



UCD Centre for Translational Pain Research

— Advancing Science, Changing Pain —

UCD Centre for Translational Pain Research

Inaugural Scientific Meeting

Monday 13th June 2016

Health Science Centre, University College Dublin



UCD Centre for Translational Pain Research Scientific Meeting

C006, UCD Health Science Centre, Belfield Campus, Dublin

0900	Registration
0930	Opening Remarks Dr Catherine Blake, CTPR, University College Dublin
0945-1015	Professor Harriet Wittink (Physiotherapy), Uterecht University of Applied Sciences, The Netherlands <i>Relapse in rehabilitation; why it happens and strategies to prevent it</i>
1015-1030	Lifting the fibrofog': examining psychosocial reports and cognitive functioning in a female, Irish Fibromyalgia patient cohort Dr Damien Lowry, Mater Misericordiae University Hospital
1030-1045	Pain profiles following spinal cord injury in Ireland: A national survey Dearbhla Burke. UCD School of Public Health, Physiotherapy and Sports Science, CTPR UCD
104-1100	More than a little sore: Prevalence of pain in children post appendectomy. Norma O'Keeffe, Temple Street University Hospital
1100	Coffee and posters
1130-1200	Dr. Keith Smart (Physiotherapy), St Vincent's University Hospital, Dublin 4 <i>Physiotherapy for pain and disability in adults with complex regional pain syndrome (CRPS) types I and II</i>
1200-1215	Investigating the impact of health literacy in individuals with chronic pain Laura Mackey, Public Health, Physiotherapy and Sports Science, CTPR UCD
1215-1230	Exercise-induced hypoalgesia in people with knee osteoarthritis with normal and abnormal conditioned pain modulation Caitriona Fingleton, Public Health, Physiotherapy and Sports Science, CTPR UCD
1230-1330	Lunch and posters
1330-1400	Professor Gerry Wilson (Rheumatology), University College Dublin and St. Vincent's University Hospital, Dublin 4 <i>Causes and treatment of joint pain</i>
14.00-1415	Pain sensitization and response to physiotherapy treatment in people with knee osteoarthritis Helen O'Leary, HRB Fellow, Public Health, Physiotherapy and Sports Science, University College Dublin, CTPR UCD
1415-1430	Evaluation of a combined exercise and acceptance and commitment therapy group based programme for chronic pain: A pilot study Maire-Brid Casey, Mater Misericordiae University Hospital
1430-1445	Impact of a multidisciplinary weight management service on musculoskeletal pain in obese individuals: A retrospective study Grace MacLellan, Public Health, Physiotherapy and Sports Science, UCD
1445-1515	Dr. Conor Hearty (Pain Medicine), Mater Misericordiae Hospital, Dublin <i>Advances in pain medicine</i>
1515	Prizes oral presentation / poster presentation
1530	Closing remarks

Keynote Speakers

Professor Harriët Wittink

Professor of Lifestyle and Health , Faculty of Healthcare, HU University of Applied Sciences, Utrecht

“Relapse in rehabilitation; why it happens and strategies to prevent it”.



Professor Wittink has been professor in Lifestyle and Health at HU University of Applied Sciences Utrecht since 2007. She began her career as a physiotherapist and gained her PhD in 1998 at Boston University with a thesis on the relationship between physical activity, physical fitness and chronic lower back pain. She is Assistant Professor of anaesthesia / pain management at Tufts University.

Within the Lifestyle and Health research group, Wittink looks mainly at the relationship between exercise and health. Her focus is on people with medical conditions that prevent them from exercising. Working with physiotherapists and remedial therapists, she aims to improve care so that patients can benefit from improved treatments.

Harriët Wittink's specific expertise is in the area of physiotherapy, exercise physiology, chronic pain rehabilitation, and clinimetrics.

Dr Keith Smart

Clinical Specialist Physiotherapist, St Vincent's University Hospital Dublin

“Physiotherapy for pain and disability in adults with complex regional pain syndrome (CRPS) types I and II”



Dr Keith Smart qualified as a physiotherapist in 1994 and has been working with patients with musculoskeletal disorders for most of his career.

He currently works within the field of orthopaedic and rheumatology triage and has a keen interest in the assessment and management of musculoskeletal pain.

He has undertaken post-graduate studies focusing on the clinical reasoning and classification of pain and is currently collaborating on a number of research projects and systematic reviews exploring pain sensitization and neuropathic pain in osteoarthritis.

Professor Gerry Wilson

Professor of Rheumatology, School Of Medicine, Conway Institute, UCD

“Causes and treatment of joint pain”



Professor Gerry Wilson graduated in Medicine from Queen's University Belfast. He undertook clinical training in Edinburgh, Sheffield and Oxford. His PhD was funded by Arthritis Research UK (ARUK) on the genetics of TNF in rheumatoid arthritis (RA) and subsequently an ARUK funded post-doctoral scientist at Stanford University. He was appointed Professor in Rheumatology and Honorary Consultant Rheumatologist at the University of Sheffield Medical School and Sheffield Teaching Hospitals NHS Foundation Trust where he was Head of the Sheffield EULAR Centre of Excellence for Rheumatology (1997-2013). He was appointed to the Arthritis Ireland/UCD Chair of Rheumatology in 2013 and undertakes clinics in the Mater and St Vincent's University Hospitals.

His research is on molecular mechanisms regulating joint damage in RA. He is chairperson of an External Advisory Committee of the Commission on Human Medicines of the UK and a member of the Clinical Expert Subcommittee of the Health Products Regulatory Authority of Ireland.

Dr Conor Hearty

Consultant in Anaesthesia and Pain Medicine, Department of Pain Medicine
Mater Misericordiae University Hospital, Dublin

“Advances in pain medicine”



Dr Hearty is Consultant in Anaesthesia and Pain Medicine in the Mater Misericordiae Hospital. He obtained his medical qualification from UCD in 2001. In 2006 Dr Hearty became a Fellow of The College of Anaesthetists, Royal College of Surgeons in Ireland, he obtained a Diploma in Pain medicine from the College of Anaesthetists in 2008. He has completed pain Fellowships in Acute and Chronic Pain Medicine in St James Hospital in 2009 and in Adelaide, South Australia in 2012.

