare the cardiovascular responses of the two exercises at rest and following the 3 repetition sets.

Results: Both FIL and EIL caused an increase in HR, systolic blood pressure, rate pressure products, PSV, and RI in proportion to exercise repetitions (P<0.00) more significant in FIL than EIL specifically following 15 and 20 repetitions of FIL (P<0.00).

Conclusions: Both EIL and FIL tend to increases the cardiovascular responses significantly following 20 repetitions but more following FIL. The 10 repetitions of both exercises appear to be a safe exercise load.

Implications: Knowledge of the cardiovascular baseline status and responses to exercise load during testing and or treatment is clinically important , specifically, that many of our patients may have or are at risk of developing a cardiovascular or cerebrovascular incidences that they may be unaware of. Patients should be instructed not to exceed the prescribed exercise repetitions.

Key-words: 1. McKenzie lumbar spine exercise 2. aortic diameter, blood flow velocity 3. heart rate , blood pressure

Funding acknowledgements: None.

Ethics approval: This study was approved by the Institutional Review Board of the Faculty of Allied Health Sciences in Kuwait University.

Session name: MUSCULOSKELETAL: Spine 5

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Spine

All authors, affiliations and abstracts have been published as submitted. Published in partnership with Elsevier publishers and the Physiotherapy journal.
ASSESSMENT OF SELECTED PHYSICAL AND BIO-BEHAVIORAL OUTCOME MEASURES BEFORE AND AFTER MCKENZIE TREATMENT INTERVENTION

Al-Obaidi S., Hassan N.,1, Ben Nakhi H.,2, Al-Mandeel M.3
1Kuwait University, Physical Therapy, Kuwait, Kuwait, 2New Dar ElShifa Hospital, Kuwait, Kuwait, 3Ibn Sina Hospital, Physical Therapy, Kuwait, Kuwait

Purpose: To assess bio-behavioral and physical performance characteristics of individuals with chronic low back pain (CLBP) who demonstrated pain centralization at baseline, 5-weeks and 10-weeks after McKenzie intervention. Secondly, to determine if selected bio-behavioral measures obtained prior to and at subsequent follow up periods after McKenzie intervention predict variations in the patients physical performances.

Relevance: It is still unclear why some people with low back pain suffer from persistent pain and disabilities and ultimately develop CLBP. Bio-behavioral factors are believed to mediate between the neuro-physiological aspects of pain and the actual perception of the pain experience, which reinforce the pain avoidance behaviors. In this study, we argue that McKenzie approach can be used to overcome pain and related fear and disability beliefs, so as to promote the "well behavior".

Participants: 62 volunteers with CLBP (28 men and 34 women) average ages 41.35 and 37.60 years.

Methods: Patients filled out health screening questionnaires, underwent McKenzie mechanical assessment protocol to determine the occurrence of CP. Patients who demonstrate CP underwent McKenzie intervention. The treatment included a selection of various mechanical techniques such as sustained end range position or repeated end range lumbar movement in a precise direction that facilitated the CP, mobilization, over pressure and utilization of passive lumbar support. Exercises and manual techniques were implemented according to individual objective examinations. Treatment visits were scheduled within 24-48 hour intervals. Pain (anticipated and actually reported pain) were measured by Visual Analog score (VAS), Pain related fear and disability beliefs were assessed using the Disability Belief Questionnaire (DBQ) and Fear Avoidance Belief Questionnaires (FABQ). The time of repeated sit-to-stand, forward bending, customary and fast walking was recorded. Outcome measures were repeated at the end of the 5th and 10th weeks after completing the treatment. Performance times were compared to healthy matched individuals based on grouped age and body mass index (BMI).

Analysis: Descriptive statistics, one way analysis of variance (ANOVA) and Scheffe post hoc test with (P< 0.05), paired t-tests and Stepwise regression analysis were used.

