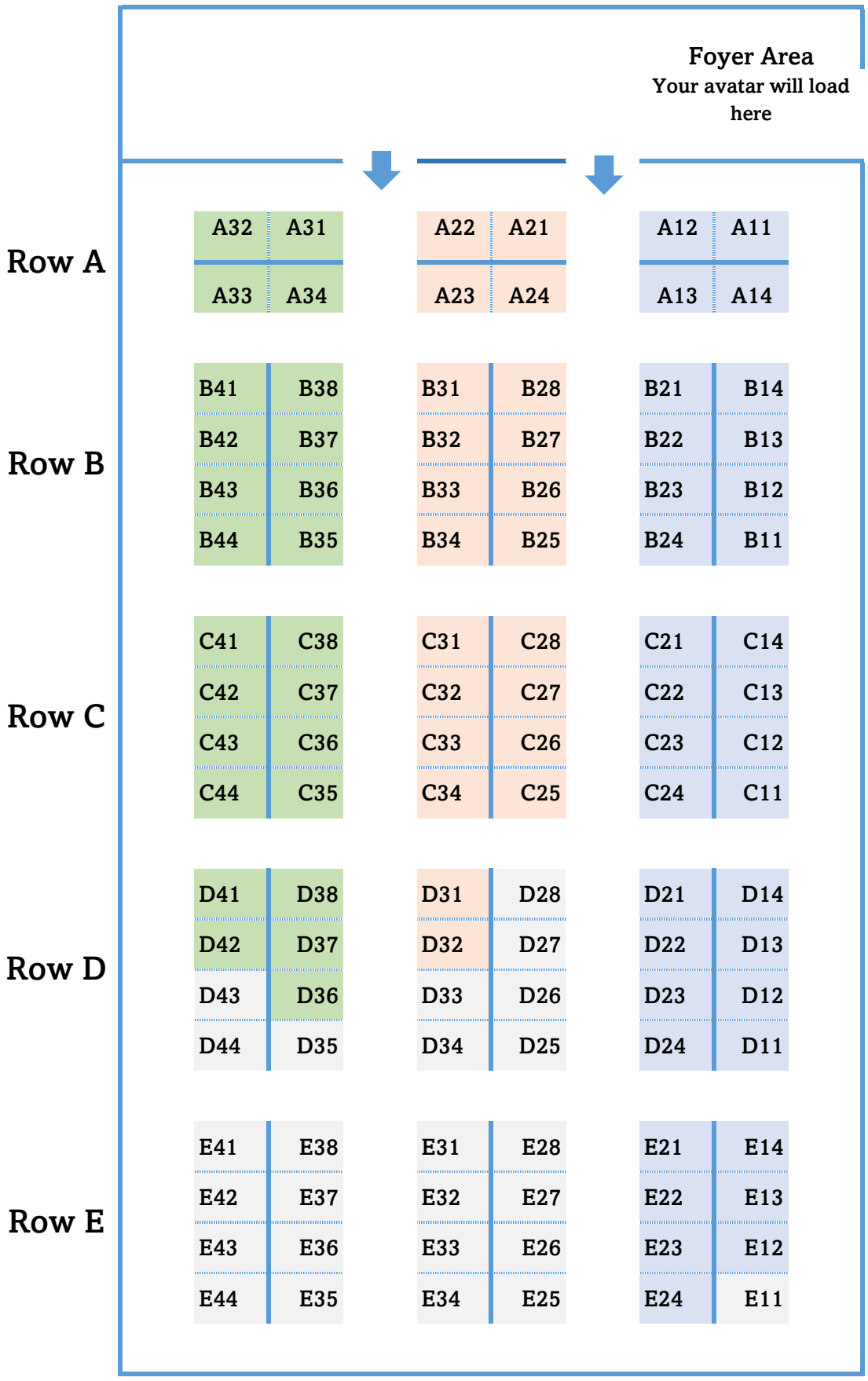
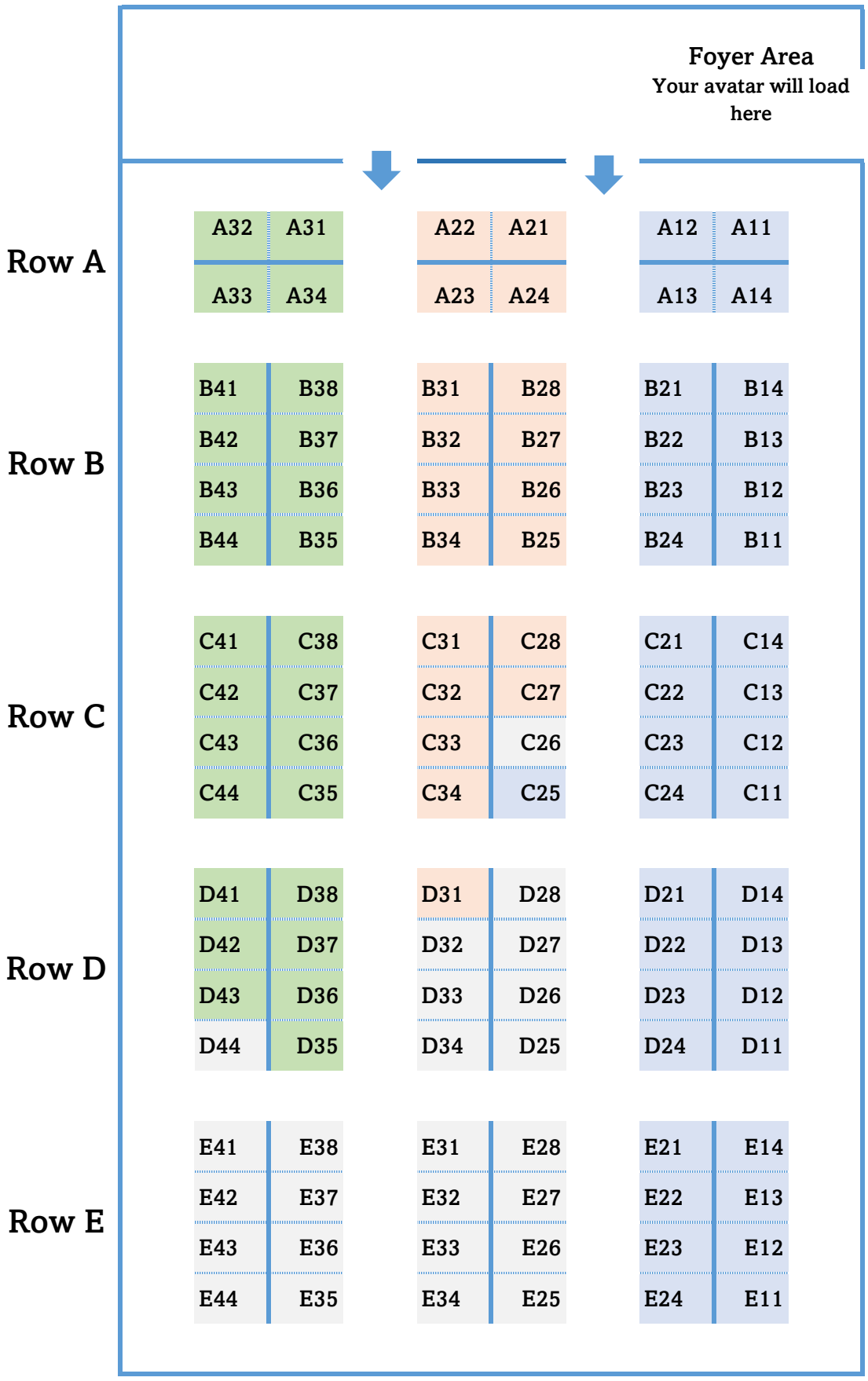
Poster Presentations

Abstracts are listed alphabetically by the last name of the submitting author

Map of Expo Hall 1 (Poster Session 1)



Map of Expo Hall 2 (Poster Session 2)



Australasia

The influence of insomnia symptoms on the association of parental spinal pain and recovery from spinal pain in adult offspring

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Research Aim/Objective:
Offspring of parents with spinal pain are at risk for poorer outcomes compared to offspring of pain-free parents. Insomnia symptoms have been shown to worsen patient-reported outcomes. We investigated the influence of insomnia symptoms on the association between parental spinal pain and recovery from spinal pain in adult offspring.

Research Methods:
The HUNT Study is a population-based health study conducted within the county of Nord- Trøndelag, Norway. In this prospective cohort study, we used family linked longitudinal data from the Norwegian HUNT study collected in HUNT2 (1995-97) and HUNT3 (2006-08). A total of 2,292 offspring who reported spinal pain at baseline (HUNT2) were linked with parental data and followed-up (HUNT3). We estimated relative risk (RR) with 95% confidence intervals (CIs) for recovery from spinal pain and activity limiting spinal pain (pain that interferes with participants' usual activities), stratified by offspring's levels of insomnia symptoms.

Results:
Our results showed that the presence or absence of insomnia symptoms moderates the recovery from spinal pain. Offspring with insomnia symptoms and both parents reporting spinal pain were 31% less likely to recover from spinal pain (RR 0.69, 95% CI: 0.34, 1.41), compared to offspring with insomnia and both parents free of spinal pain. This association was stronger (58% less likely to recover) for offspring with activity limiting spinal pain and both parents with spinal pain (RR 0.42, 95% CI: 0.18, 0.98). The corresponding RR for activity limiting spinal pain among offspring without insomnia symptoms and both parents with spinal pain was 0.77 (95% CI: 0.57, 1.03). There was no association between parental spinal pain and offspring spinal pain in offspring without insomnia symptoms (RR 0.92, 95% CI: 0.75, 1.12) compared to offspring without insomnia and both parents free of spinal pain.

Discussion:
Offspring of parents with spinal pain are less likely to recover from spinal pain and activity limiting spinal pain if they have insomnia symptoms. Identifying people at risk of poor recovery from spinal pain as early as possible is important since specific approaches may be used to avoid the progression of this condition. Clinicians should consider family history of spinal pain and factors such as insomnia when implementing strategies to improve recovery from spinal pain.

Submission #: 239
Poster day: 2
Position: A11

Evaluation of placebo fidelity and trial design methodology in placebo-controlled surgical trials of musculoskeletal conditions

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Research Aim/Objective:
(i) assess the level of placebo fidelity (i.e., degree to which the placebo procedure mimicked the index surgical procedure) in placebo trials of musculoskeletal surgery, (ii) describe the trials' methodological features using the adapted Applying Surgical Placebo in Randomised Evaluations (ASPIRE) checklist, and (iii) describe each trial's characteristics (i.e. cross-overs)

Research Methods:
We searched four electronic databases from inception until February 18th, 2021, for randomised trials of surgery that included a placebo control for any musculoskeletal condition. Protocols and completed trials were used to assess placebo fidelity (categorised as one of minimal, low, or high-fidelity). The adapted 26-item ASPIRE checklist was also completed on each trial. Each trial's ASPIRE score and placebo fidelity was also compared with their effect size. PROSPERO registration number: CRD42021202131.

Results:
30,697 studies were identified in the search, of which 22 were placebo-controlled surgical trials that reported on a total of 2045 participants. Thirteen trials (59%) included a high-fidelity placebo-control, 7 (32%) used low-fidelity, and 2 (9%) minimal-fidelity. The highest level of cross-overs and drop-outs were observed in trials with minimal and low placebo fidelity. The study with the lowest blinding success (48%) used a minimal-fidelity placebo. According to the ASPIRE checklist, included trials had good reporting of the "rationale and ethics" (68% overall) and "design" sections (42%), but few provided enough information on the "conduct" (13%) and "interpretation and translation" (11%) of the placebo trials. The mean ASPIRE checklist score increased from 6·4 (out of 26) in the first 11 trials between 1987 and 2016 to 7·7 in the second 11 trials between 2017 and 2019. The two trials with the lowest ASPIRE score also had the largest effect sizes.

Discussion:
According to the ASPIRE checklist, the methodological detail reported in placebo-controlled surgical trials has increased/improved over time. Using a minimal placebo fidelity (i.e., skin incision only) intervention may increase the rates of drop-outs and crossovers in placebo-controlled surgical trials. There may be a weak association between lower ASPIRE scores and larger effect sizes.

Submission #: 32
Poster day: 2
Position: B14

How much improvement do spinal surgeons expect following lumbar decompression and microdiscectomy?

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Research Aim/Objective:
The study aimed to determine how much change in neurogenic claudication Australian spinal surgeons expect in patients following decompression for lumbar spine stenosis (LSS), and radicular leg pain following microdiscectomy. Secondary aims were to identify surgeons' preferences regarding surgical approach for lumbar decompression.

Research Methods:
All registered Australian spine surgeons were invited, of whom 71 completed the survey. The online survey, administered using REDCap, included: demographics and background; expected change in symptoms on a +/- 100% scale (-100 worst possible, 0 no change and 100 best possible); surgical preference; and rating of current evidence for lumbar decompression compared with other treatments using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) criteria.

Results:
76% of the responders were neurosurgeons (N=54) and predominantly male (96%; N=68). On average, surgeons expected an 86% (median: 87%, inter-quartile range (IQR): 80%, 91%) improvement in neurogenic claudication following decompression for LSS and 89% (median: 91%, IQR: 85%, 95%) improvement in radicular leg pain following microdiscectomy. A multiple linear regression found surgeon characteristics were not associated with expected change following surgery. The preferred surgical technique for LSS was full laminectomy (58%; N=41). Using the GRADE criteria, 55% of surgeons accurately rated the evidence supporting the superiority of lumbar decompression with fusion compared with non-surgical care for LSS, and 25% accurately rated the evidence for lumbar decompression alone compared with non-surgical care for LSS.

Discussion:
The improvements spine surgeons expected following lumbar decompression (86% improvement) and microdiscectomy (89% improvement) were higher than the improvements reported in current evidence. When considering the preferred surgical technique for lumbar decompression of central LSS, the majority of Australian spine surgeons preferred a full laminectomy, over more minimally invasive approaches. Surgeons overestimated the quality of evidence supporting lumbar decompression with or without fusion compared with non-surgical care for treating LSS.

Submission #: 54
Poster day: 1
Position: B22

Determining burden and recovery after minor road traffic injury (mRTI): study protocol for an international cohort data pooling study

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Research Aim/Objective:
Using pooled individual participant data (IPD):
1. To develop a clinically useful model of health-related quality of life (HRQoL) recovery after mRTI
2. To explore discrete latent developmental paths of HRQoL recovery after mRTI, and
3. To quantify the magnitude of health-loss associated with mRTI by estimating case-based disability weights

Research Methods:
We will pool HRQoL (EQ-5D, SF-12, SF-36) IPD from nine international studies (n≈12,500) of mRTI to 12 months post-injury. Data will be integrated using the Data Integration Protocol In Ten-Steps (DIPIT) framework Crosswalks will be used to map SF-12/SF-36 data to EQ-5D. Using the pooled data, we will conduct three new analyses: (i) using linear mixed modelling of EQ-5D utility scores, will conduct an IPD meta-analysis of HRQoL recovery following mRTI; (ii) using group-based trajectory modelling of IPD EQ-5D utility scores, we will identify heterogeneous groups of longitudinal HRQoL recovery, and (iii) by subtracting IPD preference scores from EQ-5D reference norms, calculating time-averaged disability weights and then summing them to estimate a single case-based disability weight, we will quantify the residual long-term burden of mRTI.