Dr Hearty established a pain management programme in the Mater Hospital, The Mater Act Pain Programme (MAPP). The MAPP includes Psychology sessions which are based on Acceptance and Commitment Therapy (ACT), which seeks to increase psychological flexibility and also includes mindfulness practices and peer-support sessions. Physiotherapy includes hydrotherapy and gym-based activities and additional education sessions are delivered by different team members, covering topics such as understanding pain, activity pacing, sleep hygiene, stress control and medication management.

Oral Presentations

01 TITLE

Lifting the fibrofog': examining psychosocial reports and cognitive functioning in a female, Irish Fibromyalgia patient cohort

Damien Lowry^{1,2}, Teresa Burke^{2,3}, Declan O'Keeffe⁴, & Geraldine McCarthy⁵

¹Psychology Department, Mater Misericordiae University Hospital; ² School of Psychology, University College Dublin; ³School of Nursing and Human Sciences, Dublin City University; ⁴Dept Pain Medicine, St. Vincent's University Hospital; ⁵ Rheumatology Department, Mater Misericordiae University Hospital.

BACKGROUND: Fibromyalgia-syndrome (FMS) is an increasingly recognised condition that is characterised by chronic widespread pain. Patients frequently report significant symptomatology across physical, emotional, social and cognitive domains. Whilst there have been many research studies conducted on this cohort in other countries, little if any data exist on the subjective psychosocial and objective cognitive performance profile of Irish FMS patients.

AIMS: The aim was to investigate psychosocial wellbeing and neuropsychological functioning in a cohort of Irish females with FMS. *A priori* hypotheses included FMS reporting significantly greater psychosocial distress and cognitive dysfunction, relative to a gender- and education-matched healthy-control-group.

METHODS: A two group multi-site cross sectional design was used. Fibromyalgia patients were recruited from the Rheumatology and Pain Medicine Departments of Mater Misericordiae and St. Vincent's University Hospitals, respectively. Individuals meeting inclusion and exclusion criteria who volunteered for a psychosocial survey were subsequently invited to complete two two-hour blocks of cognitive testing. The order of test-block administration was randomised to control for potential effects of test-fatigue. Similarly, a healthy control group was recruited through public notices and social contacts of patient participants.

RESULTS: FMS patients completing the survey (n=40) exhibited significantly greater levels of psychosocial distress than controls (n=18). This included significantly higher levels of anxiety, depressed mood, fatigue and pain, despite being 6-years younger on average. Available social support was relatively comparable though FMS patients enjoyed less 'positive interaction'. On cognitive testing, FMS participants (n=26) performed significantly poorer than controls on measures of memory, verbal learning and attention-switching and inhibition.

CONCLUSIONS: FMS is a condition which is characterised by pronounced, widespread difficulties spanning physical, psychological, social and cognitive domains. Further research is needed to improve its ill-defined etiology and guide effective treatment.

02 Title

Pain profiles following spinal cord injury in Ireland: A national survey

Burke D¹, Lennon O¹, Fullen B.M.^{1,2}.

UCD School of Public Health, Physiotherapy and Sports Science, UCD CTPR

Background: Neuropathic pain (NP) is a common post spinal cord injury (SCI) [1], presenting at or below the level of injury and described as the most severe pain post SCI [1]. In qualitative research by Spinal Injuries Ireland (n=385), pain was highlighted as a dominant issue for respondents [2].

Aims: To obtain by national survey, data relating to the prevalence of pain and NP and a comparison between NP and general pain presentations with respect to severity of symptoms, health related quality of life and health service utilisation in SCI in Ireland.

Methods: Members registered to the SII database (n=1,574) were surveyed. Ethical exemption was granted. The Questionnaire pack included demographic and SCI characteristics, the ISCIP Basic Pain Dataset [3], the Douleur Neuropathique 4 (DN4) (interview) [4], the WHO QoL Bref [5] and questions on health care utilisation and pain management. Data were entered into SPSS statistical software. Independent t-tests, Mann Whitney U tests and Chi² tests compared variables between respondents presenting with general pain and NP. Significance was set p<0.05.

Results: In total 661 (43%) surveys were completed, 458 (69%) respondents experienced pain and 236 (36%) scores from the DN4 indicated NP. Respondents with NP had higher pain intensities and reported more days with pain (P= <0.001), LOWER health related quality of life

scores ($P < 0.05$) and had increased healthcare service utilisation ($P = < 0.001$) when compared to those with generalised pain presentations.

Conclusion: The problem of pain post SCI is evident and warrants further investigation and improved management strategies.

03 Title: More than a little sore: Prevalence of pain in children post appendectomy.

Norma O'Keeffe, RGN RCN RNP BNS (Hons), MSc Advanced Pain Management, ANP Candidate Children's Pain, Temple Street Children's University, Dublin 1

Professor Laserina O Connor PhD, RANP, RNP, Professor Clinical Nursing, Joint Clinical Chair, UCD School of Nursing Midwifery & Health Systems, UCD Dublin 4.

Dr. Mary Casey, Associate Dean for Taught Graduate Programmes, UCD School of Nursing, Midwifery & Health Systems, UCD Dublin 4.

Background: Despite the availability of clinical practice guidelines to guide paediatric pain management, children continue to experience significant pain following appendectomy.

Aim: The purpose of this study was to develop an algorithm to guide the management of pain in children post appendectomy.

Methodology: This study used an action research approach (cooperative inquiry) to develop an algorithm and comprised of two phases. Phase one involved conducting a retrospective chart review of all children who had an appendectomy over a four month period. Phase two involved forming a cooperative inquiry group consisting of nurses, anaesthetists and paediatric surgeons. Over a 12 week period, four inquiry meetings were held. Data collected from the chart review provided an insight into the current management of pain for this patient group, which led to discussions on optimal pain management practices for these patients and the development of an algorithm.

Results: Through collaboration of the inquiry group, a number of barriers preventing children receiving optimal management of pain were identified. Additionally the results of the chart review indicate that 73% of children experienced moderate to severe pain in the first 24 hours post appendectomy, while 28% of children continued to have moderate to severe pain on day 1 post surgery. Ultimately an algorithm to guide the pharmacological management of pain in children post appendectomy was agreed and developed.

Conclusions: In conclusion, the results of the chart review indicate that children experience considerable pain in the first 24 hours post appendectomy. While the study identified a number of shortcomings in clinical practice, relating to assessment and pharmacological management of pain, it is anticipated, that the newly developed algorithm has the potential to overcome key challenges, resulting in improved clinical practice and enhanced recovery.