Results: Significant improvements were reported at the end of the 5th week for all variables (P<0.05), with slight increase in bio-behavioral variables at the end of the 10th week. Range of improvement in physical performances were 18%-33% for men and 5%-38% for women (P<0.01). Anticipation of pain and Fear Avoidance Beliefs Questionnaire Physical Activity subscale were the strongest predictors for variation in physical performances.

Conclusions: After being treated with McKenzie interventions, individuals with CLBP demonstrated significant improvements in physical performances and reported pain, fear and disability beliefs. The peak improvements occurred on the 5th week, while slight elevation in bio-behavioral measures observed on the 10th week did not affect physical performances.

Implications: McKenzie intervention was found effective on short term in the management of CLBP as well as influencing related fear and disability beliefs in patients demonstrating CP. The observed improvement in physical performances occurred regardless of elevated actual reported pain.

Key-words: 1. chronic low back pain 2. McKenzie treatment intervention 3. bio-behavioral outcome measures

Funding acknowledgements: None.

Ethics approval: This study was approved by the institutional research review board of the Faculty of Allied Health Sciences, Kuwait University.

Session name: MUSCULOSKELETAL: Spine 6

Programme track/theme: Professional Practice - MUSCULOSKELETAL: Spine

All authors, affiliations and abstracts have been published as submitted.
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IS PULSED ELECTRICAL STIMULATION A VIABLE TREATMENT OPTION IN MANAGING PAIN FROM OSTEOPHARTHROSIS OF THE KNEE?

Fary R.1, Carroll G.J.2, Briffa T.G.1, Briffa N.K.1
1Curtin University, School of Physiotherapy and Curtin Health Innovation Research Institute, Perth, Australia, 2Notre Dame University, School of Medicine, Fremantle, Australia, 3University of Western Australia, School of Population Health, Nedlands, Australia

Purpose: To examine the efficacy of sub-sensory, pulsed electrical stimulation (PES) in managing pain in osteoarthritis (OA) of the knee. Secondary objectives were to determine its effectiveness in improving function, quality of life and activity levels.

Relevance: Physical Therapists use a variety of electrotherapy modalities to treat osteoarthritic knees. PES is reported to reduce osteoarthritic knee pain in the short-term with few adverse side effects. With OA being a chronic disease and pain being a dominant feature, treatment effectiveness over a longer duration is critical.

Participants: Seventy people (mean age 70 years, 53% male) with clinician diagnosed OA knee.

Methods: A double-blind, randomised, placebo-controlled trial was conducted. Participants were randomised to active treatment or placebo, stratified for age, gender and baseline pain levels. PES electrodes were worn inside a neoprene brace. Participants were directed to wear the device for 7 hours/day, usually overnight, for 26 weeks. The trial conformed to CONSORT guidelines. Data were collected at baseline, four, 16 and 26 weeks. The primary outcome was a change in pain (100mm VAS) from baseline to 26 weeks. Other outcome measures included in function, patient global assessment (PGA) and quality of life (SF-36). These outcomes were measured at baseline, 4, 16 and 26 weeks. Physical activity was measured at baseline and 16 weeks. A patient global perceived effect scale was completed at 16 and 26 weeks.

Analysis: T-tests were used to measure the difference in change in pain, function, PGA, quality of life and physical activity between the groups. Chi-square was used to compare the proportion of participants who felt better in each group.

Results: At baseline groups were similar. Both groups achieved improvement in pain VAS approaching clinical significance but there was no difference between the groups (p=0.89). Similarly no difference was noted between the groups in change in function (p=0.62), PGA (p=0.62) or SF-36 physical and mental component scores (p=0.29, p=0.55, respectively), from baseline to 26 weeks. Similarly there was no difference between groups at baseline and 16 weeks in activity measures (p>0.16).

Conclusions: PES over 26 weeks did not improve pain any better than placebo. Results were the same for the secondary outcome measures.

Implications: Our findings suggest that PES is no more effective than placebo in moderately active people with moderate to severe radiological OA of the knee who have moderate symptoms of pain and function.

Key-words: 1. osteoarthritis 2. randomised controlled trial 3. electrical stimulation therapy

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