Results:
The long-term health burden of mRTI is unknown. Global Burden of Disease (GBD) studies has identified low back and neck pain as leading causes of years lost to disability. However, the GBD studies have not quantified the burden of back and neck pain accounted for by RTIs. Similarly, while the GBD reports the burden of RTIs of all injury severity, it provides no specific data for minor RTIs. Valid and reliable data underpin the identification of unmet healthcare needs, they inform service planning and policy, and they are needed as inputs to evaluations of the effects of healthcare interventions, yet no large-scale recovery models for mRTI exist. At a population level, the total health loss accounted for by mRTI is not currently estimable because mRTI-specific disability weights have not yet been derived. The results of the new analyses described here will help to address these important knowledge gaps.

Discussion:
While previous studies exploring health burden of mRTI using HRQoL data have been well-designed and conducted, most have been based on small samples, some have focused only on whiplash associated disorders, some recruited only compensation claimants, limiting their generalisability, and some did not capture the early recovery period. No large-scale studies have modelled HRQoL recovery, explored trajectories of HRQoL recovery, or have been able to derive disability weights for mRTI.

Submission #: 102
Poster day: 2
Position: B13

Physiotherapist understanding, experiences and unmet needs for delivering exercise programs for low back pain prevention: a qualitative interview study

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Research Aim/Objective:
This study aimed to explore physiotherapists' understanding, attitudes and experiences related to low back pain (LBP) prevention, including exercise programs; and to explore how interventions could support physiotherapists to deliver LBP prevention programs.

Research Methods:
Eligible participants (physiotherapists in Australia who were experienced in LBP care) were recruited through the authors' professional networks, and purposively sampled to capture a broad range of experiences (e.g. private vs public, years' experience, gender). Semi-structured interviews on Zoom were audio-recorded, transcribed, and analysed using Framework thematic analysis. This involves five steps: 1) familiarisation with the data; 2) indexing (assigning codes to data); 3) gathering similar codes into preliminary themes; 4) charting data into a thematic framework; 5) synthesis/interpretation. Themes were refined through iterative cycles of discussing and revising the themes as a group, which included 2 consumers with LBP, 1 non-academic physiotherapist consumer, 3 musculoskeletal researchers, and 2 behavioural scientists. Revised themes were checked against the data to ensure that revised concepts were supported.

Results:
Of 25 participants, 14 (56%) were female, 20 (80%) worked in private clinics, 19 (76%) in urban settings. Theme 1 explored physiotherapists' hesitancy about 'LBP prevention,' raising concerns this term might inadvertently entrench unhelpful beliefs. They preferred language about minimising the risk and impact of recurrences, and promoting an active lifestyle. Theme 2 discussed uncertainty about delivering high-value prevention care. Participants felt there was limited opportunity to deliver prevention programs because patients became less engaged as acute pain receded. Some perceived these programs as placing unnecessary financial burden on patients. Many were uncertain about how to support patients during periods when they weren't in pain and wanted training for exercise prescription and individualisation. Theme 3 emphasised that patient-buy in to prevention programs could be challenging. They discussed that person-centred care and individualisation facilitated buy-in but wanted more training in communication/counselling. Consistency in external messaging about LBP prevention was considered important.

Discussion:
Physiotherapists were often hesitant about using the term LBP prevention with patients. Many were themselves uncertain about how to deliver 'high-value' LBP prevention programs, and many struggled with patient buy-in. In developing exercise programs for LBP prevention, researchers must take care to address physiotherapist preconceptions about LBP prevention. Programs could also benefit from providing training or an explicit structure that enhances physiotherapist's skills for delivering person-centred exercise programs that are tailored to individual patients' needs.

Submission #: 96
Poster day: 2
Position: A12

Experiences of Australian pregnant women seeking chiropractic care for low back and pelvic girdle pain: a qualitative exploration

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Research Aim/Objective:
This qualitative case study is a phenomenological exploration of the experiences of Australian pregnant women who seek chiropractic care for their pregnancy-related low back and/or pelvic girdle pain. With 20% of Australian pregnant women visiting a chiropractor for this condition, little is known about this social phenomenon.

Research Methods:
National recruitment of chiropractic offices led to a purposive sampling of pregnant women with current low back and/or pelvic girdle pain seeking chiropractic care. A constructivist stance informed the grounded theory approach in exploring a phenomenological understanding of pregnant women's lived experiences. Unstructured interviews using an audio-visual recording on Zoom, were transcribed verbatim, and supplemented by a respondent's characteristic survey and the pelvic girdle questionnaire. Grounded theory was used in coding and iterative comparative data analysis, based on a framework of transcribed verbatim interviews, memos, and survey findings. Triangulation and respondent validation was used in the analysis. Purposive sampling continued until thematic saturation was reached. Data was placed in N-Vivo qualitative software. Macquarie University ethics approval was obtained for this study (#: 52020621817665).

Results:
A national recruitment from 27 chiropractic practices, led to 16 potential participants who contacted the research student. After eligibility screening, interviews were undertaken until the ninth respondent at which thematic saturation was reached. The thematic analysis identified four major themes describing key experiences. Care driver described the need to take control and seek care for severe pain and functional disabilities. Preferences for non-pharmacological treatment and desire for better labour outcomes, led to recommendations for chiropractic care from antenatal carers, family, peers and the internet or social media. Previous chiropractic experience in pregnancy led multigravidas to return to care. Care barrier included low back and pelvic pain "normalised" during pregnancy, the lack of knowledge of chiropractic treatment and fear of cavitation in spinal manipulation in pregnancy. Multimodal chiropractic treatment was described and response to care reported high satisfaction with improved biopsychosocial effects.

Discussion:
Themes provided key experiences which support an overarching substantive-level theory that chiropractic care for pregnant woman experiencing low back and pelvic girdle pain improves their pain, functionality, and pregnancy-related biopsychosocial concerns. A second substantive-level theory may examine the effect of chiropractic care on birthing outcomes. Qualitative findings provide a "naturalistic" generalisability and transferability. Major themes may inform antenatal carers about pregnant women's experience with chiropractic care and recommendations for future research.

Submission #: 174
Poster day: 2
Position: B12

Physical activity, body mass index, and age modify the relationship between the anti-diabetic drug metformin and chronic back pain: a cross-sectional analysis of 21,899 participants

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Research Aim/Objective:
To investigate whether physical activity, BMI, and age modify the relationship between the anti-diabetic drug metformin and the prevalence of low back pain in people with diabetes.

Research Methods:
This was a cross-sectional study of 21,889 participants with type 2 diabetes who were drawn from the UK Biobank database. Type 2 diabetes, chronic back pain, and metformin were self-reported. Participants were stratified according to their physical activity level (low, moderate and high), Body Mass Index (normal, overweight, and obese), and age (40 to <50; 50 to < 60; and ≥60 years). Adjusted logistic regression models were built to investigate the prevalence of chronic back pain amongst those using and not using metformin for these strata. Covariates education, smoking status, cardiovascular and mental health conditions were retained when the association between the covariate and the outcome was lower than 0.2 (p-value) in univariate models.

Results:
Participants who were using metformin and who had low levels of physical activity [OR 0.87, 95%CI 0.78 to 0.96], or who were obese [OR 0.90, 95%CI 0.86 to 0.98], or older [OR 0.85, 95%CI 0.78 to 0.93] had lower odds of reporting chronic back pain than their counterparts.

Discussion:
The use of the anti-diabetic drug Metformin in people with diabetes is associated with lower levels of reporting of chronic back pain among people who are older, overweight, and less active. There might be a role for metformin in managing low back pain in these high-risk groups.

Submission #: 236
Poster day: 1
Position: D13

Efficacy, acceptability, and safety of muscle relaxants for adults with non-specific low back pain: systematic review and meta-analysis

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Research Aim/Objective:
To investigate the efficacy, acceptability, and safety of muscle relaxants for low back pain.

Research Methods:
We searched for randomised controlled trials in MEDLINE, Embase, CINAHL, CENTRAL, ClinicalTrials.gov, clinicialtrialsregister.eu, and WHO ICTRP from inception to 23 February 2021. Eligible trials investigated a muscle relaxant compared to placebo, usual care, a waiting list, or no treatment in adults (≥18 years) reporting non-specific low back pain. Two reviewers independently identified studies, extracted data, and assessed the risk of bias and certainty of the evidence using the Cochrane risk-of-bias tool and Grading of Recommendations, Assessment, Development and Evaluations, respectively. Random effects meta-analytical models through restricted maximum likelihood estimation were used to estimate pooled effects and corresponding 95% confidence intervals. Outcomes included pain intensity, disability, acceptability, and safety.

Results:
49 trials were included in the review, of which 31, sampling 6505 participants, were quantitatively analysed. For acute low back pain, very low certainty evidence showed that at two weeks or less non- benzodiazepine antispasmodics were associated with a reduction in pain intensity compared with control (mean difference −7.7, 95% confidence interval−12.1 to−3.3) but not a reduction in disability (−3.3, −7.3 to 0.7). Low and very low certainty evidence showed that non-benzodiazepine antispasmodics might increase the risk of an adverse event (relative risk 1.6, 1.2 to 2.0) and might have little to no effect on acceptability (0.8, 0.6 to 1.1) compared with control for acute low back pain, respectively. The number of trials investigating other muscle relaxants and different durations of low back pain were small and the certainty of evidence was reduced because most trials were at high risk of bias.

Discussion:
Considerable uncertainty exists about the clinical efficacy and safety of muscle relaxants. Very low and low certainty evidence shows that non-benzodiazepine antispasmodics might provide small but not clinically important reductions in pain intensity at or before two weeks and might increase the risk of an adverse event in acute low back pain, respectively. Large, high quality, placebo controlled trials are urgently needed to resolve uncertainty.

Submission #: 52
Poster day: 1
Position: E12

Do randomised trials evaluating physiotherapy interventions for low back pain exclude participants based on language proficiency? A systematic review

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Research Aim/Objective:
This systematic review aims to identify randomised controlled trials evaluating physiotherapy interventions for low back pain where language proficiency was specified as an eligibility criterion and to analyse the associations between the characteristics of these trials and their language-grounded eligibility criterion.

Research Methods:
Eligibility criteria: Randomised controlled trials evaluating at least one physiotherapy intervention for the prevention or management of low back pain. Database searches: Relevant randomised trials written in any language were searched in PEDro from inception to 4 May 2021 and in LILACS and SciELO from inception to 16 May 2021. Study selection: Eight reviewers are independently reviewing full texts and extracting data, with discrepancies to be resolved by consensus. Non-English articles will be reviewed by additional bilingual reviewers. Data extraction: A standardised data extraction form in Excel was calibrated by three iterations of pilot testing. Methodology quality: The PEDro score rated by two independent PEDro raters.

Results:
We retrieved 3,296 articles from PEDro and included 2,712 articles in full text review and data extraction, including 2,406 English articles and 306 articles written in 14 other languages. We retrieved 631 articles from LILACS and SciELO and included 25 English articles and 13 articles written in Spanish and Portuguese. Full-text review and data extraction started in August 2021 and will be completed by early October 2021. Once data extraction is completed, we will describe the characteristics of all included trials. We will dichotomise included trials depending on whether language proficiency was specified as an eligibility criterion and analyse the associations between language-grounded eligibility criterion and language spoken by participants, country of recruitment, the Linguistic Diversity Index of recruitment country, World Health Organization region, publication year, PEDro score, age group, and category of physiotherapy intervention, using unconditional logistic regression models. We will present full results at the forum.

Discussion:
Although guidelines commonly recommend physiotherapy interventions for non-specific low back pain management, selectively excluding potential participants lacking language proficiency from a significant number of clinical trials implies uncertainty about their generalisability in the minorities residing in multicultural communities.

Submission #: 118
Poster day: 2
Position: B11

(Un)certainty in low back pain (LBP) care – insights from a qualitative investigation

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Research Aim/Objective:
To explore how uncertainty plays out in the context of care provided to patients with LBP in both private and public settings, and to investigate how clinicians manage the tensions accompanying these uncertainties.

Research Methods:
Qualitative data were collected through ethnographic observations of clinical encounters at two sites. Study participants included i) adults with LBP from a large private physiotherapy clinic (site 1) and a multidisciplinary publicly funded pain clinic (site 2), both in Australia and ii) the clinicians who work with them: general practitioners, pain specialists, psychiatrists, nurses, physiotherapists, psychologists, occupational therapists, pharmacists and addiction specialists. Analysis involved reflexive and abductive qualitative thematic principles informed by conceptual contributions from sociology. Fox and Katz's work on medical uncertainty fostered understandings of sources of uncertainty and how uncertainty is managed in LBP care. Ahmed's theorisation of emotions added a critical understanding of the affective and power dimensions of uncertainty in LBP.

Results:
In total, 77 ethnographic observations were conducted (49 observations of approximately 30 minutes at Site 1; 28 observations of approximately one hour at site 2). Sixty-four patients and 31 clinicians were observed. All participants were observed at least once. Our reflexive thematic analysis produced three themes. 1) Sources of uncertainty: both patients and clinicians expressed uncertainty during clinical encounters, relating to, for instance, aetiology, and the mismatch between imaging findings, clinical presentation and prognosis. Such uncertainty was often accompanied by emotions: anger, tiredness, frustration. 2) Neglecting complexity: clinicians attempted to decrease uncertainty and emotions associated with uncertainty by providing narrow answers when confronted with questions about LBP aetiology or treatment efficacy. At times, clinicians' denial of uncertainty also denied individuals the right to make informed decisions about treatments. 3) Attending to uncertainty?: clinicians attended to uncertainty through logical reasoning, reassurance, acknowledgement, personalising care, shifting power, adjusting language and disclosing risks.

Discussion:
Uncertainty pervades LBP care and is often accompanied by emotions. Our analysis suggests that neglecting uncertainty may be problematic. In decreasing uncertainty, clinicians can stray from person-centred approaches, overrate treatment effectiveness and omit potential treatment risks. Conversely, acknowledging and negotiating uncertainty can enable clinicians to disclose professional limitations, and potentially enhance patient safety and quality of care, by challenging power imbalanced patient-clinician relationships, opening lines of communication and emphasising human aspects of care.

Submission #: 220
Poster day: 2
Position: B21

Can poor sleep and sedentary behaviour trigger a low back pain flare? Objective measures from wearable sensors

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Research Aim/Objective:
To determine whether: 1) objective measures of physical activity and sleep are associated with risk of experiencing low back pain (LBP) flares; and 2) these associations differed between flares defined by pain increase (pain defined flare, PDF), or identified by participants according to a broader flare definition (self-reported flare, SRF).

Research Methods:
We recruited participants who had experienced LBP for >3 months. Physical activity and sleep were monitored for 28 days using wearable sensors. Occurrence of flares (PDF/SRF) were assessed daily using a smartphone application. PDF was defined as a day with pain 2 or more points greater than average pain over the period. Sensor data were analysed using ActivPAL proprietary software and Matlab to calculate; Time in bed, Sleep time, percent (%) of the day undertaking sendentary activity, % standing, % walking, and % at different levels of estimated metabolic equivalent energy expenditure. Data on exposure to risk factors one, two and three days preceding a PDF/SRF were compared to non-flare periods. Conditional logistic regression determined the association between each factor and risk of flares.