04 Title: Investigating the impact of health literacy in individuals with chronic pain

Laura M. Mackey BSc1; Dr. Catherine Blake1; Dr. Camillus Power2; Dr. Ray Victory3; Dr. Conor Hearty4; Máire-Bríd Casey MSc4; Dr. Brona Fullen1, 5.

1. University College Dublin, Belfield, Dublin 4, Ireland. 2. Adelaide and Meath Hospital, Tallaght, Dublin 24, Ireland. 3. St. Vincent's University Hospital, Elm Park, Dublin 4, Ireland. 4. Mater Misericordiae University Hospital, Eccles Street, Dublin 7, Ireland. 5. UCD Centre for Translational Pain Research, University College Dublin, Ireland.

Background: Inadequate health literacy (HL) - a person's ability to find, understand and utilise information effectively to make informed decisions about their health, has been linked to poorer health outcomes in many chronic diseases. However, the impact of HL in those with chronic pain is unknown, therefore, this study aims to establish if HL is linked to poorer outcomes and behaviours in patients with chronic pain.

Methods: A cross-sectional questionnaire was distributed in three pain clinics, in university hospitals in Dublin, Ireland. Those eligible for inclusion had pain lasting longer than three months. The questionnaire comprised the following assessments: demographics, chronic pain status, quality of life, beliefs about pain control, and a validated HL tool (Newest Vital Sign1).

Results: Of the 131 participants that were recruited, 54.2% had inadequate HL. The group was subsequently stratified according to HL level (i.e. inadequate or adequate). In bivariate analysis, inadequate HL was associated with older age ($p < 0.001$), being unemployed or retired ($p = 0.005$), poorer educational attainment ($P < 0.001$), lower income, increased comorbidities ($p = 0.038$), being less likely to use allied health services ($p = 0.001$), poorer disease-related knowledge

($p=0.002$), and poorer beliefs about pain ($p<0.05$). In multivariate analysis, HL remained an independent predictor of disease-related knowledge (OR 2.5, 95%CI 1.0—6.3) and beliefs about pain ($B=-2.317$, 95%CI -4.2—-0.5), signifying that the odds of having greater disease-related knowledge and more appropriate beliefs about pain control were over two times higher in those with adequate HL.

Conclusion: Inadequate HL is prevalent in chronic pain patients, and may impact on the development of health behaviours necessary for effective management. Healthcare professionals should consider including HL-sensitive strategies, such as Plain English or 'Teach-Back Methods' in their practice.

05 Title: Exercise-induced hypoalgesia in people with knee osteoarthritis with normal and abnormal conditioned pain modulation

Caitriona Fingleton PhD, BSc Chartered Physiotherapist^{a,b} Keith Smart PhD, MSc, BSc Clinical Specialist Physiotherapist^c Catherine Doody PhD, MSc, Dip T Senior Lecturer^a

^aSchool of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland, CTPR UCD, ^bDublin South City Primary Care, Rathfarnham, Dublin 14 ^cSt. Vincent's University Hospital, Dublin, Ireland

Objectives: Recent evidence suggests that exercise-induced hypoalgesia (EIH) in people with knee OA may be associated with baseline degree of pain sensitization. The aim of this study was to investigate the effect of aerobic and isometric exercise in people with knee OA with varying degrees of pain sensitization by comparing knee OA patients with abnormal conditioned pain modulation (CPM) to those with normal CPM and pain-free controls.

Methods: 40 people with knee OA were subdivided into groups with abnormal and normal CPM, as determined by a decrease/increase in pressure pain thresholds (PPTs) following the cold pressor test. Abnormal CPM ($n = 19$), normal CPM ($n = 21$) and control participants ($n = 20$) underwent PPT testing before and after aerobic and isometric exercise protocols. Between-group differences were analysed using repeated-measures ANOVAS and within-group differences were analysed using Wilcoxon signed-rank tests.

Results: Significant differences were demonstrated between groups for changes in PPTs post-aerobic ($F(2, 55) = 4.860$, $P = 0.011$) and isometric ($F(2, 57) = 4.727$; $P = 0.013$) exercise, with significant decreases in PPTs demonstrated post-exercise in the abnormal CPM group ($P < 0.05$), and significant increases in PPTs shown post-exercise in the normal CPM and control groups ($P < 0.05$).

Conclusions: Results are suggestive of dysfunctional EIH in response to aerobic and isometric exercise in knee OA patients with abnormal CPM, and normal function of EIH in knee OA patients with an efficient CPM response. The results are of clinical importance due to the central role of exercise in the management pain and disability of knee OA. Identification of people with knee OA with inefficient endogenous pain modulation (i.e. abnormal CPM) may afford the opportunity to offer a more individualised and graded approach to exercise in addition to targeted pharmacological interventions.

06 Title: Pain sensitization and response to Physiotherapy treatment in people with moderate to severe osteoarthritis of the knee.

H. O'Leary* 1, C. Doody1, K. Smart2, N. Maloney3

1School of Physiotherapy and Performance Science, University College Dublin, 2Physiotherapy Department, St. Vincent's University Hospital, Dublin, Ireland, 3Department of Health Sciences, Macquarie University, New South Wales, Australia

Background: The clinical relevance of pain sensitization in knee osteoarthritis (OA) has been highlighted, whereby individuals with more severe knee pain demonstrate widespread hyperalgesia and increased temporal summation. Physiotherapy is a frequently recommended conservative intervention for knee OA, however not all patients

achieve clinically meaningful improvements in pain and function. To date the relationship between QST parameters and subsequent response to physiotherapy has not been prospectively investigated.

Objectives: The purpose of this prospective cohort study was to compare the somatosensory characteristics of people with knee OA who responded to physiotherapy with those who did not show a clinically meaningful response. We hypothesized that the non-responders to

physiotherapy would demonstrate more evidence of pain sensitization at baseline. We hypothesized that both groups would be different to healthy controls

Methods: A comprehensive battery of Quantitative Sensory Testing (QST) was conducted in 134 participants with knee OA referred for physiotherapy. QST measures included pressure pain thresholds (PPTs) measured at local, distal and remote sites, temporal summation (TS) at local and remote sites and conditioned pain modulation (CPM), in addition to measuring vibration threshold and mechanical detection thresholds. Demographics and clinical pain characteristics were also recorded. Following physiotherapy participants were classified into responder and non-responder groups based on the OMERACT-OARSI responder criteria.