Results:
Among 126 participants recruited, 68.2% (86) had data for both case and control periods and thus had data available for analysis. Day-to-day variation in physical activity and in-bed time was associated with risk of LBP flares, but associations differ depending on how flare is defined. Longer in-bed time increased the risk of PDF one (OR 1.09, 95% CI 1.01, 1.17) and two (OR 1.11, 95% CI 1.03, 1.20) days later, but not SRF. Although physical activity levels were not associated with higher risk of PDF, greater sedentary behaviour increased risk of SRF (percent sedentary - OR 1.03, 95% CI 1.00, 1.05; %MET < 1.4 (sedentary) - OR 1.03, 95% CI 1.00, 1.05). In contrast, being more physically active decreased risk for SRF (Standing - OR 0.97, 95% CI 0.95, 1.00); higher total MET - OR 0.96, 95% CI 0.91, 1.00; %MET 1.4-3 (walk slowly) - OR 0.97, 95% 0.95, 1.00).

Discussion:
Day-to-day variation in physical activity and sleep was associated with risk of LBP flares, but associations differed depending on how flare is defined. Although physical activity levels were not associated with higher risk of PDF, risk of SRF was increased by sedentary behaviour and reduced by being more physically active. Longer sleep was associated with increased risk of PDF, but not SRF. Sleep and physical activity interventions have the potential to prevent LBP flares.

Submission #: 258
Poster day: 1
Position: D22

The burden of musculoskeletal conditions and low back pain in Australia: findings from the Global Burden of Disease Study 2019

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Research Aim/Objective:
Report the national prevalence, years lived with disability (YLDs) and attributable risk factors for musculoskeletal (MSK) conditions and low back pain (LBP) in Australia.

Research Methods:
Data on MSK conditions and LBP were accessed via the Global Burden of Disease (GBD) meta-data, and aggregated. These data are publicly available, and shared, where legally permissible, through Institute for Health Metrics and Evaluation's (IHME) Global Health Data Exchange. Counts and age-standardized rates (with 95% uncertainty intervals) were extracted for prevalence, YLDs and attributable risk factors for MSK conditions and LBP.

Results:
In 2019, MSK conditions were the leading cause of YLDs in Australia (20.1%). There were 7.2 million prevalent cases of MSK conditions and 685,000 YLDs due to MSK conditions. There were 2.7 million people living with LBP, accounting for 299,000 YLDs (44% of YLDs attributed to all MSK conditions). In 2019, 22.3% and 39.8% of YLDs due to MSK conditions and LBP were attributed to modifiable GBD risk factors, respectively.

Discussion:
The ongoing high burden due to MSK conditions impacts Australians across the life course, and in particular females and older Australians. Strategies for integrative and organisational interventions in the Australian healthcare system should support high value care and address key modifiable risk factors for disability such as smoking, occupational ergonomic factors and obesity.

Submission #: 37
Poster day: 1
Position: B12

Preliminary results from the BAck Complaints in the Elderly study: a cohort profile

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Research Aim/Objective:
One in seven adult chiropractic patients are aged >65 years and of these, 60% present with a back problem. The aim of the BAck Complaints in the Elderly:Chiropractic - Australia study is to examine the clinical course of LBP in older adults who seek chiropractic care.

Research Methods:
Design: a 12-month, prospective longitudinal cohort study. Inclusion criteria was a 'new' episode of LBP. Questions about sociodemographic factors, lifestyle characteristics, health, pain, functional status, cognition, adverse events, medications, satisfaction with chiropractic and quality of life were asked at baseline and at follow up (2 and 6 weeks and at 3, 6, 9 and 12 months). Longitudinal SMS pain data was captured daily for two weeks and then weekly for 11.5 months. Descriptive statistics will report the cohort profile.

Results:
226 chiropractic patients were enrolled into the study, with 52.4% female and a mean age of 67.6 (s.d 8.6) years. Only 7.9% reported LBP for the first time, and 65.0% described pain that extended into the lower limb. At baseline, mean VAS for LBP at baseline was 4.2 (s.d. 2.5) and the highest proportion for ODI scores was 48% for moderate disability. The STarT back questionnaire identified 41.9% of participants as having low risk of chronicity.

Discussion:
At baseline, more than 90% of older adults with LBP had a past history of LBP, disability levels were high and lower limb pain was common. As we finish 12 month longitudinal data collection, the study will allow a better understanding of the demographics, clinical course and predictors of LBP in older adults.

Submission #: 288
Poster day: 2
Position: B22

Cognitive functional therapy for non-specific low back pain: a systematic review

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Research Aim/Objective:
This study evaluated the effectiveness of cognitive functional therapy (CFT) to improve pain intensity and disability in adults with non-specific low back pain (LBP), as well as the certainty of this evidence.

Research Methods:
Design: Systematic review
Data sources: Four electronic databases and two trial registers, searched up to May 2021.
Eligibility criteria: Randomised control trials comparing CFT to control in adults with non-specific LBP of any duration, with or without associated leg pain. Primary outcomes were pain intensity and disability following treatment. Secondary outcomes were psychological function, patient satisfaction, and safety (adverse events).

Results:
We included 14 studies examining chronic LBP: four provided data, nine are ongoing and one was terminated. 359 participants were randomised in the four included studies: 188 to CFT and 171 to control. Participants were on average 45 years old (range from 41 to 50.6) and had a baseline pain intensity of 5.5 on a 0-10 scale (range from 4.9 to 6.2) and a baseline disability of 27.7 on a 0-100 scale. There was substantial clinical diversity in participant characteristics (differing inclusion criteria were used regarding the association between movement and the participants LBP), the control conditions (controls differed between joint mobilisation with exercise, physical therapy with exercise, exercise classes with pain education, and current best practice) and CFT delivery (both group and individualised care was utilised), preventing us from performing quantitative synthesis. No adverse events were reported. All included studies were at high overall risk of bias.

Discussion:
At present we are unable to synthesise the evidence of CFT because of marked clinical diversity across the small number of studies with available data. Based on a limited number of studies, that are all at high risk of bias, evidence supporting the effectiveness of CFT to improve pain and disability for adults with chronic LBP is very uncertain. This may change given the number of trials in progress.
Registration: PROSPERO (CRD42020205092);

Submission #: 256
Poster day: 1
Position: D21

Patterns of opioid dispensing and associated wage replacement duration in workers with accepted claims for low back pain: a retrospective cohort study

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Research Aim/Objective:
This study aimed to identify patterns of opioid dispensing in Australian workers with accepted workers' compensation claims for low back pain and determine the association of dispensing patterns with wage replacement duration.

Research Methods:
Australian workers' compensation claimants with low back pain and at least one day of wage replacement were included. We used group-based trajectory modelling to identify opioid dispensing patterns over a two and half year period from reported low back pain onset. Quantile regression was then used to compare wage replacement duration between each dispensing pattern group.

Results:
One third of workers with low back pain (N=3205, 33.3%) were dispensed opioids at least once during their claim. Three dispensing patterns were identified. The majority had a short-term low-volume opioid dispensing pattern (N=2166, 67.6%), while 798 (24.9%) had a long-term moderate-volume pattern and 241 (7.5%) had a long-term high-volume pattern. Workers dispensed opioids had significantly longer wage replacement duration than those not dispensed opioids (median (weeks): 63.6 versus 7.1 respectively). In addition, moderate- and high-volume long-term dispensing had significantly longer wage replacement duration compared with short-term dispensing (median (weeks): 126.9, 126.0 and 30.7 respectively).

Discussion:
Our study found a high use of opioids for long durations among compensated Australian workers with low back pain. Considered in the context of other findings, results suggest multi-faceted strategies to reduce opioid use may help reduce work disability duration. However, further research controlling for pain severity, psychosocial factors and recovery expectations is required to confirm whether the relationship between opioid dispensing pattern and wage replacement duration is causal in nature.

Submission #: 91
Poster day: 1
Position: C22

Australian health policy perspectives related to diagnostic imaging: spinal imaging's impact on economic and environmental sustainability

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Research Aim/Objective:
Low value health care negatively impacts the sustainability of the health care system. Between 4.5% and 66% of diagnostic imaging services for low back pain are inappropriate. This presentation will summarise Australian health policy related to diagnostic imaging, their impact on the sustainability of the sector, and future policy recommendations.

Research Methods:
Improving access to diagnostic imaging is an important goal, especially where there is inequitable distribution that disadvantage rural and remote populations. Considerable public funds have been allocated to increase the number of MRI machines eligible for Medicare rebates and increasing Medicare contributions for imaging services to reduce out-of-pocket expenses.
Few policy initiatives have been employed to address the inappropriate use of diagnostic imaging. The 2011-12 Diagnostic Imaging Reform Package allocated funds to improve the appropriate use of diagnostic imaging, yet implementation of these initiatives was limited. The Medicare Benefits Schedule Review Taskforce convened a working group to provide recommendations that ensure the diagnostic imaging services for low back pain represent best practice. Analysis of the current policy landscape is limited to Medicare service use data.

Results:
Diagnostic imaging policy initiatives have had mixed results on the utilisation of diagnostic imaging services for conditions of the spine. A steady decline in x-ray use has been observed over the past 10 years, yet CT and MRI utilisation has continued to increase at a steady rate (5% and 8.5% per annum, respectively). There are several possible explanations for these results. The decline in x-ray use may be due to the restriction of allied health professionals requesting certain services or uptake of guidelines, such as Choosing Wisely recommendations. On the other hand, improving patient access to MRI has had the unintended consequence of increasing its utilisation for the spine with no evidence that the change in referral pattern has improved patient outcomes. The increased utilisation of advanced imaging modalities has contributed to a substantial increase in Medicare spending for spinal imaging with questionable benefit.

Discussion:
Australian health policy decisions in relation to diagnostic imaging has resulted in an increased utilisation of advanced imaging and rising Medicare expenditure. This suggests that addressing inequity in access to MRI without addressing low value overuse of imaging at the same time may have unintended consequences for the sustainability of the sector. Opportunities exist with the implementation of eReferral through My Health Record to assess the appropriateness of imaging referrals and disseminate clinical decision rules.

Submission #: 250
Poster day: 2
Position: B23

Cancer in people presenting with back pain in primary care: a prevalence and diagnostic accuracy study protocol

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Research Aim/Objective:
We aim to estimate the proportion of patients in primary care who have cancer as the probable underlying cause of their back pain; and develop a diagnostic screening model to identify patients at greater risk of cancer.

Research Methods:
We will link routine data from a UK primary care registry for new episodes of back pain (2013–2017), with linkage to the national cancer registry. Clinical features will be collected from the primary care registry, with detailed information on any history of cancer (previous 10 years) from linkage with the cancer registry. Diagnosis of cancer as a cause of back pain will be ascertained by cancer diagnosis in the registry within 6 months of the index visit. The proportion of patients with a cancer diagnosis will be estimated. A multivariable diagnostic model to estimate the probability of cancer as the cause of back pain will be developed using baseline features as predictors. Model validation will use data sampled from a previous 5-year period.

Results:
(Protocol)
From preliminary code counts relating to back pain, we estimate up to one million patients will meet inclusion criteria for each 5-year period of the development and validation datasets.

Discussion:
This study will overcome the limitations of previous studies (small sample size, lack of long-term follow-up) to provide robust estimates for prevalence of cancer presenting as back pain using a nationally representative dataset from primary care. Our findings will advance understanding of the relationship between back pain, other clinical features, and cancer. The results of this study have potential to inform screening strategies in the early assessment of back pain.

Submission #: 150
Poster day: 1
Position: B24

Consumer understanding of terms used in imaging reports requested for low back pain: a cross-sectional survey

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Research Aim/Objective:
To investigate 1) self-reported societal comprehension of common and usually non-serious terms found in lumbar spine imaging reports and 2) its relationship to perceived seriousness, likely persistence of low back pain, fear of movement, back beliefs and history and intensity of low back pain.

Research Methods:
Cross-sectional online survey of adults in five countries (UK, USA, Canada, New Zealand and Australia). Participants were presented with 14 terms commonly found in imaging reports (annular fissure, disc bulge, disc degeneration, disc extrusion, disc height loss, disc protrusion, disc signal loss, facet joint degeneration, high intensity zone, mild canal stenosis, Modic changes, nerve root contact, spondylolisthesis, spondylosis) and asked to rate their understanding of each term, its perceived seriousness, whether its presence would indicate pain persistence and/or prompt fear of movement. We used Spearman's rank correlation to investigate the correlation between responses to the four statements regarding the terms, and multivariate regression analysis to investigate associations between self-reported understanding of terms and perceptions about their meaning, demographics, history of back pain and back beliefs.

Results:
From 774 responses we included 677 (87.5%) with complete and valid responses. 577 (85%) participants had a current or past history of LBP of whom 251 (44%) had received lumbar spine imaging. Self-reported understanding of all terms was poor. At best, 235 (35%) reported understanding the term 'disc degeneration', while only 71 (10.5%) reported understanding the term 'modic changes'. For all terms, a moderate to large proportion of participants (range 59-71%), considered they indicated a serious back problem, that pain might persist (range 52-71%) and they would be fearful of movement (range 42-57%). Higher education and better back beliefs were both associated with greater self-reported understanding of terms and less worry about seriousness, persistence and movement. Most participants agreed that the report should be written in a way to facilitate lay understanding (n=586, 87%) and it would be useful to include epidemiological information (n=587, 87%).

Discussion:
Common and usually non-serious terms in lumbar spine imaging reports are poorly understood by the general population and may contribute to the burden of low back pain. Our study provides both the imperative and empirical data indicating the importance of accurately and clearly portraying the significance of imaging findings in terms that are understandable to both clinicians and patients. This may reduce both unwarranted anxiety and low-value care.

Submission #: 105
Poster day: 1
Position: C24

GLA:D® Back Australia: a mixed methods feasibility study for implementation

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Research Aim/Objective:
GLA:D® Back, developed in Denmark to assist evidence-based guideline implementation by clinicians, offers a structured education and supervised exercise program for low back pain. This study evaluated the feasibility of implementing the program in Australia, comprising clinician and patient recruitment and retention, observing program delivery and participant experiences.

Research Methods:
Clinicians were conveniently sampled and if eligible, participated in the two-day GLA:D® Back program, that comprised lectures and workshops for patient education and exercise. Clinicians were also exposed to a project-specific data collection system. Patients were eligible to participate if they had persistent or recurrent low back pain. Feasibility aims include (1) recruiting 20 clinicians; (2) recruiting and retaining 60 patients minimum; (3) observing delivery of the program; and (4) determining perceived barriers and facilitators for clinicians' and patients' participation. Secondary data on clinician (e.g., beliefs, and attitudes towards management) and patients (e.g., pain intensity, disability, fear avoidance behaviour and clinical performance tests) were also collected.

Results:
Eight chiropractors and twelve physiotherapists participated in our study, with eleven of the twenty clinicians offering GLA:D® Back to their patients to completion. Fifty-seven patients were enrolled in the program, with 38 attending the final assessment 8 weeks later. We directly observed delivery of the GLA:D® Back on four occasions; however, the COVID-19 pandemic impacted patient recruitment and retention. Clinician themes emerging from semi-structured interviews related to intervention acceptability, and barriers and facilitators regarding implementation. Patient themes related to intervention acceptability and program efficacy. From our secondary data, clinicians demonstrated a sustained biomedical orientation pre- and post-training for beliefs, and attitudes towards management, while patient outcomes such as pain intensity, disability, fear avoidance behaviour and clinical performance tests trended toward improvement.

Discussion:
Implementing GLA:D® Back appears feasibility in Australia, but modifications are required. Clinician recruitment was achievable, and it was possible to directly observe the program. Clinician barriers and facilitators identified themes related to acceptability and implementation, while program efficacy and acceptability resonated with patients. Finally, patient retention and data collection were impacted by the COVID-19 pandemic. Therefore, fresh approaches to support patient recruitment and retention along with incorporating telehealth-like services for greater flexibility, should be considered.

Submission #: 51
Poster day: 1
Position: B21

Efficacy, acceptability and safety of antidepressants for low back pain: a systematic review and meta-analysis

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Research Aim/Objective:
Antidepressant medicines are used to manage symptoms of low back pain. The efficacy, acceptability, and safety of antidepressant medicines for low back pain (LBP) are not clear. We aimed to evaluate the efficacy, acceptability, and safety of antidepressant medicines for LBP.

Research Methods:
We searched databases from inception to May 2020. We included published and trial registry reports of RCTs that allocated adult participants with LBP to receive an antidepressant medicine or a placebo medicine. Pairs of authors independently extracted data in duplicate. We data using random-effects meta-analysis models and calculated estimates of effects and heterogeneity for each outcome. We formed judgments of confidence in the evidence in accordance with GRADE. We prespecified all outcomes in a prospectively registered protocol. The primary outcomes were pain rintensity and acceptability. We measured pain intensity at end-of-treatment on a 0–100 point scale and considered 10 points the minimal clinically important difference. We defined acceptability as the odds of stopping treatment for any reason.

Results:
We included 23 RCTs in this review. Data were available for pain in 17 trials and acceptability in 14 trials. Treatment with antidepressants decreased pain intensity by 4.33 points (95% CI − 6.15 to − 2.50) on a 0–100 scale, compared to placebo. Treatment with antidepressants increased the odds of stopping treatment for any reason (OR 1.27 [95% CI 1.03 to 1.56]), compared to placebo.

Discussion:
Treatment of LBP with antidepressants is associated with small reductions in pain intensity and increased odds of stopping treatment for any reason, compared to placebo. The effect on pain is not clinically important. The effect on acceptability warrants consideration. These findings provide Level I evidence to guide clinicians in their use of antidepressants to treat LBP.

Submission #: 245
Poster day: 2
Position: B24

A content analysis of online information about the benefits and harms of spine surgery

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Research Aim/Objective:
To describe the proportion of webpages containing information about surgery for spinal pain (decompression and fusion) that accurately described the evidence on the benefits of surgery, described harms and provided quantitative estimates of these harms.

Research Methods:
We searched Google in April 2021 for webpages containing information about spine surgery. Two reviewers identified webpages and extracted data the following data: indications for surgery (e.g. disc herniation, fracture, etc.), information about the benefits of surgery (e.g. estimation of success rate, reported benefits in terms of surgical or patient outcomes or both), and harms (e.g. listed at least one harm). Primary outcomes were the proportion of webpages that accurately described the evidence on the benefits, described harms, and provided quantitative estimates of these harms. Outcomes were compared between webpages of decompression and fusion using a test of equality of proportions for dichotomous outcomes and independent t-test for continuous outcomes. Comparisons were presented as differences between proportions (DP) and 95% confidence intervals.

Results:
We screened 454 potentially eligible webpages and included 117 webpages from 76 unique websites. Most webpages covered decompression (n=70, 60%), followed by fusion (n=47, 40%). Only 29 (25%) webpages accurately described the evidence on the benefits of spine surgery, and more webpages on decompression accurately described the evidence compared to webpages on fusion (31% vs 15%; DP 16%; 95% CI 2% to 31%). Harms of surgery were described in most webpages (n = 76, 65%) with no difference between webpages on decompression versus fusion (DP 9%; 95% CI -9% to 27%). A much smaller proportion of webpages (n = 18, 15%) provided a quantitative estimate for the mentioned harms, with no difference between webpages on decompression and fusion (DP 8%; 95% CI -5% to 20%).

Discussion:
Most webpages covering fusion and decompression failed to accurately describe the evidence on the benefits of these surgeries, and webpages on fusion were less likely to provide such description. Although harms were often mentioned, a very small proportion provided a quantitative estimate of harms. Overall, included webpages presented an optimistic view of surgery, particularly fusion. This may mislead patients into thinking spinal fusion is an effective surgery for a range of conditions affecting the spine.

Submission #: 48
Poster day: 2
Position: C21

An investigation into case-mix adjusted hospital admission rates for low back pain following an emergency department presentation in Australia

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Co-Authors:
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Research Aim/Objective:
To investigate variation in hospital admission rates due to low back pain (LBP) following a presentation to the emergency department (ED).

Research Methods:
We conducted a retrospective study using data from the New South Wales Emergency Department Records for Epidemiology. We included all ED presentations aged 18+ years with an LBP diagnosis to public EDs across New South Wales, Australia between January 2016-December 2019. Presentations due to serious LBP (e.g., fracture) were excluded. Sourced data included case-mix (e.g. age, sex, triage scale) and hospital factors (e.g rural or metropolitan hospital). Outcomes were (i) the proportion of overall variation attributable to hospitals measured with intraclass correlation coefficient (ICC) and median odds ratio (MOR); (ii) admission rates adjusted by case-mix and hospital factors. Data were analysed using multilevel mixed-effects logistic regression. Hospital variation was described in terms of the odds (OR) of a patient with similar characteristics being in each hospital.

Results:
We included data from 176,729 presentations from 177 hospital EDs. The overall crude admission rate was 25.2% (n= 44,459). Mean (SD) age was 51.8 (19.6), 52% were female, 32% arrived by ambulance, 54% presented after hours and 90% had English as the primary language spoken at home. When adjusted by case-mix and hospital variables, 10% of the variance was explained by hospital variation (ICC=0.10). The MOR is 1.8, meaning that if a patient with similar characteristics presented to a different hospital, the average increase in odds of admission would be 1.8. There was substantial variation in the odds of admission across hospitals. The odds of a patient with the same characteristics being admitted to hospital ranged from 0.17 to 5.3.

Discussion:
This is the first study to explore hospital variation in LBP admission rates in Australia. We showed that there is variation that cannot be explained by differences in case-mix and hospital type. Case-mix adjusted analyses are widely used to compare performance across hospitals for key indicators, such as patient admission. There is a need to better define key performance indicators for hospital admission due to LBP.

Submission #: 259
Poster day: 1
Position: D23

Prevention strategies to reduce future impact of low back pain: a systematic review and meta-analysis

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Research Aim/Objective:
To evaluate the evidence from randomised controlled trials (RCTs) on the effectiveness of prevention strategies to reduce future impact of low back pain (LBP), where impact is measured by LBP intensity and associated disability.

Research Methods:
A comprehensive search of five electronic databases (MEDLINE, Embase, CINAHL, PEDro and The Cochrane (CENTRAL) was conducted from inception to 22 October 2018. Eligible RCTs evaluating any intervention aiming to prevent future impact of LBP, reporting an outcome measure of LBP intensity and/or disability measured at least 3 months post-randomisation, and the intervention group must be compared with a group that received no intervention/placebo or minimal intervention were included. Trials restricting recruitment to participants with current LBP were excluded.

Results:
A total of 27 published reports of 25 different trials (8341 participants) fulfilled the inclusion criteria. The pooled results, from three RCTs (612 participants), found moderate-quality evidence that an exercise programme can prevent future LBP intensity (mean difference, −4.50; 95% CI −7.26 to −1.74), and from 4 RCTs (471 participants) that an exercise and education programme can prevent future disability due to LBP (mean difference, −6.28; 95% CI −9.51 to −3.06). It is uncertain whether prevention programmes improve future quality of life and workability due to the overall low-quality and very low-quality available evidence.

Discussion:
This review provides moderate-quality evidence that an exercise programme, and a programme combining exercise and education, are effective to reduce future LBP intensity and associated disability. It is uncertain whether prevention programmes can improve future quality of life and workability. Further high-quality RCTs evaluating prevention programmes aiming to reduce future impact of LBP are needed.

Submission #: 41
Poster day: 1
Position: B11

Objectifying clinical gait assessment: using a single-point wearable sensor to measure gait metrics for the evaluation of patients undergoing lumbar spine surgery

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Research Aim/Objective:
Gait metrics may serve as an objective outcome that can be used alongside subjectively reported patient-reported outcome measures (PROMs) to facilitate comprehensive patient assessment in lumbar spine patients. We aim to assess lumbar spine patients pre- and postoperatively using a comprehensive battery of gait metrics with a single-point wearable sensor.

Research Methods:
We perform a cross-sectional observational study with intervention using 12 patients undergoing lumbar spine surgery and 24 healthy controls matched based on age and sex. Patients were recruited on presentation to the NeuroSpine Clinic (Randwick, Australia) and healthy controls were recruited from the community using verbal outreach. All subjects walked along a straight unobstructed pathway at a self-selected pace for a self-selected distance (maximum 120m), while patients also completed the Oswestry Disability Index (ODI) and Visual Analogue Scale (VAS). Patients were measured preoperatively and six weeks postoperatively, while healthy controls were measured at any one timepoint within the timeframe of this study. Gait metrics (spatiotemporal, asymmetry, and variability) were measured using the MetaMotionC© single-point wearable sensor placed at the skin immediately overlying the sternal angle.

Results:
Patients reported significantly improved PROMs (ODI: 42.4 vs 22.8, $p = 0.01$; VAS: 7.00 vs 1.50, $p = 0.001$) postoperatively. Only asymmetry metrics (step length asymmetry: 0.0596m vs 0.0492m; swing asymmetry: 0.0617s vs 0.0245s; single limb support asymmetry: 0.0656s vs 0.0328s; double limb support asymmetry: 0.0150s vs 0.0106s; all $p < 0.040$), and all variability metrics (gait velocity variability: 10.8 vs 8.53m/s; step time variability: 13.2s vs 6.03s; step length variability: 12.5m vs 8.31m; stance variability: 9.49s vs 6.72s; swing variability: 20.0s vs 8.26s; single limb support variability: 44.2s vs 16.8s; double limb support variability: 17.9s vs 6.12s; all $p < 0.023$) significantly improved postoperatively. Changes in ODI postoperatively best correlated with changes in spatiotemporal metrics (for example, regarding change in gait velocity: $r = - 0.914$, $p < 0.001$). Most gait metrics differed between patients and controls preoperatively, while only spatiotemporal metrics differed between patients and controls postoperatively.

Discussion:
We assessed lumbar spine patients pre- and postoperatively using objective gait metrics with a single-point wearable sensor. Changes in spatiotemporal metrics correlated strongly with changes in the ODI, suggesting that these patients perceived compromised spatiotemporal features of gait as meaningful functional limitations. Due to being small, low-cost, and lightweight, single-point wearable sensors have potential to remotely monitor spine surgery patients in their everyday environment, an avenue for future research.

Submission #: 252
Poster day: 1
Position: D11

Telephone support improves early engagement with a web-based pain program – a randomized controlled trial investigating the effect of adjunct telephone support

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Research Aim/Objective:
To evaluate whether augmenting the existing Reboot Online program with additional telephone support by a clinician, improves program adherence and effectiveness, relative to the online program alone

Research Methods:
A two-armed, CONSORT-compliant registered randomized controlled trial (RCT), with one-to-one group allocation was conducted. It compared an online multidisciplinary pain management program Reboot Online combined with telephone support (n=44), with Reboot Online alone (n=45) as the control group. Participants were recruited via online social media and existing THISWAYUP networks. The primary outcome for this study was adherence to the Reboot Online program. Adherence was quantified via three metrics; (i) completion of the program (ii) the number of participants who enrolled into the program, (iii) the number of participants who commenced the program. Data on adherence were collected automatically via the THIS WAY UP platform. Secondary measures of clinical effectiveness were also collected.

Results:
Reboot Online combined with telephone support had a positive effect on enrolment and commencement of the program compared to Reboot Online without telephone support. Significantly more participants from the Reboot Online plus telephone support group enrolled (93.2%) into the course compared to the control group (77.8%) ($\chi 2 = 4.23$, $p = 0.04$), Further, more participants from the intervention group commenced the course compared to the control group (90.9% versus 60.0% respectively, $\chi 2 = 11.42$, $p = 0.001$). Of those participants enrolled in the intervention group, 43.2% completed the course (19/44) and of those in the control group 31.1% completed the course (14/45). When considering the subgroup of those who commenced the program, there was no significant difference between the proportions of people who completed all 8 lessons in the intervention (47.5%) versus control groups (51.8%) ($\chi 2 = 1.39$, $p = 0.24$).

Discussion:
Internet-based treatment programs present a solution for providing access to pain management for those unable to access clinic-based multidisciplinary pain programs. Attrition from internet interventions is a common issue. Clinician supported guidance can be an important feature in online interventions. This study has shown that telephone support improves participants' registration, program commencement and engagement in early phase of the internet intervention; however, it did not not appear to impact efficay associated with clincila outcomes.

Submission #: 97
Poster day: 2
Position: C22

Does exercise increase pain self-efficacy in chronic low back pain? Preliminary results from a systematic review and meta-analysis

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Research Aim/Objective:
Pain self-efficacy has shown promise as a mechanism that improves pain and functional disability in chronic musculoskeletal populations. This systematic review and meta-analysis aimed to determine the effect of exercise on pain self-efficacy for non-specific chronic low back pain.

Research Methods:
We included randomised controlled trials that compared exercise interventions to a control group in adults with non-specific chronic low back pain. The primary outcome measured was pain self-efficacy following treatment. Once data extraction is completed, we will conduct a meta-analysis using a random effects model. Statistical heterogeneity will be calculated using the restricted maximum likelihood model. Risk of bias of each study will be evaluated using the Cochrane risk of bias tool for randomised trials, version 2. The quality of evidence and strength of recommendations will be assessed using GRADE.

Results:
We searched Cochrane Central Register of Controlled Trials, PubMed, EMBASE, PsycInfo and CINAHL from inception to 31/07/2021. Two reviewers independently screened 12860 studies by title and abstract. 1680 studies were eligible for full text screening. It is estimated that approximately 10 studies will be eligible for data extraction. The following data will be extracted: (1) trial characteristics: year of publication, country, and sample size; (2) participants: age, male/female ratio, duration of NSCLBP and baseline pain and disability; (3) interventions: exercise details, intervention length and trial setting; and (4) outcomes: questionnaire used and PSE scores at baseline and following the intervention.

Discussion:
The mechanisms(s) that lead to exercises' benefits for chronic low back pain are unknown. Determining these mechanisms(s) could lead to targeted treatment with better outcomes. This review will help determine future research pathways for investigating the mechanism(s) of exercise that cause reductions in pain and functional disability in chronic low back pain. (Data extraction and analysis will be completed and ready for presentation at the conference.)

Submission #: 143
Poster day: 2
Position: C23

Effectiveness of a coordinated discharge support system for reducing health care use in patients with chronic low back pain: a randomised controlled trial

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Research Aim/Objective:
The primary aim is to evaluate the effect of introducing a coordinated support system (linking hospital outpatient physiotherapy services to a public health coaching service) at discharge from LBP treatment, on the future use of hospital, medical, and health services for LBP, compared with usual care provided at discharge.

Research Methods:
374 adults with chronic non-specific LBP will be recruited from outpatient physiotherapy departments of hospitals in New South Wales, Australia. Participants will be individually randomised to a support system or usual care group. All participants will receive the usual care provided at discharge from treatment. The support system group will also receive up to 10 telephone-based health coaching sessions, delivered by the Get Healthy Service®, over 6 months. Health coaches will support participants to achieve physical activity and personal health-related goals. The primary outcome is the total number of encounters with hospital, medical, and health services for LBP, over 12 months. A within-trial economic evaluation will quantify the incremental costs and benefits of the support system from a health system perspective, to support reimbursement decision-making.

Results:
The trial is registered, funded, and ethically approved. Recruitment commenced at a public hospital in New South Wales in July 2021. We anticipate that recruitment will be completed by December 2022.