A one-way between-groups analysis of variance (ANOVA) was performed to investigate effects of group (responder/non-responder/control) differences on QST parameters ($p < 0.01$).

Results: 45 participants (33.6%) were responders to physiotherapy and 89 participants (66.4%) were non-responders. There were no significant differences in gender, age or sensory hypoesthesia (vibration and light touch) or CPM response between the responder and non-responder groups. The responder group demonstrated significantly higher PPTs at the forearm ($M = 379.6$ kPa, $SD = 93.7$) and tibia ($M = 377.7$ kPa, $SD = 111.6$) compared to the non-responder group (arm PPT, $M = 327.6$ kPa, $SD = 80.0$; tibia PPT, $M = 316.5$, $SD = 93.0$). Significantly lower TS was also demonstrated in the responder group at the arm ($M = 1.1$, $SD = 1.2$) and at the knee ($M = 1.9$, $SD = 1.5$) compared to the non-responder group (TS arm $M = 1.8$; $SD = 1.3$; TS knee $M = 2.9$ $SD = 1.5$). Compared to the non-responders had significantly greater hyperalgesia, enhanced TS and inefficient CPM compared to controls ($p < 0.01$) In contrast the responders showed no significant differences compared to the control group.

Conclusions: In knee OA non-responders to physiotherapy have a different somatosensory profile, showing increased hyperalgesia and enhanced temporal summation. While the results do not address predictors of treatment response, participants with greater indications of pain sensitization at baseline may warrant an alternate treatment approach.

07 Title: Evaluation of a combined exercise and acceptance and commitment therapy group based exercise programme for chronic pain: A pilot study.

Máire-Bríd Casey¹, Damien Lowry², Conor Hearty³, Rachel Neary⁴, Catherine Doody⁴

¹ Physiotherapy Department, Mater Misericordiae University Hospital, ² Psychology Department, Mater Misericordiae University Hospital, ³Department of Pain Medicine, Mater Misericordiae University Hospital, ⁴School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland

Background: The effectiveness of exercise for the treatment of chronic pain is well established and there is emerging evidence to suggest that Acceptance and Commitment Therapy (ACT) is an effective psychological approach.

Aim: The aim of this pilot study was to evaluate the impact of a combined exercise and ACT group based Pain Management Programme (PMP) for people with chronic pain.

Methods: 54 people with chronic pain consented to participate in this study which was set in a hospital Pain Medicine Clinic. The PMP is a group based intervention comprising daily two hourly psychology sessions and one hour of exercise in a pool or gym setting. Participants attended one day each week for eight weeks and they completed a series of validated outcome measures at baseline, on completion of the programme ($N = 45$) and at four month follow up ($N = 28$). Participants also wore pedometers for the duration of the programme, which recorded daily step count. Data were analysed using descriptive statistics, paired t-tests and ANOVA using SPSS v 20.

Results: Significant improvements were seen between baseline and post intervention measures in the Brief Pain Inventory (BPI) pain interference subscale, Chronic Pain Acceptance Questionnaire (CPAQ) total and activity engagement (AE) subscale, Pain Catastrophizing Scale (PCS), Chronic Pain Values Inventory, Pain Self Efficacy Questionnaire (PSEQ) and Kessler 10 (K10) psychological distress scale. There was a significant increase in average daily step counts over the duration of the programme. Significant improvements were seen between baseline and four-month follow up in the CPAQ total and AE subscale, PCS, PSEQ and K-10.

Conclusion: The results of this pilot study are encouraging and suggest that a combined exercise and ACT PMP is a promising intervention for chronic pain. Further randomised controlled trials are necessary, specifically trials incorporating physical activity measurement, cost-effectiveness analysis and long term follow up.

08 TITLE: Impact of a multidisciplinary weight management service on musculoskeletal pain in obese individuals: A retrospective study.

*Grace MacLellan^{1,2}; *Colin Dunlevy³; Emer O'Malley³; Cathy Breen³; Karen Gaynor³; Natalie Wallace³; Ruth Yoder³; Domnhall Casey³; John Mehegan³; **Donal O'Shea³; **Brona Fullen^{1,2}

1 University College Dublin, School of Public Health, Physiotherapy and Sports Science, Belfield, Dublin 4, Ireland 2 UCD Centre for Translational Pain Research, University College Dublin, Belfield, Dublin 4, Ireland 3 Weight Management Service, St. Columcille's Hospital, Loughlinstown, Co. Dublin, Ireland

BACKGROUND: Multidisciplinary weight management services (WMS) are cost-effective interventions that aid weight loss and long-term weight management^{1,2}. Musculoskeletal (MSK) pain is a common comorbidity in obese patients, however the impact of WMS on their pain profiles has not been extensively researched.

AIMS: This study aimed to: evaluate the impact of WMS on weight, BMI, and pain; evaluate the impact of weight loss categories on pain; investigate the relationships between changes in pain and other continuous measures; and determine variables predictive of clinically significant change (CSC)³ in pain scores.

METHODS: A retrospective analysis of the patient database at St. Columcille's Hospital WMS included anonymised patient data (e.g. demographic, anthropometric, self-report, and functional measures). All data were cleaned and entered into SPSS (V.20). Ethical approval was granted by SVUH Ethics and Medical Research Committee. Descriptive and inferential statistics were completed.

RESULTS: In total, 806 obese patients attended the WMS and were given follow-up appointments [male, 34.6% (n=279); female, 65.4% (n=257); mean age 44.7 (\pm 12.1) years]; mean BMI 50.7 (\pm 8.6) kg/m². The majority of patients complained of MSK pain (90.9%; n=628) and 59.1% (n=476) attended their follow-up reassessments. Overall, 72.2% (n=343) of patients lost weight and significant reductions were found for weight and BMI (p<0.05). Lower back pain (LBP) scores and prevalence, and knee pain scores also reduced (p<0.05); significant differences were found between weight loss categories (p<0.05). Nearly 32% (n=77) achieved CSC in LBP scores and 23.2% (n=46) achieved CSC in knee pain scores at reassessment. Significant correlations were found between changes in pain, anthropometrics, self-report, and functional measures (p<0.05). Models were developed to illustrate variables predictive of CSC in LBP and knee pain scores (p<0.05).