Discussion:
Innovative community-driven solutions to support people with chronic LBP after discharge from treatment are urgently needed. This study will establish the effect of a coordinated support system, introduced at discharge from treatment, on the future use of hospital, medical, and health services for LBP and various health outcomes. Study findings will help to inform health care policy and clinical practice in Australia.

Submission #: 100
Poster day: 1
Position: C21

Beneficial and harmful associations between physical activity, sedentary behaviour, and care seeking behaviours in people with low back pain: the AUTBACK study

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Research Aim/Objective:
The aim of this study was to investigate the relationship between different amounts (i.e., intensities and volumes) and/or domains of physical activity (PA) and sedentary behaviour, and care-seeking behaviours for low back pain (LBP).

Research Methods:
Longitudinal data from adult twins with a history of LBP were drawn from the AUstralian Twin BACK study. Study outcomes were the total self-reported frequency (counts) of utilising any care (overall care utilisation), utilising health services, and utilising self-management strategies, for LBP, over one year. The explanatory variables were device-based or self-reported measures of sedentary behaviour, moderate-to-vigorous intensity PA (MVPA), physical workload, and work, transport, household, and leisure domain PA, at baseline. Adjusted negative binominal regression models were performed for each outcome separately. Explanatory variables were dichotomised (low or medium-to-high volumes) and analysed in separate regression models. Low volumes were considered the reference groups. A robust estimator was used to account for non-independence of data from complete twin pairs. Statistical significance was set at $p<0.05$.

Results:
Data from 340 individual twins were included in the study. Medium-to-high baseline volumes of physical workload (overall care utilisation: RR 2.67, 95% CI 1.20 to 5.94; utilisation of self-management strategies: 2.42, 1.01 to 5.77) and household domain PA (overall care utilisation: 2.09, 1.27 to 3.43; utilisation of self-management strategies: 2.27, 1.33 to 3.89) were significantly associated with greater counts of overall care utilisation for LBP and utilisation of self-management strategies for LBP, over one year. In contrast, medium-to-high baseline volumes of MVPA appeared to be associated with fewer counts of overall care utilisation for LBP (0.56, 0.32 to 1.01) and utilisation of self-management strategies for LBP (0.53, 0.27 to 1.02), over one year. No other explanatory variables were significantly associated with the study outcomes.

Discussion:
Overall, people who engage in medium-to-high volumes of physical workload or household domain PA at baseline utilise more care for LBP, over a one year period. On the contrary, people who engage in medium-to-high volumes of MVPA at baseline may utilise less care for LBP, over a one year period. Study findings are novel and may improve clinical and occupational decision-making regarding the appropriate prescription of various types of PA for LBP.

Submission #: 163
Poster day: 2
Position: C14

Treatment classifications for neck pain: a scoping review

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Research Aim/Objective:
Various neck pain classifications exist and many different conservative interventions have been investigated on its effectiveness, which complicates comparing interventions in a network meta-analysis.
This study aims to describe how neck pain has been classified and group conservative interventions into potential nodes for consideration in future network meta-analyses.

Research Methods:
We conducted a scoping review of the currently available literature on conservative interventions for neck pain. Clinical practice guidelines (CPGs) published up to 2019, systematic reviews (SRs) and randomised clinical trials (RCTs) referred to in these CPGs were included. We calculated the frequencies of classifications used to classify people with neck pain across CPGs and RCTs. We grouped interventions extracted from the RCTs using definitions of the intervention as used in Cochrane reviews as a starting point. Potential network plots for further analyses were constructed using the Shiny R application CINEMA to construct network graphs for all interventions according to neck pain classifications.

Results:
We included 46 neck pain CPGs. From these CPGs, we identified 13 review of reviews, 123 SRs and included 242 RCTs.
Neck pain classifications: The Neck Pain Task Force (NPTF) classification was used in three CPGs the International Classification of Functioning, Disability, and Health (ICF) based classification was used in one CPG and the Quebec task force classification (QTFC) was used in another to describe whiplash associated disorder (WAD). Two guidelines did not use any classification system.
Neck pain Interventions and network graphs: We grouped both index and comparative arm interventions into 19 discrete potential intervention groups (nodes). RCTs (n=80) that contributed to one node only were not considered for the network graphs, meaning we included 162 trials in the construction of network graphs.

Discussion:
We successfully grouped conservative interventions from 162 trials into 19 discrete potential nodes. We aim to use these nodes in future research (a network meta-analysis) to determine the most effective interventions for a given classification of people with neck pain. We are investigating the clinical validity of these nodes in a Delphi study.

Submission #: 242
Poster day: 2
Position: C12

What are the effects of diagnostic imaging on clinical outcomes in patients with low back pain presenting for chiropractic care: a matched observational study

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Research Aim/Objective:
The aim of this study was to determine if diagnostic imaging changes clinical outcomes in patients with non-specific low back pain presenting for chiropractic care.

Research Methods:
A matched observational study using prospective longitudinal observational data with one year follow up was performed in ten primary care chiropractic clinics in Denmark. Participants included patients with a new episode of non-specific low back pain presenting for chiropractic care, who were either referred or not referred for diagnostic imaging during their initial visit. Coarsened exact matching was used to match patients referred for diagnostic imaging with patients not referred for diagnostic imaging on baseline variables including patient demographics, pain characteristics, and clinical history. Mixed linear and logistic regression models were used to assess the effect of imaging on back pain intensity and disability at two-weeks, three-months, and one-year, and on global perceived effect and satisfaction with care at two-weeks.

Results:
2,162 patients were included, with 24.1% referred for imaging. Near perfect balance between matched groups was achieved for baseline variables except age and leg pain. Patients referred for imaging had slightly higher back pain intensity at two-weeks (0.4, 95%CI: 0.1, 0.8) and one-year (0.4, 95%CI: 0.0, 0.7), and disability at two-weeks (5.7, 95%CI: 1.4, 10.0), but the changes are unlikely to be clinically meaningful. No difference between groups was found for the other outcome measures. Similar results were found when sensitivity analysis, adjusted for age and leg pain intensity, was performed.

Discussion:
Diagnostic imaging did not result in better clinical outcomes in patients with non-specific low back pain presenting for chiropractic care. Conversely, there was a trend towards slightly poorer outcomes in the imaging group; however, differences were of unlikely clinical importance. These results support that current guideline recommendations against routine imaging apply equally to chiropractic practice.

Submission #: 101
Poster day: 1
Position: C23

Spinal cord stimulators: an analysis of the adverse events reported to the Australian Therapeutic Goods Administration

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Research Aim/Objective:
To describe the adverse events relating to spinal cord stimulators reported to the Therapeutic Goods Administration (TGA) of Australia between July 2012 and January 2019.

Research Methods:
Adverse events were coded by seriousness, severity, body system affected, type of event, action taken and attribution of fault. Data on the number of stimulators implanted and removed was sourced from the Admitted Patient Care Minimum Data Set.

Results:
Five-hundred and twenty adverse events were reported for spinal cord stimulators. The majority of events were rated as severe (79%) or life threatening (13%). Device malfunction was the most common event (56.5%). The most common action taken in response to an adverse event was surgical intervention with or without antibiotics (80%). The ratio of removals to implants was 4 per every 10 implanted.

Discussion:
Spinal cords stimulators have the potential for serious harm and each year in Australia many are removed. In view of the low certainty evidence of their long term safety and effectiveness, our results raise questions about their role in providing long-term management of intractable pain.

Submission #: 9
Poster day: 2
Position: C11

A survey evaluation of sufficiency of pain curricula in Australian Accredited Exercise Physiology degrees

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Research Aim/Objective:
This cross-sectional study evaluated the nature of pain curriculum being taught in accredited exercise physiology degrees across Australian universities and assessed its usefulness for preparing exercise physiologists to treat people with chronic pain

Research Methods:
Separate self-administered online surveys of graduates and universities were conducted. The purpose of the graduate survey was to determine how prepared graduates believed they were at the end of their degree to treat people with chronic pain. The survey consisted of four parts: 1) participant characteristics, 2) degree characteristics, 3) pain assessment and management competencies, and 4) other. The purpose of the universities survey was to determine how pain management curriculum is addressed in Accredited Exercise Physiology degrees in Australia. The survey consisted of three parts: 1) degree characteristics, 2) general questions on pain curriculum taught in the degree, and 3) targeted pain science curriculum questions to assess competency domains as outlined in the IASP criteria for physical therapy.

Results:
Median (interquartile range) instruction time on pain curriculum was 12 (7.25-18.75) hours. Few universities (30%) were aware of the guidelines for physical therapy pain curricula, although most (70%) agreed their degrees contained adequate instruction on pain assessment and management. When asked to reflect back to when they were a new graduate (i.e., within 1-2 years of finishing their degree), most participants felt their degree did not adequately prepare them to treat people with chronic pain (not prepared at all: n = 22 (28%); very unprepared: n = 18 (23%) somewhat unprepared: n = 18 (23%). Indeed, only 2 (3%) and 15 (19%) graduates, respectively, reported feeling very prepared or somewhat prepared to treat people with chronic pain at the end of their degree. Half the graduates (51%) were not aware of the guidelines for physical therapy pain curricula.

Discussion:
There is a disconnect between perceptions of Australian universities and their graduates regarding the sufficiency of pain curriculum taught to student exercise physiologists. Benchmarking pain curriculum in Australian university programs against relevant international recommendations may enhance the suitability of pain curricula taught to exercise physiologists, thereby better preparing new graduates to treat people with pain.

Submission #: 225
Poster day: 2
Position: D14

Exploring the social determinants of health outcomes for adults with LBP or spinal cord injury and persistent pain in Australia: a mixed methods study

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Research Aim/Objective:
Our specific objectives were i) to investigate relationships between the social determiniants of health (SDH) and health outcomes (ii) to explore how socio-economically disadvantaged adults with persistent LBP or persistent pain following SCI experience healthcare, and (iii) to explore their perceived barriers and facilitators to receiving optimal pain care.

Research Methods:
We used a mixed-methods parallel convergent study design with quantitative and qualitative components. Individuals were eligible for inclusion if they were aged 18 years or over and experienced either persistent LBP (pain occurring daily for three months or more) or had a history of SCI and currently experienced persistent pain. For the quantitative study, participants completed an online survey to collect data concerning their health status, social status and pain experience. For the qualitative study, semi-structured interviews explored in-depth, the healthcare experiences of participants. We conducted descriptive thematic analysis of the data to develop key themes that described the experience of participants. We carried out the qualitative and quantitative investigations independently, analysed the findings separately and then integrated the results in a final interpretative stage.

Results:
One hundred and sixty-four participants completed the survey and their results were included in the analysis; 96 had persistent LBP and 68 had persistent pain following SCI. Our results demonstrated strong relationships between greater self-reported social isolation and higher levels of pain interference, greater psychological distress and lower quality of life. Participants with high pain intensity had a significantly larger number of SDH than participants with low pain intensity ($p=0.004$). We conducted 17 semi-structured interviews; ten with adults with persistent LBP and seven with adults with persistent pain following SCI. Thematic analysis of the interviews identified five themes: active strategies are important for well-being; low agency; facilitators of optimal care; barriers to optimal care; and health inequities. The breadth and depth of the data from this mixed methods study allowed us to generate five meta-inferences that addressed the research objectives.

Discussion:
This research highlights the importance of clinicians recognising the socially determined aspects of their patients' health status and considering the potential impact of the SDH on pain, experiences of care and related health outcomes. Our study endeavours to advance understanding of the perceptions, needs and circumstances of those seeking pain care as an important component of pursuing health equity for adults with persistent pain and disability.

Submission #: 10
Poster day: 1
Position: A11

The association between different trajectories of low back pain and degenerative imaging findings in young adults from the Raine Study

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Research Aim/Objective:
The association between lumbar spine imaging findings and low back pain remains unclear due to important limitations of previous studies. This study investigated the association between lumbar spine MRI findings and previous low back pain 5-year trajectories in young adults based from the Raine Study.

Research Methods:
Young adults from the Raine Study, a cohort of 2,868 children born between 1989 and 1991, were recruited at the age of 27. We identified 78 'case' participants with a previously identified 'consistent high disabling low back pain' longitudinal trajectory and 78 'control' participants from a longitudinal trajectory with consistently low pain, matched for sex, age, body mass index, physical activity levels and work physical demands. All participants had a lumbar MRI scan at age 27, and imaging findings were extracted (e.g. disc degeneration/herniation, endplate abnormalities, facet changes, stenosis, etc). Primary analyses used logistic regression to investigate the relationship between each imaging finding and being a case or control. Secondary analyses explored those relationships based on the number of spinal levels with each MRI finding.

Results:
The odds for being a case compared to a control were higher in those with disc degeneration (Pfirrmann grade >3; OR=3.21, 95%CI:1.60-6.44; p=0.001) or those with a herniation (OR=1.90, 95%CI:0.96-3.74; p=.065). We also found that the association became substantially stronger when either disc degeneration or herniation was present at two or more spinal levels (OR=5.56, 95%CI:1.97-15.70; p=0.001, and OR=5.85, 95%CI:1.54-22.25; p=.009, respectively). The other investigated MRI findings were not associated with greater odds of being a case, suggesting that they manifest as part of the aging process and are not related to the pain profiles of young adults.

Discussion:
This study of young adults found MRI reported disc degeneration and disc herniation were associated with a history of disabling LBP over a 5-year period. In addition, these relationships were stronger when the MRI finding was present at 2 or more lumbar levels. These findings suggest that lumbar disc degeneration and herniation may be important contributors to LBP and further investigation of their potential prognostic and causal roles is indicated.

Submission #: 133
Poster day: 1
Position: C13

The prevalence of neck pain and headache and their associated factors in Chinese adolescents

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Research Aim/Objective:
Neck pain (NP) and headache are common among adolescents. One Brazilian study found that physical inactivity was related to NP in teenagers although it was not validated in other populations. This study aimed to determine the prevalence of NP and headache, and their associated factors in Chinese adolescents.

Research Methods:
An online survey was distributed to students in two secondary schools (aged 11-18 years) who obtained parents' consent for their study participation. The survey consisted of four parts: (1) a modified Nordic Musculoskeletal Questionnaire; (2) KIDSCREEN; (3) Rosenberg Self-esteem Scale, and (4) Pediatric Daytime Sleepiness Scale (PDSS). KIDSCREEN evaluated the health-related quality of life (HRQOL) of teenagers, while Rosenberg Self-esteem Scale and PDSS assessed adolescents' self-esteem and daytime sleepiness, respectively. The 12-month prevalence rates of neck pain and headache were calculated. Characteristics of adolescents with and without neck pain/headache were compared by separate independent t-tests. Factors associated with neck pain/headache were analyzed by separate stepwise logistic regression models. The alpha level was set at 0.05 for all tests.

Results:
229 participants completed the survey (mean age: 14.5+1.7 years; 53.3% response rate). The 12-month prevalence of NP (39.3%) and headache (31.0%) were high. Adolescents with NP had significantly shorter durations of daily light-intensity physical activity (25.9 vs 39.5 minutes) or daily walking/cycling (28.9 vs 37.2 minutes) than non-NP counterparts. Adolescents with headache were significantly older (14.9 vs 14.3 years) and heavier (51.6kg vs 49.2kg) and experienced more pain-related interferences of daily activities (3.2/10 vs 2.6/10) or recreational activities (3.3/10 vs 2.6/10) than asymptomatic counterparts. Regression models showed that not meeting World Health Organization recommended physical activity level for children/adolescents and the presence of an additional painful region were associated with a higher 12-month prevalence of NP/headache (OR=2.73/3.60 and OR=1.79/1.56, respectively). Further, an additional hour of smartphone usage during weekends was associated with a higher 12-month prevalence of headache (OR=2.03).

Discussion:
While NP and headache are common among Chinese adolescents, only headache had significant self-perceived pain-related negative effects on daily activities/recreational activities of Chinese adolescents. Given the strong associations between physical inactivity (e.g., decreased walking/cycling) and NP/headache in the current study and the known effects of exercises in improving NP and tension-type headache in adults, future studies are warranted to investigate whether increased physical activity can reduce NP and headache in adolescents.

Submission #: 215
Poster day: 2
Position: D13

Surgical versus nonsurgical treatment for sciatica: a systematic review and meta-analysis

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Research Aim/Objective:
To determine the effectiveness of surgery compared to nonsurgical treatment for sciatica due to lumbar disc herniation.

Research Methods:
Searches will be carried out on electronic databases including MEDLINE, EMBASE, CINAHL, and Cochrane Central Register of Controlled Trials. Randomised controlled trials (RCTs) of any design (e.g., parallel, cross-over, factorial) will be included.

Participants
Adult participants with sciatica (radicular pain, radiculopathy, or other terms of radiating leg pain) due to a herniated disc (diagnosed through radiographic examination) will be included.

Intervention
Surgical treatment (e.g., microdiscectomy) using any approach (e.g., open or minimally invasive).

Comparator
Conservative and non-pharmacological treatments, pharmacological treatments, interventional treatments, or combinations of these.

Outcomes
Primary outcomes are leg pain intensity and disability. Secondary outcomes: back pain intensity, health related quality of life, adverse events, and satisfaction with treatment.

Results:
The protocol of this systematic review has been registered (https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42021269997). Full review is in progress and preliminary results will be available by October.

Discussion:
Full review is in progress.

Submission #: 116
Poster day: 2
Position: D12

The environmental impact of healthcare for musculoskeletal conditions: a scoping review

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Research Aim/Objective:
To map the available knowledge on what is known about the environmental impact of health care for musculoskeletal conditions in a scoping review.

Research Methods:
We searched electronic databases of MEDLINE and Embase using keywords for environmental health and musculoskeletal conditions.
Selection criteria: We included published papers that measured or explicitly discussed the environmental impact of healthcare or health support services for any musculoskeletal condition. This could include the impacts of the care (e.g. imaging, hospital visits, surgery, pharmaceutical production) on indices of climate change or global warming. All publication designs were eligible for inclusion. We did not impose any date or language restrictions.
Data collection and analysis: For each study, data were independently charted for author, year, country, research field, topic of publication, study design, aim/s, results and conclusion and presented as a narrative synthesis.

Results:
Of 11,498 publications retrieved and screened, 26 full-text articles were assessed for eligibility and 14 were excluded. Twelve publications were eligible for inclusion. All included papers were published from 1994 to 2021, with the majority (n=8, 66.6%) published within the past 3 years. Eight of the 12 publications were editorials and four were original research studies relating to orthopaedic surgery. The original research studies were hospital waste audits that quantified the mass and volume of surgical waste (n=3) and one study explored the customisation of disposable surgical products to reduce waste without affecting surgical quality and safety. Four editorials described a need for the physiotherapy profession to address the environmental impacts of care.

Discussion:
Despite an established link between healthcare and greenhouse gas emissions we did not find any direct empirical data estimating the actual environmental impact of care for MSK conditions. Four original research studies investigated waste in orthopaedic surgery, however, none of these studies investigated well recognised contributors of greenhouse gas emissions in healthcare. Raising awareness of the environmental impacts created at a health service level may lead to behaviour changes surrounding care for MSK conditions.

Submission #: 249
Poster day: 2
Position: D11

Medical record review of admitted patients with LBP: identifying patients potentially eligible for a novel virtual hospital model of care

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Research Aim/Objective:
There is a dearth of evidence on how admitted patients with low back pain (LBP) are managed in Australia. This study describes current patterns in hospital care of LBP and informs an implementation strategy for a novel virtual hospital model of care.

Research Methods:
Eligible records included adult inpatient admissions initially diagnosed as non-serious LBP (+/- radiculopathy) in the emergency departments (EDs) of Sydney Local Health District (SLHD). Data from the SLHD STARS Back Pain Application was supplemented by manual review of eMR for a sub-sample of admissions, from January 2016 to September 2020. ED provisional diagnosis was compared to inpatient discharge diagnosis, to determine the proportion of admitted patients with final discharge diagnoses of non-serious back pain, serious spinal or non-spinal pathologies, and other musculoskeletal conditions. Diagnostic codes were used to identify the volume of patients that could be suitable for virtual hospital care. Admission costs, length of stay, imaging and opioid prescription are also described.

Results:
We included 1,983 admissions from ED with a provisional non-serious back pain diagnosis. These admissions were coded to 257 unique ICD-10-AM diagnostic codes and distributed to four broad categories. 57% were discharged with a non-serious LBP (+/- radiculopathy) diagnosis, 14% were found to have a 'serious spinal' pathology, 24% a 'non-spinal pathology', and 5% a 'non-spinal musculoskeletal condition'. 60% of admitted patients were female, and 42% were aged ≤65. Non-serious LBP admissions had a median length of stay of 4 days, with a median total admission cost of $7,000. Regarding imaging, 37% of admissions underwent MRI, 60% X-ray and 43% CT imaging. 61% received at least one opioid analgesic during admission.

Discussion:
Non-serious LBP admissions are common and costly. Excluding serious spinal pathology is critical, given the high prevalence rate in this cohort. However, a substantial proportion of back pain admissions from ED could be eligible for virtual hospital care, equating to ~240 admissions per year in the SLHD. Given that 58% of these cases were aged ≥65 years, development of the virtual model needs to be tailored to this population.

Submission #: 28
Poster day: 1
Position: B14

Does the biopsychosocial model speak to social justice? Results from a critical review

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Research Aim/Objective:
To investigate how the use of the term 'biopsychosocial' relates to social justice, using the results from our critical review in the area of physiotherapy and low back pain. Social justice refers to the equitable distribution of resources and opportunity of good health among all groups in society.

Research Methods:
We searched articles from Pubmed and Web of Science databases up to October 2020. We included articles that (a) discussed implementation of the biopsychosocial model, (b) pertained to physiotherapy assessment and/or management of low back pain. We used the qualitative method of critical discourse analysis to investigate the underpinning assumptions related to the use of the term 'biopsychosocial' in the selected articles. Critical discourse analysis approaches are concerned with investigating the hidden power relations and ideologies in texts or images and link to micro, meso, and macro level social phenomena. Two investigators independently read through the data set and one provided an external perspective to confirm the final analysis.

Results:
We included sixty-six articles that varied in terms of focus and methodology. The focus incorporated treatment and assessment of low back pain, as well as physiotherapists' beliefs about the biopsychosocial model. The articles had various quantitative and qualitative methodologies including systematic reviews, clinical trials, interviews, surveys, perspective studies and professional issue. Our analysis indicated clear patterns in the way physiotherapy literature conceptualises the biopsychosocial model in low back pain. We identified four relevant discourses in our analysis: 1) conflation of the biopsychosocial with the biomedical model, 2) attention to (mainly behavioural and cognitive) psychological aspects, 3) very little consideration of social and 4) other social justice related dimensions such as cultural and institutional power injustices. Although most articles had more than one discourse evident, the emphasis on biological and certain psychological dimensions were apparent in how articles conceptualised the use of the term 'biopsychosocial' in low back pain.

Discussion:
Exclusion of social structure and power considerations suggests this narrow application of the biopsychosocial model is ill suited to supporting clinicians in attending to social justice. Conceptualisation of the biopsychosocial model in physiotherapy might promote an individualistic approach to health and silence diverging context-based political, social, and economic considerations that contribute to peoples' health. Our analysis suggests that the biopsychosocial model as a dominant approach requires reconceptualisation; new approaches that prioritise social justice are warranted.

Submission #: 24
Poster day: 1
Position: A13

Characterising the pathological gait signatures of degenerative lumbar spine diseases using inertial wearable sensors – an observational study

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Research Aim/Objective:
In this study we aim to examine the quantitative gait patterns associated with the sequelae of lumbar disc herniation (LDH), lumbar spinal stenosis (LSS) and mechanical low back pain (MLBP) using a chest-based inertial wearable sensor. These pathological 'gait signatures' will be compared to an age-matched control population.

Research Methods:
The present study is a single-centre observational (case-control) study of participants with degenerative lumbar spinal diseases. Eligible patients presenting to Prince of Wales Hospital (Sydney, Australia) with primary diagnoses of LDH, LSS or MLBP were recruited following a semi-structured interview. Clinical (patient-reported outcome measures) and demographic characteristics of participants was also collected by participant questionnaire. Exclusion criteria included infection, cancer, prior lumbar spine surgery at the index level, and presence of gait-altering pathologies of the knee, hip or neurological system. Spatial, temporal, asymmetry and variability parameters of gait were compared with age-matched controls. All participants were fitted at the sternal angle with an inertial measurement unit (IMU), MetaMotionC (Mbientlab Inc., USA) and walked unobserved (at self-selected pace) along a (obstacle-free, carpeted) hospital corridor for 120m.

Results:
A total of 88 case and 80 control participants consented for inclusion. Following age-matching, no significant differences were present in participant characteristics (age, body mass index, smoking, diabetes). Gait in all lumbar spine groups (LDH, MLBP and LSS) involved increases to temporal gait metrics (step time, stance time, swing-time, double-support time and single-support time) and reductions to spatial features (gait velocity, step length) of gait. Notably, LDH group (n=33) had a gait profile of marked asymmetry in terms of step length (+39.1%, p=0.018), step time (+23.0%, p=0.026), stance time and single-support time. LDH group also involved gait variability with increased step length variation (+29.0%, p=0.029). MLBP group was not associated with gait asymmetry, however some gait variability was present in terms of increased single support time variation (+49.0%, p=0.031). LSS group was both asymmetric (+24.9%, p=0.039) and variable (+36.3%, p=0.043) in terms of step length.

Discussion:
Chest-based wearable sensors are capable of detecting gait abnormalities (relative to healthy age-matched controls) present in LDH, LSS and MLBP patients. Wearable-based gait analysis is sensitive to identifying disease-specific gait impairments in lumbar spine patients. Subtypes of degenerative lumbar spine disease have unique 'pathological signatures' of gait impairment. Limitations include sample size, single-centre sampling, no gender-matching. Further real-world testing is required to validate wearable gait analysis as an inexpensive clinical tool for differential diagnosis.

Submission #: 125
Poster day: 1
Position: C14

Barriers and enablers to monitoring and deprescribing opioid analgesics for chronic non-cancer pain: a qualitative evidence synthesis using the Theoretical Domains Framework

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Research Aim/Objective:
To perform a qualitative evidence synthesis of the barriers and enablers of monitoring ongoing appropriateness and deprescribing of opioids for chronic non-cancer pain (CNCP), and to map the findings to the Theoretical Domains Framework (TDF).

Research Methods:
We included English-language primary studies that explored healthcare professional (HCP), patient and the general public's perceptions regarding barriers and enablers to monitoring and deprescribing opioids for CNCP using qualitative methods. We searched MEDLINE, EMBASE, CINAHL, AMED and PsycINFO from inception to August 2020. Two authors independently selected studies, extracted data, assessed the methodological quality of studies using the Critical Appraisal Skills Programme (CASP) tool, and assessed the confidence in the findings using the GRADE Confidence in the Evidence from Reviews of Qualitative Research (CERQual) approach. We used an inductive approach to synthesis of qualitative data and mapped identified themes to TDF domains. PROSPERO reference CRD42019140784.

Results:
From 6,948 unique records identified we included 21 studies involving 209 HCPs and 330 patients. Five barrier themes were identified: limited alternatives to opioids, management of pain is top priority, patient understanding, expectations and experiences, prescriber pressures, and reluctance to change. Four enabler themes were identified: negative effects of opioids and benefits of deprescribing, clear communication and expectations for deprescribing, support for patients, and support for prescribers. 16 barrier and 12 enabler subthemes were identified with the majority graded as high (n=15) or moderate (n=9) confidence. Beliefs about consequences, environmental context and resources and social influences TDF domains were common for both patients and HCPs. Emotion was more salient for patients, whereas HCPs had more themes regarding skills and beliefs about capabilities.

Discussion:
Future implementation interventions aimed at deprescribing opioids should target the patient and healthcare professional barriers and enablers identified in this synthesis.

Submission #: 18
Poster day: 1
Position: A12

It’s ok to move! A randomised controlled trial investigating the effect of a video designed to increase people’s confidence becoming more active despite low back

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Research Aim/Objective:
The objective of this trial is to investigate the efficacy of a public health campaign to increase peoples’ confidence becoming more active despite low back pain.

Research Methods:
This trial is an online community-based two-group, global, randomised controlled trial. We will recruit people with and without low back pain. We developed a social media compatible video to support recommendations for the management of low back pain. Participants in the control group will not have access to the video intervention.
Baseline questionnaires will include questions on demographics and about presence of low back pain, current pain intensity and duration.
The primary outcome, measured immediately, will be item 10 of the patient self-efficacy questionnaire. When completing the outcomes, those without low back pain will be asked to imagine a scenario where they have low back pain. Qualitative evaluation will include questions, regarding the video content, the level of engagement and overall experience.

Results:
We will analyse the data by intention-to-treat. We will use descriptive statistics to characterise the sample. We will report means and standard deviations for continuous variables. We will use frequencies and percentages to report categorical variables. We will conduct linear regression analysis to calculate the effect of being randomized to each group on the primary outcome. We will conduct subgroup analyses to investigate if the size or direction of the effect differs between people with and without low back pain and with low back pain of different durations. We will repeat these analyses with the 1-month follow up data.
No results are available yet

Discussion:
Mass media campaigns are typically not rigorously tested in randomised controlled trials (RCT)s. Most studies investigating the effectiveness of public health campaigns have poor methodological quality, particularly a high risk of selection bias as group randomisation is uncommon. Testing a public health campaign in an RCT can give an insight into its efficacy, engagement and reach.

Submission #: 237
Poster day: 1
Position: D12

What messages predict intention to self-manage low back pain? A study of attitudes towards patient education

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Research Aim/Objective:
This observational study evaluated participants' attitudes towards educational statements and tested whether this predicted intention to self-manage low back pain.

Research Methods:
Participants with or without low back pain who were over 18-years of age and fluent in written English were recruited. Participants completed an online survey asking demographic questions and questions on the presence or absence of low back pain, its duration and intensity. We assessed attitude toward educational statements and conducted linear regression analyses to investigate the relationship between attitude toward each statement and intention to self-manage.

Results:
We recruited 656 participants, n=345(53.6%), with low back pain of varying duration. On average, participants had a positive attitude toward all statements except one; participants with chronic low back pain had a negative attitude toward a statement relating to the cause of low back pain. The effect of attitude on intention to self-manage was dependent on whether someone had low back pain and for how long. For example, increased intention to self-manage was predicted by a positive attitude toward educational statements related to staying active[beta= 0.22(CI 0.11 to 0.33] in participants without pain, statements about reassurance[beta=0.33(CI 0.16 to 0.49] for participants with acute or subacute low back pain, and statements about the severity of back pain[beta= 0.25(CI 0.18 to 0.33] for participants with chronic low back pain.