CONCLUSIONS: Multi-site MSK pain is prevalent in obesity, but prevalence and pain scores can be reduced with weight loss following WMS. Baseline characteristics and relationships between pain, anthropometric, self-report, and functional measures should be considered when treating obesity.

Poster Presentations

TITLE Examining psychosocial reports and cognitive functioning, whilst controlling for pain, in both fibromyalgia and hepatitis-C patient groups

Damien Lowry^{1,2}, Teresa Burke^{2,3}, Stephen Stewart⁴, Declan O'Keeffe⁵, & Geraldine McCarthy⁶
1Psychology Department, Mater Misericordiae University Hospital; 2 School of Psychology, University College Dublin; 3 School of Nursing and Human Sciences, Dublin City University; 4Liver Centre, Mater Misericordiae University Hospital; 5Dept Pain Medicine, St. Vincent's University Hospital; 6Rheumatology Department, Mater Misericordiae University Hospital.

BACKGROUND: Fibromyalgia-syndrome (FMS) and hepatitis-C are clinical conditions where patients frequently report symptoms across physical, psychological and cognitive domains. It is suggested that pain symptoms might underpin some of these difficulties. To our knowledge, the psychosocial and cognitive functioning of FMS and hepatitis-C patients has never been compared whilst controlling for the effects of pain.

AIMS: Compare psychosocial wellbeing and neuropsychological functioning among Irish females with FMS and iatrogenic-hepatitis-C-exposure, whilst controlling for pain.

METHODS: Subsets of existing data comprising a PhD were used. The PhD was investigating the impact of iatrogenic hepatitis-C infection and the potentially confounding role of pain on

cognitive function. Patients attending the liver units and pain/rheumatology departments of both Mater Misericordiae University and St. Vincent's University Hospitals were recruited into the larger project. Individuals satisfying inclusion and exclusion criteria completed a psychosocial survey before considering extensive cognitive testing. For the purpose of this study, select subgroups of these larger samples were obtained by removing participants reporting 'average-pain-severity' below 3/10 on the BPI, yielding two samples of pain-matched FMS (N=22) and hepatitis-C (n=20) patients.

RESULTS: In controlling for average-pain, these select subgroups were also strongly matched on age, education, health-related-quality-of-life (HRQoL), fatigue and mood, with a series of independent sample t-tests failing to reveal any significant between-group differentiation. Of interest, both subgroups reported impaired levels of physical and mental HRQoL, fatigue and mood-distress. On cognitive testing, mean subgroup performances all fell within the normal range, suggestive of relatively healthy cognition, though the FMS subgroup displayed some isolated dual-task difficulties compared to the hepatitis-C group.

CONCLUSIONS: Poor psychosocial functioning in these cohorts may be explained somewhat by somatic pain. FMS also appears to be a condition more characterised by cognitive dysfunction than hepatitis-C.

Musculoskeletal pain profile of individuals attending a multidisciplinary weight management service: A retrospective study.

*Grace MacLellan^{1,2}; *Colin Dunlevy³; Emer O'Malley³; Cathy Breen³; Karen Gaynor³; Natalie Wallace³; Ruth Yoder³; Domnhall Casey³; John Mehegan³; **Donal O'Shea³; **Brona Fullen^{1,2}

1 University College Dublin, School of Public Health, Physiotherapy and Sports Science, Belfield, Dublin 4, Ireland 2 UCD Centre for Translational Pain Research, University College Dublin, Belfield, Dublin 4, Ireland 3 Weight Management Service, St. Columcille's Hospital, Loughlinstown, Co. Dublin, Ireland

BACKGROUND: In 2014, approximately 600 million (13%) of adults were obese, worldwide¹. Obesity is associated with numerous chronic diseases, including musculoskeletal (MSK) disorders². These patients commonly report multi-site pain in lower regions of the body³⁻⁸, however research on pain in obesity is limited.

AIMS: This study aimed to: develop a pain profile of patients attending a multidisciplinary weight management service (WMS); determine the impact of obesity classification and number of pain sites on pain profiles; and investigate relationships between pain, anthropometric, self-report, and functional measures.

METHODS: A retrospective analysis of the patient database at St. Columcille's Hospital WMS included all anonymised patient data (e.g. demographic, anthropometric, self-report, and functional measures). All data were cleaned and entered into SPSS (V.20). Ethical approval was granted by SVUH Ethics and Medical Research Committee. Descriptive and correlational statistics were completed.

RESULTS: In total, 915 obese patients attended the WMS [male, 34.8% (n=318); female, 65.2 (n=597); mean age 44.6 (\pm 12.2) years]. Mean BMI was 50.7 (\pm 8.7) kg/m²; 91.9% (n=835) were classified as Class III obese (BMI \geq 40). Pain was reported in 90.6% (n = 724) of patients; 68.7% (n=539) had lower back pain (LBP) with mean NRS of 7.4 (\pm 2.4) and 58.0% (n=447) had knee pain with mean NRS of 6.8 (\pm 2.3). Class III obese patients were younger, had higher LBP scores, and more chronic knee pain (p<0.05). Patients with \geq 3 pain sites were older, female, and reported taking more pain medication (p<0.05). Significant correlations were found between pain, anthropometric, self-report, and functional measures (p<0.05).

CONCLUSIONS: Musculoskeletal pain is prevalent in obesity, especially in weight-bearing structures (e.g. lower back and knees). Patients with higher BMIs had more severe LBP and chronic knee pain highlighting the direct association between obesity and MSK pain. Relationships between baseline pain, anthropometric, self-report, and functional measures should also be considered when treating obesity.

Advancing Nursing Practice: Treatment and Management of Neuropathic Pain with Capsaicin 8% without Physician Supervision

Ms. Joanne O'Brien, RANP, MSc, BSc (Hons), RGN, RNP. Beaumont Hospital. Dr. Joseph Keaveny, MB Bch, FFARCS. Beaumont Hospital. Dr. Valerie Pollard, Mb, BCh, BAO, FFARCSI, FPPMCAI. Beaumont Hospital. Dr. Linda Elizabeth Nugent, PhD, MSc, BSc. RCSI, School of Nursing.

Purpose/Aims: The purpose of this study was to examine the management of patient's neuropathic pain with capsaicin 8% in a nurse led clinic when administered by a registered Advanced Nurse Practitioner without physician supervision.

Design: A single group quantitative longitudinal research design assessing pain scores and quality of life: measures over a three month period was used.

Methods: Patients diagnosed with neuropathic pain were assessed and treated with capsaicin 8% by an advanced nurse practitioner with prescriptive authority in a nurse led clinic. Baseline data included pre-treatment pain level and the revised Self-Assessment of Treatment (SAT) was used to assess patients' perceptions of pain post treatment using questionnaire at 1 week, 4 weeks and 3 months. Sample size was small (n = 24) and data was analyzed using Friedman's test. Post hoc analysis was performed with Wilcoxon signed-rank test, conducted with a Bonferroni correction.

Results: Pain scores at rest were significantly lower than baseline at 1 week (z = 3.400, p = 0.001, p < 0.008), 4 weeks (z = 3.550, p = 0.001, p < 0.008) and at 3 months (z = 3.294, p = 0.001, p < 0.008) and on movement at 1 week (z = 2.927, p = 0.001, p < 0.008), 4 weeks (z = 3.298, p = 0.001, p < 0.008) and 3 months (z = 2.986, p = 0.003, p < 0.008). Most improvements noted in patient's quality of life occurred between 1 week and 4 weeks. Patient satisfaction was high with 83% stating that they would be happy to have the treatment repeated.

Conclusion: Patients with neuropathic pain can be effectively treated with Capsaicin 8% by a registered Advanced Nurse Practitioner with prescriptive authority in an outpatient setting without the need for direct physician supervision.

Title: An exploration of healthcare professionals' attitudes towards health literacy, and the clinical encounter with chronic pain patients.

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Background: A recent review of long-term outcomes for patients who attended a pain management programme revealed only moderate improvements¹. The authors hypothesised that health literacy (HL) may be a factor, as low HL can result in poorer uptake of self-management behaviours. However, little data exists regarding the use of HL interventions in healthcare settings. This study aimed to explore healthcare professionals (HCPs) attitudes regarding the role of HL in clinical practice.

Methods: Semi-structured interviews were utilised to capture HCPs' (nurses, consultants, physiotherapists, psychologists) perspectives on HL. Interview questions were derived from HL research, focussing on interviewees' knowledge of HL, recognising those at risk of low HL, the skills required to identify and manage those with low HL, and the economic burden of low HL. The interviews were transcribed verbatim, coded, and inter and intra-reliability was determined by two reviewers. Common themes were identified.

Results: Sixteen HCPs (four per discipline) were interviewed, with four main themes emerging: 1) Lack of formal HL awareness in healthcare settings, 2) HL vital for engaging in treatments, 3) varying interventions for low HL, and 4) barriers to addressing low HL in patients.

The majority of HCPs were not familiar with HL, Also, HCPs' knowledge of HL-sensitive interventions varied, and was based on subjective experience as opposed to evidence-based practice. Furthermore, most cited time-restraints as a barrier to facilitating HL development in their patients, despite acknowledging it as their responsibility.

Conclusion: These findings suggest that HCPs need further support to incorporate HL-sensitive interventions into their practice.

Title: Development of an app for judging future risk of pain-related disability.

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Background: According to the biopsychosocial model, psychological and social factors are of equal importance as biological factors in influencing pain management and disability, but are often underestimated by healthcare professionals. Research conducted by Dwyer et al. (2016a) indicates that though biopsychosocial education in judging future risk of disability regarding

individuals living with chronic lower back pain enhanced domain-specific knowledge and positive attitudes towards the biopsychosocial perspective, there was no effect on judgment accuracy. Further research by Dwyer and colleagues (2016b) revealed seven core factors influencing whether a biopsychosocial perspective would be applied in clinical-judgment settings regarding chronic pain – the four most important being: GP attitudes, cost, GP knowledge and time; thus indicating that judgments of future risk of disability may not incorporate psychosocial factors.

Method: To help overcome such barriers, extant research recommends the development of an app facilitating judgment-making of future risk of pain-related disability, consistent with psychosocial risk factors, to be utilised by healthcare practitioners. Currently in development, the app calculates the patient's risk of future pain-related disability based on a series of questions the healthcare practitioner asks of their patients, pertaining to problems associated with their biological, psychological and social experiences.

Conclusion: Once developed, the app will be piloted among healthcare practitioners to evaluate the app's usability, design and efficacy. Based on the feedback obtained, the app will be edited before launch and subsequent evaluation.

Title: Retrospective review of the hypermobility physiotherapy exercise program in children Attending TSCUH

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Introduction:: It has been noticed that an increasing number of hypermobility patients attend physiotherapy clinic in Temple Street Children's University Hospital. At present, there is no set standard on how to treat this patient cohort, but there is a local consensus of a progressive resistive strengthening program for these children. This retrospective audit was carried to measure current physiotherapy strengthening approach and how this programme could improve patient's muscle strength and pain.

Methods: This audit was a retrospective chart review over a period of six months; a purposeful sample selection was carried out. Total 21 patients who had a diagnosis of hypermobility were included in this audit. Data collection was based on the muscle strength of Hip flexion/ extension/ abduction, knee flexion/ extension, ankle plantar flexion, shoulder flexion/ extension/ abduction, elbow flexion/ extension and wrist extension utilising the Oxford grading scale.

Results: Twenty-one children who attended physiotherapy clinic for hypermobility exercise programme were selected for this audit. It has been evident from this audit there was improved hip flexion/ extension/ abduction, knee flexion/ extension, ankle plantar flexion, shoulder flexion/ extension/ abduction, elbow flexion/ extension and wrist extension using the OGS at the pre assessment and post 6 months of using the muscle strengthening exercise program.

Recommendations: 1. To design a standardised assessment form that consistently collects data, at every visit, for muscle strength of both upper and lower limbs. 2. To obtain a validated tool to objectively capture data on patient pain, -fatigue and quality of life. 3. To use a muscle strengthen assessment tool (I.e. Kendall) that will objectively measure minimum changes in muscle strength and is validated.