Discussion:
We noted differences in attitude toward educational messages and individuals' intention to self-manage low back pain depending on pain duration. Self-management could be encouraged with specific reassurance in people with acute or subacute low back pain and education about severity in people with chronic low back pain.

Submission #: 93
Poster day: 2
Position: D21

A content analysis of Australian low back pain (LBP) directives

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Research Aim/Objective:
To understand the landscape of policy directives for Low Back Pain – including policies, clinical guidelines, and information resources. Specific aims were to determine: 1) Where, by whom and for what purpose directives have been created 2) the content and the key messages.

Research Methods:
The review takes a qualitative approach, wherein the data from the directives were analysed to determine their origins, purpose, and key themes.

Document selection
Directives were collected through a comprehensive desktop search, conducted through Google from Australian websites, using a combination of search terms, performed for all states and territories, snowballing websites and through network of the NHMRC Centre of Research Excellence in Low Back Pain.

Data analysis
Data were analysed using inductive qualitative content analysis in the form of thematic analysis. A combination of emergent coding and structured coding was performed. During structured coding, category labels were formed following open coding. Codes that represented the whole data emerged, and these were grouped into subthemes/categories.

Results:
We found 75 directives in total which included fifty-three information sheets aimed at either care providers or patients. The directives were produced by universities, not-for-profit organizations, federal/State government, hospitals, religious, professional, and private organisations. The documents varied greatly in their types and form, from models of care to clinical tools.
The following four subthemes emerged from the data: Patient consultation, pain management, patient education, and important messages. The important messages delivered were 'Avoid smoking, weight gain and sleep healthy', 'Think positively, learn about back pain and acceptance', 'Stay at work if possible and engage with family and friends', 'Pace activities and exercise', 'Pain does not mean more damage', 'X-rays, CT, and MRI are not necessary in most cases,' 'Surgery is rarely needed, 'Seek help early- both medical and psychological', 'Use pain medications when needed with expert advice, 'Be aware of the signs and symptoms requiring medical help.'

Discussion:
Though there are a variety of documents, developed by various organisations, there is paucity of MOC and an excess of information sheets, which is important as MOC are important means to improve musculoskeletal care. The quality and implicit purpose of information sheets vary drastically and there is need for more authoritative sources meeting the needs of care providers and the information websites need to be evaluated for their evidence-based nature and quality, before release.

Submission #: 255
Poster day: 2
Position: D22

Measurement properties of the Patient-Specific Functional Scale in musculoskeletal conditions: an updated systematic review

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Research Aim/Objective:
The Patient-Specific Functional Scale (PSFS) is a widely used patient-reported outcome measure in management of back and neck pain. In this update, we aimed to systematically review (a) measurement properties of the PSFS (validity, reliability, responsiveness), (b) interpretability, (c) acceptability and feasibility, and (d) current uses of the PSFS.

Research Methods:
We used recent COSMIN guidelines and searched 11 databases for published primary articles that either assessed measurement properties of PSFS or used the PSFS. Two independent reviewers screened all records, extracted data, performed risk of bias assessment, and GRADE assessments. We then qualitatively summarized findings for each measurement property in different health conditions. This study was pre-registered in Open Science Framework. We screened 985 articles and included 57 articles on measurement properties of the PSFS (including 8 studies on neck pain and 11 studies on low back pain).

Results:
Twenty-eight studies with sample sizes ranging from 6 to 99 participants studied the test-retest reliability of the PSFS. Based on qualitatively summarized data, we found that the PSFS had sufficient reliability (i.e., ICC values >0.70) (low to moderate certainty), and sufficient responsiveness (moderate to high certainty) but construct validity was uncertain. Several studies concluded the PSFS demonstrates comparable responsiveness to region-specific outcome measures such as Upper Extremity Functional Index and Neck Disability Index (NDI) with some suggesting it is more responsive than region-specific measures in low back pain and neck pain. Median MIC values ranged from 1 point to 3 points.

Discussion:
Our findings regarding uncertain validity are based on our a priori hypotheses. Given the patient-specific nature of the PSFS, the low correlations with comparator PROMs may not discount the PSFS as a valid tool, but may instead demonstrate that the PSFS measures physical function in a different way than condition-specific measures. Future studies may consider head-to-head comparisons of the contents of PSFS with item-bank based measures.

Submission #: 167
Poster day: 1
Position: C11

The impact of physical activity type and intensity on medication use and activity limitation for low back pain: a cohort study with one-year follow up

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Research Aim/Objective:
The aim of this study was to assess the relationship between different types (eg. leisure, work-related) and intensities (eg. moderate/vigorous) of physical activities assessed objectively and through self-reported tools, and the frequency of medication use and reports of activity limitation in people with low back pain.

Research Methods:
This cohort study forms part of the AUstralian Twin low BACK pain study, examining the impact of physical activity in low back pain related outcomes. Information on demographics, anthropometrics, low back pain, and health-related factors (physical activity, depression, anxiety, stress and sleep quality) were collected at baseline through online self-reported questionnaires, as well as device-based physical activity data. Data on the total number of episodes of activity limitation and medication use for low back pain were collected weekly for during a period of one year. Negative binomial regression models were conducted separately for each type of physical activity and were analysed both continuously and categorically (high and middle vs low reference group). Results were presented as Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI).

Results:
From an initial sample of 366 participants, a total of 140 individuals recorded episodes of activity limitation and 86 participants reported episodes of medication use to manage their low back pain across the follow up period. The average number of activity limitation episodes was 6.7 weeks, and 8.8 weeks on average for the number of medication use episodes for low back pain. The negative binomial regression models for activity limitation episodes highlighted significant associations for sedentary time (IRR 1.04, 95% C.I 1.01–1.09) and leisure activity (incidence risk ratio .94, 95% C.I .81–.99). For medication use episodes, moderate-vigorous physical activity time (IRR .97, 95% C.I .96–.99) and spinal load at work (IRR 1.02, 95% C.I 1.01–1.05) were shown to be significant. No other types of physical activity were found to be significant by the negative binomial regression models for episodes of activity limitation or medication use.

Discussion:
The results of this study show that different types and frequencies of physical activities have impact differently on activity limitation associated with low back pain and medication intake. Results highlight the importance of supporting patients to engage in moderate-vigorous leisure physical activity and minimising sedentary time or time spent in activities involving high spinal loads to reduce the risk of activity limitation and the need for medication use in people with low back pain.

Submission #: 169
Poster day: 2
Position: D23

Deprescribing paracetamol in pain conditions: a scoping review

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Research Aim/Objective:
To collate current evidence on deprescribing paracetamol in pain conditions and inform future strategies for paracetamol deprescription.

Research Methods:
A scoping review design was conducted, searching MEDLINE, Embase, CINAHL, PsycINFO, Cochrane Central Register of Controlled Trials, and JBI Ovid databases via Ovid from inception to July 2020. Our population was adults in pain, taking paracetamol. We included original clinical studies that included a measure of paracetamol intake, with an intentional or unintentional deprescribing strategy. All comparator groups were eligible. Our primary outcomes were to identify: 1) the characteristics of strategies used to deprescribe paracetamol and 2) the comparative effectiveness of paracetamol deprescribing strategies. Our secondary outcomes were to investigate: 3) the number of adverse events and 4) barriers to deprescribing in the included studies. A risk of bias assessment was also incorporated in this review for the included studies.

Results:
After screening for titles, abstracts, and then full texts, 16 original articles were included. Deprescribing strategies were grouped into 5 categories: (1) Pharmacological, (2) Psychological, (3) Physiological, (4) Policy, and (5) Combination. We found strategies were predominately consumer-focused, conducted in community settings and involved individuals experiencing musculoskeletal pain (such as low back pain and osteoarthritis). A total of twelve studies investigated interventions targeting dose reduction and four studies examined interventions focusing on discontinuation of paracetamol. The most common strategies used to deprescribe paracetamol in pain conditions were physiological strategies, followed by psychological strategies. All included studies demonstrated some level of effectiveness of the intervention used to deprescribe paracetamol in a pain conditions, although the effectiveness of deprescribing strategies were highly variable, ranging from the majority of participants discontinuing their paracetamol use, to less than 10% reducing their paracetamol use upon the latest follow-up.

Discussion:
Our findings should be considered as conservative estimates of the potential for strategies to deprescribe paracetamol. The majority of strategies used in our review were focused on improving other clinical outcomes such as pain and disability, rather than trying to target a reduction or discontinuation of paracetamol intake. There are clear opportunities for prospective trials to be designed more purposely and primarily focused to reduce paracetamol for specific pain conditions where deprescription is appropriate.

Submission #: 171
Poster day: 2
Position: D24

(C)onsumer focused (E)ducation on p(A)racetamol (S)ide (E)ffects, i(N)adequate (O)utcomes and (W)eaning (CEASE NOW) for individuals with low back pain: protocol for a feasibility study

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Research Aim/Objective:
To investigate: (1) the acceptability and experience of participants with the pharmacological education tool, (2) feasibility of recruitment, data collection and outcome measure completion, and (3) participant's willingness to participate in a randomised control trial.

Research Methods:
This will be a single group, repeated measures, mixed methods feasibility study design. We will recruit individuals remotely from Australian consumer pain organisations. Included participants will be adults experiencing low back pain and self-report consumption of paracetamol for pain relief weekly for at least one month. The intervention is a booklet containing education about the safer and more effective alternatives to paracetamol available to treat low back pain. Online questionnaires will be completed at baseline and then one-week and one-month after reading the pharmacological educational tool. A semi-structured interview will also be completed for each participant after completing the study. Quantitative data will be analysed on variability, expressed through means and 95% confidence intervals. Qualitative data will be explored through thematic content analysis.

Results:
Based on the results of this study, one of the following decisions will be made: (1) the study is not feasible, and therefore should not proceed to a randomised control trial; (2) the study is feasible, but modifications are required; (3) the study is feasible, and no modifications are required. This study will be judged as feasible without modification if, 1) a total of 20 eligible participants are recruited within three months of initial advertisement, 2) the study design and pharmacological education tool are found to be acceptable by the majority of participants, and 3) there is less than 20% of missing data for secondary outcomes, and a minimum of 85% follow-up rate for enrolled participants.

Discussion:
No previous study has investigated the feasibility of a pharmacological education tool for individuals using paracetamol to manage their low back pain. Consumer education on appropriate paracetamol use could increase the self-efficacy of individuals with low back pain to better self-manage their condition.

Submission #: 168
Poster day: 1
Position: D14

GABA+ A potential marker of pain- gaining a better understanding of pain neurochemistry

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Research Aim/Objective:
This study aimed to establish whether increased brain GABA+ levels might represent an underlying mechanism of chronic pain. Understanding mechanisms of chronic pain can serve to improve treatment outcomes through identification of therapeutic targets, the identification of neurochemical phenotypes within a pain condition and neurochemical phenotypes that might predict recovery.

Research Methods:
Using a cross-sectional, case-control design, we recruited people (n=56) with low back pain, whiplash associated disorder with headache (whiplash-headache) and migraine, and compared them with a pool of age-and sex-matched controls (n=22). Participants were required to meet diagnostic criteria, have moderate pain, exceeding 3-months duration. Participants were excluded if they had symptoms in common with the other groups, contraindications to brain imaging, or took medications known to effect GABA. Participants underwent spectral-edited magnetic resonance spectroscopy at 3T in three brain regions (posterior cingulate gyrus (PCG), anterior cingulate cortex (ACC) and the thalamus) to determine GABA plus co-edited macromolecules (GABA+) levels. Data were acquired using the MEGA-PRESS sequence optimized to detect GABA+ and analysed using the Gannet software.

Results:
Results found that GABA+ levels were significantly higher in people experiencing low back pain and migraine compared with controls in the PCG (low back pain [4.88 IU ± 0.46 versus controls 4.58 IU ± 0.34; p=0.02] and migraine [4.89 IU ± 0.62 versus controls 4.62 IU ± 0.38; p=0.02]). Similarly, GABA+ levels were higher and in participants with whiplash-headache compared to controls but did not reach significance (4.78 IU ± 0.43 versus controls 4.63 IU ± 0.44; p=0.07). Overall 75% of participants had increased levels of PCG GABA+ regardless of pain group. GABA+ levels in the thalamus were also higher in the low back pain group compared to controls, but not in the other pain conditions. However, altered levels of GABA+ were not observed in the ACC.

Discussion:
Increased PCG GABA+ levels appear present across pain conditions. Therefore, might reflect a mechanism common across back, neck and headache conditions. This mechanism reflected by the increased GABA+ level appears specific to the PCG and not present in other regions of the brain normally associated with pain. Better understanding of pain at a neurochemical level provides the foundation to identify neurochemical phenotypes and develop treatments that specifically target aberrant brain neurochemistry to improve patient outcomes.

Submission #: 142
Poster day: 2
Position: C24

The impact of lumbar multifidus features, psychosocial factors, and sleep problems on clinical outcomes of individuals with chronic low back pain.

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Research Aim/Objective: Lumbar multifidus (LM) is thought to be related to the onset/maintenance of chronic low back pain (CLBP). However, factors, such as psychosocial determinants, may confound the association between LM and CLBP. Therefore, this study aimed to determine the relationship between LM parameters and CLBP outcomes after considering various psychosocial factors.

Research Methods:
Seventy-eight volunteers with CLBP provided their sociodemographic information and completed a battery of self-reported questionnaires [11-point numeric pain rating scale, Roland-Morris Disability Questionnaire, Hospital Anxiety and Depression Scale (HADS), Pain Catastrophizing Scale (PCS), Fear Avoidance Belief Questionnaire (FABQ), and Insomnia Severity Index (ISI)]. Bilateral resting and contracted thickness of LM at L4-5 and L5-S1 levels were measured using brightness-mode ultrasonography. The percent thickness changes of LM at these levels during submaximal contraction were calculated. Shear wave elastography was used to measure resting stiffness of bilateral LM at L4-5 and L5-S1. The bivariate relation between various factors and CLBP were analyzed by Spearman's rank correlation coefficients. Psychosocial factors and LM parameters that predicted pain intensity/disability in people with CLBP were analyzed by multiple regression models.

Results:
Pain intensity was significantly correlated with PCS-Total (ρ = 0.29, p<0.05), PCS-Helplessness (ρ = 0.34, p<0.05), FABQ-Total (ρ = 0.30, p<0.05), FABQ-Work (ρ = 0.39, p<0.05), ISI (ρ = 0.44, p<0.05) in people with CLBP. Disability was significantly correlated with age (ρ = 0.26, p<0.05), education level (ρ = -0.36, p<0.05), HADS-total (ρ = 0.26, p<0.05), HADS-Depression (ρ = 0.28, p<0.05), PCS-Total (ρ = 0.29, p<0.05), FABQ-Total (ρ = 0.34, p<0.05), FABQ-Physical activity (ρ = 0.24, p<0.05), PCS-Helplessness (ρ = 0.33, p<0.05), ISI (ρ = 0.24, p<0.05) in people with CLBP. The ISI and FABQ-Work scores together significantly predicted pain intensity in people with CLBP, accounting for 21% of variance, while the FABQ-Total scores predicted disability levels, accounting for 34% of variance. No LM parameters were significantly related to pain intensity or disability in these patients.

Discussion:
While altered LM morphometry/biomechanics have been thought to be related to CLBP, our findings, after considering psychosocial factors, have shown that LM parameters are unrelated to clinical outcomes in people with CLBP. Our results substantiate that the presence of fear avoidance behaviors and/or sleep problems are significantly associated with increased pain and disability in people with CLBP. Clinicians should routinely screen for these problems in patients with CLBP and refer them for proper management.