Title: Complex pain in children and adolescents: a clinical audit of physiotherapy referrals and multidisciplinary involvement

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Background: Complex pain affects approximately 30% of children and adolescents worldwide. International practice guidelines recommend a multidisciplinary biopsychosocial approach for the successful management of these patients. OLCHC does not currently have a dedicated service for children with complex pain. However, physiotherapy referrals for this cohort have increased significantly in recent years.

Aims: The main aims of this audit were: (i) Profile patients with complex pain referred to physiotherapy (ii) Determine the number of cases receiving multidisciplinary care

Method: A retrospective audit of a five year period (2010-2015) was conducted. Data was extracted from the Patient Administration System (PAS) in OLCHC, including age, gender, diagnosis, referral source, length of stay, number of physiotherapy sessions and other allied health professionals (AHP) involved. Descriptive statistical analyses were performed.

Results: During this period, 190 patients diagnosed with complex pain were referred to physiotherapy. The mean age was 12.5 years (SD 2.5) and 71% (n=135) were female. Fifty-seven percent (n=108) were hospitalised at least once; the average length of stay per patient was ten days (IQR 10). The mean number of physiotherapy sessions was 11.1 (SD 14.7). The most common diagnoses were Pain Amplification Syndrome (35%; n=68), Non-Organic Pain (26%; n=49) and Complex Regional Pain Syndrome (11%; n=21). Sixty-two percent (n=118) were referred by orthopaedics. Other specialities involved in these cases included: occupational therapy (55%; n=105), psychology (20%; n=39), psychiatry (10%; n=39), social work (20%; n=38) and pain clinical nurse specialist (5%; n=10).

Conclusions: Clinical guidelines recommend that coordinated interdisciplinary management is best practice for the management of children with complex pain². This audit profiles children and adolescents with complex pain referred to physiotherapy and highlights the varying involvement of other disciplines. The results of this audit highlight the need for the development of an integrated care pathway for the management of children with complex pain.

Title: The implementation of a cognitive behavioural therapy pain management programme (CBP-PMP) for neuropathic pain following spinal cord injury: A feasibility study.

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Background: Neuropathic pain (NP) is common post spinal cord injury (SCI), presenting at or below the level of injury [1] and is frequently cited as the most 'severe pain' post SCI [2]. Dedicated cognitive behavioural therapy pain management programmes (CBT-PMPs) are optimal and can lead to significant improvements in mood, pain catastrophizing and pain interference [3-5], currently no CBT-PMPs for SCI patients exist in Ireland.

Aims: The study aimed to establish the feasibility of a CBT-PMP for NP post SCI.

Methods : Ethical approval was received. Patients with chronic NP post SCI were recruited from the National Rehabilitation Hospital (NRH) outpatient service. A multi-disciplinary team delivered the CBT-PMP two days per week for five weeks. Principles of CBT were central to the programme in addition to daily mindfulness, exercise and educational sessions. Multi-dimensional outcome measures recording quality of life (WHO QOL Bref) [6], mood (HADS) [7], pain (ISCIP: BDS) [8] and sleep (PSQI) [9] were assessed at baseline and post programme. Data were entered into SPSS. Wilcoxon sign-rank tests compared pre and post intervention variables. Significance was set $p < 0.05$.

Results: Eight patients participated with a mean attendance rate of 90% (SD 11.6). Recruitment issues included transportation and accommodation availability. A decrease was recorded in the HADS depression score ($p=0.01$) and the psychological domain of the WHO QoL Bref ($p=0.03$). Remaining measures improved with a trend toward significance.

Conclusions : The benefits of a CBT-PMP for NP post SCI reflect the literature for other diagnoses and can lead to significant improvements in psychological domains for participants. Other modes of delivery warrant consideration due to logistical issues highlighted in recruitment.

Title: Neuropathic pain prevalence following spinal cord injury: A systematic review and meta-analysis.

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Background : Following spinal cord injury (SCI) chronic pain is a common secondary complication, with neuropathic pain (NP) cited as one of the most distressing and debilitating conditions leading to poor quality of life, depression and sleep disturbances. Neuropathic pain presenting at or below the level of injury, is largely refractory to current pharmacological and

physical treatments . No consensus on the prevalence of NP post SCI currently exists, hence this systematic review was undertaken.

Aims: To systematically review the literature addressing NP from studies which include an adequate definition and assessment of NP post SCI. Where possible meta-analysis will be undertaken to estimate pooled point prevalence rates of NP in the total population, in sub-groups of the population defined by SCI and demographic characteristics and at specific time points post injury.

Methods: The review comprised three phases: a methodological assessment of databases (Pubmed, EMBASE, Web of Knowledge, CINAHL, Cochrane Library and PEDro) identifying potential papers and screening for inclusion criteria by two independent reviewers; data extraction; and finally rating of internal validity and strength of the evidence, using a published valid and reliable scale. Meta-analysis estimated pooled point prevalence rates using a random effects model.

Results : In total 17 studies involving 2,529 patients were included in the review. Overall point prevalence rates for NP were established at 53% (38.58-67.47); 19% (13.26-26.39) for at-level NP and 27% (19.89-34.61) for below level NP, with high heterogeneity noted (I² =84.2-93%).

Conclusions: Prevalence rates for NP following SCI are high. Future studies should include established definitions, classifications systems and assessment tools for NP at defined time points post SCI to follow the trajectory of this problem across the lifespan and include indices of sleep, mood and interference to allow for appropriate, optimal and timely NP management for each patient.

Title: The effect of pain on health related quality of life after spinal cord injury.

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Background: Chronic pain is one of the most common secondary complications post spinal cord injury (SCI) and has links to poorer health related quality of life (HRQoL) . No quantitative data currently exists on the profile of pain or HRQoL post SCI in Ireland.

Aims: To obtain, by survey, data relating to the national prevalence of nociceptive pain, neuropathic pain (NP) and health related quality of life in long standing SCI in Ireland.

Methods: Members registered to the Spinal Injuries Ireland database (n=1,574) were surveyed. Ethical exemption received. The survey pack comprised questions relating to demographics and SCI characteristics, The Douleur Neuropathique 4 (DN4) (interview) [2], the International Spinal Cord Injury Pain Basic Data Set (v. 1.0) [3] and The World Health Organisation (WHO) QoL Bref [4]. Surveys were entered into SPSS statistical program (Version 20) and subsequently cleaned. Mann Whitney U tests compared HRQoL scores between respondents presenting with no pain, NP and nociceptive pain. Significance was set p<0.05.

Results: A total of 43% (661) responded, 69% (458) reported pain in the last week and 36% (236) had scores on the DN4 which indicated NP. Respondents with no pain had higher scores on all domains of the WHO QoL Bref when compared to those with pain in the last week (P<0.001). Respondent's with nociceptive pain had higher scores for all domains when compared to those with NP (P<0.05).

Conclusion: Those experiencing pain demonstrated significantly poorer HRQoL scores than those without pain. Those with NP reported significantly poorer HRQoL scores than those with nociceptive pain. It is evident from this data that pain and more specifically NP negatively impacts HRQoL life after SCI. Further research is needed to evaluate treatment paradigms which can improve pain and HRQoL post SCI.

Title: Neural tissue mechanosensitivity and nervous system sensitization in osteoarthritis of the knee

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Background: Recent literature has demonstrated neuropathic-like symptoms in people with osteoarthritis of the knee, suggestive of peripheral and central nervous system sensitization. Neural tissue mechanosensitivity has been associated with neuropathic pain and nervous system sensitization in other musculoskeletal conditions.

Aims: The aims of this study were to (i) investigate the presence of neural tissue mechanosensitivity (NTM) in people with OA of the knee and (ii) explore the possible associations between NTM and other symptoms of pain sensitization in people with OA knee.

Methods: Fifteen participants with OA knee (mean age 67 + 8 years, females 8) and 15 age and sex matched controls underwent nerve palpation of the sciatic, tibial, common peroneal and femoral nerves using pressure algometry and manual palpation, in addition to neurodynamic testing with the passive straight leg raise test (SLR) and the femoral slump test (FST). Participants also completed PainDETECT and underwent quantitative sensory testing including evaluation of mechanical detection threshold (MDT) at the knee and pressure pain thresholds (PPTs) and vibration perception threshold (VPT) at the knee and remote sites.

Results : The people with OA demonstrated significantly increased sensitivity to nerve palpation at the sciatic ($p<0.001$), tibial ($p<0.001$) and common peroneal nerves ($p<0.01$), but not at the femoral nerve ($p>0.05$) and significantly reduced range of motion for the SLR ($p<0.01$) and FST ($p<0.001$) compared to controls. PainDETECT scores showed that 14% ($n=15$) of participants were classified as having likely (7%) or possible (7%) neuropathic pain. For people with OA peroneal, femoral and tibial nerve palpation were significantly correlated with PainDETECT total scores ($P<0.016$; $p<0.045$; $p<0.047$ respectively).

Conclusions: The results of this preliminary study suggest that people with OA of the knee demonstrate features of increased NTM compared to a normal healthy group. The results also demonstrate an association between increased NTM and heightened measures of nervous system sensitization and self-reported neuropathic pain. Additional larger studies are required to further investigate these findings.

Title: The long-term effects of the Ulysses cognitive behavioural pain management programme

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Objectives: Cognitive behavioural pain management programmes (CBT-PMPs) aim to teach patients how to manage their chronic pain long term. Whilst the efficacy of such programmes is well established, long term follow-up of such programmes is limited to one year post programme completion [1]. Thus, the aims of this study were to establish the long term impact of the Ulysses CBT-PMP on patient's physical and psychological function and to investigate levels of adherence to pain management principles.

Methods: A questionnaire based postal survey was undertaken of all 582 participants who had completed the Ulysses CBT-PMP (2001-2014). The questionnaire included a demographic form and validated questionnaires that patients had previously completed as part of the Ulysses programme: the Roland Morris disability questionnaire (RMDQ), the Coping strategies questionnaire (CSQ), the Fear avoidance beliefs questionnaire (FABQ), the Numerical rating scale (NRS) and the Hospital anxiety and depression score (HADS).

Results: The response rate is 43% ($n=251$). The mean age was 52 (10.32) years with a mean (sd) pain rating of 5.18 (1.9). Two thirds of the respondents were women ($n=164$, 65.3%). Controlling for the effect of time, HADS ($p=0.001$), FAB-A ($p=0.001$), FAB-W ($p=0.005$) and RMDQ ($p=0.010$) scores all showed improvements when compared with baseline scores. The CSQ subscales of catastrophizing ($p=0.001$) and increased behavioural activities ($p=0.035$) also showed improvements as did NRS scores for worst pain ($p=0.001$) and pain now ($p=0.011$). Adherence to CBT strategies accounted for 2-7% of unique variance in results. Finally, significant improvements ($p<0.05$) were noted in those who consistently adhered to CBT strategies (relaxation, pacing, goal-setting, exercise, stretching) in the long term when compared with those who adhered inconsistently to them and those who did not adhere to any strategies.

Conclusions: Results suggest that there are substantial positive effects from participation in a CBT-PMP, and adherence accounts for a small insignificant portion of variance.

The Ulysses cognitive behavioural pain management pain programme: What strategies do patients continue to use long term?

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Background & Aims: Cognitive behavioural pain management programmes (CBT-PMPs) aim to teach patients how to manage their chronic pain long term. However, follow up studies are usually of one year's duration only [1]. The aims of this study are to establish what cognitive behavioural strategies patients continue to use to manage their pain long term post CBT-PMP. **Methods :** A questionnaire based postal survey was undertaken of the previous participants of the Ulysses programme (2001-2012) (n=582). The questionnaire comprises three sections: (i) Demographic information (ii) what cognitive behavioural strategies patients utilised (iii) patients perception of benefit & satisfaction with CBT-PMP.

Results: The preliminary response rate is 37% (n=216). Respondents mean (sd) age was 52 (10.56) years with a mean (sd) pain rating of 5.18 (1.9). Back pain (n= 103, 55.1 %) emerged as the main pain location with "work accident" (n= 53, 24.5%) as the primary cause of pain. Pacing (n=98, 46%), stretching (n=95, 44.8%) and exercise (n=93, 44.1%) were the most utilised pain principles. Avoiding negative thoughts (n=138, 65.4%) and mindfulness (n=125, 59%) were the most commonly employed CBT strategies. High satisfaction ratings (n=148, 69.8%) were recorded and 48.6% (n=102) rated benefit gained as "much improved" or "completely recovered".

Conclusion: Preliminary results suggest that there are substantial long term effects from a CBT-PMP for chronic pain patients.