Submission #: 267
Poster day: 1
Position: E22

Do individuals with chronic low back pain have different morphometry/function of lumbar multifidus and spinal degenerative changes as compared to asymptomatic individuals?

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Research Aim/Objective: It remains unknown and under debate, if changes in function/morphometry of lumbar multifidus (LM) is related to chronic low back pain (CLBP) after accounting for various spinal degenerative features. This study aimed to compare the function and morphometry of LM and spinal degenerative changes between people with and without CLBP.

Research Methods: Individuals with (n=78) and without CLBP (n=73) underwent lumbar magnetic resonance imaging and ultrasonography to examine spinal degeneration and LM morphometry. Lumbar disc and facet joint degeneration were graded using the Pfirrmann grading system and a 4-point scale, respectively. Total cross-sectional areas (CSAs) and lean muscle CSAs of LM across L4-S1 levels were manually traced to estimate LM volume using a customized MATLAB program. Brightness-mode ultrasonography and shear-wave elastography were used to measure bilateral resting and contracted thickness, and stiffness of LM across L4-S1 levels, respectively. Percent thickness change of LM during contraction was calculated. Between-group differences in disc/facet degeneration gradings were assessed by chi-square tests. Between-group comparisons of LM morphometry, function, and stiffness were performed using ANCOVA (covariates: age, gender, BMI, other degenerative gradings).

Results:
Individuals with CLBP [median age: 46.0 (interquartile range (IQR): 35.8-54.0) years] and without CLBP [median age: 48.0 (IQR: 30.4-54.5) years] were characterized by more severe disc degeneration at L4/5 (22%) and L5/S1 (33%) levels and facet degeneration at L4/5 (34%) and L5/S1 (31%) levels as compared to asymptomatic counterparts ($p<0.01$). People with CLBP demonstrated significantly greater total volume [$F(1,109)=10.00$, $p=0.00$] and lean muscle volume [$F(1,109)=5.56$, $p=0.02$] of LM at L4/5 level, and CSAs at L4/5 [$F(1,109)=11.409$, $p=0.00$] and L5/S1 [$F(1,110)=5.02$, $p=0.03$) levels than asymptomatic controls. Interestingly, despite no significant between-group differences in lean muscle volume/fatty infiltration/total volume of LM at L5/S1 level, the absolute lean muscle volume at L5/S1 level in patients with CLBP were smaller. Ultrasonography and shear-wave elastography showed no significant between-group differences in resting/contracted thickness and percent thickness change, or stiffness of LM at L4/5 and L5/S1 levels.

Discussion:
People with CLBP show more severe disc/facet degeneration across L4-S1 levels, bigger LM volume/CSA at the L4/5 level than asymptomatic controls. Our LM morphometrical findings “contradict” the traditional understanding of LM changes in people with CLBP. Given that patients with CLBP are heterogeneous, these patients may display diverse LM morphometrical changes. Further research is warranted to determine factors affecting LM changes in these patients.

Submission #: 268
Poster day: 2
Position: E21

Suggestions in Hypnosis to Aid Pain Education (SHAPE): a pilot feasibility randomised controlled trial

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Research Aim/Objective:
Our aim was to develop and evaluate a novel treatment for chronic low back pain (CLBP) that uses hypnosis to enhance pain science education. Objectives included evaluating: (1) the feasibility of undertaking a randomised controlled clinical trial of hypnotically delivered pain science education; and (2) participant-reported acceptability of the intervention.

Research Methods:
Participants with CLBP were recruited from the Pain Management Unit waitlist of a public hospital. They were randomised to receive hypnotically delivered pain science education (hypnotic suggestions to enhance uptake of pain science concepts) or pain science education with progressive muscle relaxation as an attention control, both provided by a trained clinical psychologist. Participants in each group attended two in-person sessions and undertook 4 weeks of at-home activities (workbook activities and audio-recorded hypnosis or progressive muscle relaxation). A priori feasibility and intervention acceptability criteria were set, evaluating timely recruitment, timely completion of in-person treatments (within 2 weeks), completion of home treatment, follow-up retention, treatment compliance, participant burden, assessor blinding, and intervention acceptability. Secondary clinical outcomes were collected at baseline, post-treatment, and at 3- and 6-months.

Results:
Twenty participants were recruited, however, not solely from the hospital; community sampling was required (13 hospital, 7 community). Timely completion of in-person treatments was partially met (60% hypnosis, 50% control). Completion of home treatments could not be reliably assessed (25% returned participant diaries). Completion rate of follow-up assessments was poor (3-months: 40% hypnosis, 60% control; 6-months: 50% hypnosis, 60% control). Most participants did not start new treatments during the trial (50% hypnosis, 80% control). 60% of participants reported high questionnaire burden. Assessor un-blinding occurred for 35% of participants. Notably, most criteria were met in the community sample, but not the hospital sample. Participants rated the intervention format as acceptable (89% hypnosis, 100% control) and content as helpful (67% hypnosis, 78% control). Some participants advocated for additional in-person sessions (n=2 hypnosis, n=3 control). Exploratory comparisons indicated a significant improvement in pain intensity (hypnosis), and pain knowledge and pain interference (both groups).

Discussion:
Protocol modifications are needed before progressing to a full scale trial. Community recruitment may be warranted given most feasibility criteria were met in this sample. Improvements to blinding procedures (including clear instructions to participants) and reducing assessment burden through removal of questionnaires and assessment time-points, which is likely to also enhance retention, are warranted. While cautious interpretation of within group clinical changes is required, such clinical improvements paired with positive treatment acceptability ratings, are promising.

Submission #: 152
Poster day: 1
Position: C12

The effects of opioid and non-opioid pharmacological interventions on sleep in patients with chronic low back pain: systematic review and meta-analysis of randomised control trials

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Research Aim/Objective:
Individuals with chronic low back pain (LBP) frequently report unsatisfactory or inadequate sleep. The aim of this systematic review and meta-analysis was to summarise and assess the effects of opioid and non-opioid pharmacological interventions on sleep in patients with chronic LBP.

Research Methods:
Six databases were searched (Medline, Embase, Scopus, Web of Science, CINAHL and International Pharmaceutical Abstracts) on the 17th of May 2021. Included studies had to use a randomised controlled trial design of participants with non-specific chronic LBP. Those recruiting participants with a specific cause of chronic LBP were excluded. Studies were required to include an opioid or non-opioid pharmacological intervention and report at least one sleep associated outcome. A random effect meta-analysis of standardised mean differences was performed using the Review Manager 5.4.1 software. Subjective sleep outcomes measured at study endpoints were the primary outcome and compared between medication and placebo control groups.

Results:
A total of 1462 titles and abstracts were identified. Following screening and full-text review, 16 full-text articles from 14 studies remained in the qualitative analysis. Of these 14 studies, 12 assessed the efficacy of opioids and two of non-opioid medications on sleep outcomes. A total of 8 studies which directly compared an opioid intervention to placebo were included in the meta-analysis which reported on two subjectively measured sleep domains: 1) sleep quality (n=2051 participants); and 2) sleep interference (n=1324 participants). At study endpoint results showed significantly greater treatment effects in favour of opioid intervention for sleep quality (standard mean difference [SMD] = 0.27, 95% confidence interval [CI] = 0.17 - 0.36), and sleep disturbance (SMD = 0.32, 95% CI = 0.22 - 0.43). Opioid interventions had a probability of improving sleep quality and sleep interference by 61% and 63% respectively, compared to placebo intervention.

Discussion:
Opioid medicines for chronic LBP are effective to improve subjective measures of sleep in patients with chronic LBP. Sleep efficacy appear to be similar to those obtained with the use of current hypnotic sleep medications in LBP patients, questioning the need for the prescription of sleep specific drugs to improve sleep in LBP. Further research of non-opioid and hypnotic medications would elucidate which drugs are most effective for improving sleep in patients with chronic LBP.

Submission #: 244
Poster day: 2
Position: C25

Implementation of a novel risk-based novel clinical PAthway of CarE for common musculoskeletal disorders in primary care; trial protocol

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Research Aim/Objective:
Introduction: Musculoskeletal (MSK) disorders (low back pain, neck pain and knee osteoarthritis) are the highest disease burden in Australia. To address this burden, this study aims to evaluate implementation of a novel risk-based clinical PAthway of CarE (PACE) on patient health outcomes and health professional practise.

Research Methods:
Multi-centre randomised controlled trial. Participants will be stratified for risk then randomised to usual care (n=358) or the Clinical Pathway of care (PACE programme n=358). Low risk pathway participants will receive minimal care supported by a custom designed website (mypainhub.com). High-risk pathway participants will be referred to an allied health clinician with expertise in managing people with MSK conditions (MSK specialist). The MSK specialist will conduct a comprehensive patient-centred assessment then liaise with the primary HCP to determine further care (shared care, specialist care, referred care). Outcomes assessed will include physical health (SF12-PCS), global recovery and cost effectiveness. Embedded observational studies will evaluate patient experience, and health professional practise.

Results:
Preliminary results: 716 participants have been enrolled to date [279/716 (41.5%) high risk and 419/716 (58.5%) low risk, 44% low back pain, 34% knee OA and 22% neck pain]. Hypothesised outcomes for the PACE programme are improved physical health and health service delivery (e.g provide earlier access to more appropriate care for those at high risk).

Discussion:
Development of MyPainHub has supported participants and their HCP's in implementation of PACE. Stakeholder consultation has consolidated relationships between industry, clinicians, researchers and professional bodies. A collaborative network of clinicians capable of scaling the PACE programme across Australia at trial completion will be established.

Submission #: 151
Poster day: 1
Position: E23

Evaluation of a theory-driven physical activity intervention for individuals with whiplash associated disorders using a single case experimental design

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Research Aim/Objective:
People with whiplash associated disorder (WAD) experience considerable variation in physical symptoms and psychological distress. Optimal treatment continues to be a challenge. The aim of the present study was to evaluate the efficacy of a community-located, theory-based intervention designed to promote physically active behaviour in people with persistent WAD.

Research Methods:
A multiple-baseline, single-case experimental design was used to evaluate a 16 week intervention with 12 sessions conducted by an accredited exercise physiologist. Three study group participants were randomised to a baseline period of either 5, 8 or 11 weeks, and three replication group participants were randomised to the same baseline periods. Each intervention session included evidence-based strategies with individualized exercise and lifestyle physical activity (PA) prescription tailored to the participant's knowledge, beliefs, and motivational readiness for regular physical activity. Sessions were conducted in the participant's home or selected community location. The target behaviours were: accelerometer measured habitual PA; pain interference relating to participation in day to day activities; and confidence completing daily tasks in the presence of neck pain.

Results:
At baseline, all six participants had moderate/severe neck disability (neck disability index >30/100) and self-reported low levels of daily physical activity. A structured visual analysis supplemented with Tau-U statistical analyses showed significantly increased accelerometer-measured physical activity in three participants with moderate to large effect sizes (> 0.5), with increased confidence in one participant (ES > 0.5), and reduced pain interference in another participant (ES > 0.7). Changes in other behaviours included clinically important improvements in quality of life for five participants and, in those participants with baseline symptom levels outside threshold levels, improvements in pain catastrophizing and pain self-efficacy.

Discussion:
A community-located, theory-based intervention designed to increase PA adoption provided physical and psychological benefits to individuals with chronic WAD. This type of PA promotion strategy may help address physical impairments and psychological distress commonly experienced in these individuals. Due to the heterogeneous nature of WAD population, the SCED approach was advantageous because insight was gained into treatment-related change at the individual-level of analysis that is not possible with typical group level designs.

Submission #: 156
Poster day: 1
Position: E24

Facilitators and barriers of graded sensorimotor retraining for chronic low back pain: a qualitative study undertaken with a randomised controlled trial (RESOLVE trial)

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Research Aim/Objective: This study aimed to identify facilitators and barriers for engagement with an innovative and comprehensive rehabilitative program informed, in part, by evidence of pain-related alterations in neural processing in people with chronic low back pain. This study will inform treatment optimization and implementation of the RESOLVE approach.

Research Methods: We conducted semi-structured interviews with people with chronic low back pain from the active arm after completion of the RESOLVE trial. We used reflexive thematic analysis oriented by the Theoretical Framework of Acceptability for health care interventions. We selected a purposive sample with diverse characteristics in terms of age, sex, baseline characteristics of pain and changes from baseline to the 18-week follow-up in pain intensity. We used thematic saturation to determine the sample size of the qualitative study. We audio-recorded the interviews and transcribed them manually in Microsoft Word Office. Transcriptions were entered into QRS International's NVivo 10 qualitative data management software to facilitate the analyses.

Results:
We included 20 participants, 45% female, with a median age of 54 years and a median pain duration of four years. We identified nine facilitators and seven barriers for engagement with the RESOLVE intervention according to the seven domains of the framework. Most participants felt supported and encouraged with the intervention and empowered by the knowledge and experiential components of the program. A few participants reported that the program encouraged their active participation. For mots participants, the program aimed to retrain the brain and they approved the combination between face-to-face and self-directed approaches. Most people mentioned that the treatment changed their attitude toward movement, increased function, social participation, and pain control. However, participants highlighted the importance of reinforcing the elements of the program designed to improve the function of the nervous system to reduce pain.

Discussion:
This study identified feelings, beliefs and behaviours that have been proposed to influence the engagement of people in a health care intervention. We classified people's responses into facilitators and barriers for engagement with the innovative and comprehensive rehabilitative program informed by evidence of pain-related alterations in neural processing in people with chronic low back pain. We proposed several recommendations to optimise the treatment.

Submission #: 254
Poster day: 1
Position: B13

The mediating effect of pain catastrophizing on pain intensity: the influence of the timing of assessments

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Research Aim/Objective:
This study aimed to test the effect of the timing of the assessment of pain catastrophizing on its mediating role on pain intensity.

Research Methods:
Causal mediation analysis using data from a randomized controlled trial which included 100 participants with chronic low back pain. The trial found that clinical hypnosis, compared to pain education, reduced worst pain intensity and pain catastrophizing. In model 1, we used data from 2-week follow-up for pain catastrophizing and 3-month follow-up for pain. In model 2, we used data from 3-month follow-up for both pain catastrophizing and pain.

Results:
The intervention had a significant average total effect on pain (−1.34 points, 95% CI −2.50 to −0.13). The average causal mediation effect was significant when pain catastrophizing, and pain were measured at the same time (−0.62 points, 95% CI −1.30 to −0.11) but not significant when pain catastrophizing and pain intensity were measured at different times (−0.10 points, 95% CI −0.42 to 0.09).

Discussion:
The timing of the assessment influenced the mediating role of pain catastrophizing on pain intensity. These results raise questions on the casual role that pain catastrophizing has on pain intensity. Psychosocial interventions such as clinical hypnosis can reduce pain intensity even when there has been no change in pain catastrophizing.

Submission #: 30
Poster day: 2
Position: E21

Identifying generic core outcome domains from core outcome sets (COS) of musculoskeletal conditions: protocol for a systematic review

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Research Aim/Objective:
We aim to identify generic candidate domains from existing musculoskeletal core outcome sets (COSs) for use in the development of future musculoskeletal COSs. In addition, we will assess the quality of the existing COSs using the COS STAndards for Development (COS-STAD).

Research Methods:
We will search the Core Outcome Measures in Effectiveness Trials (COMET) database and four other databases. Studies will be included if they concern the development of a musculoskeletal COS including the terms “outcome domain”, “outcome subdomain” or “outcome”, used in clinical research or clinical practice, for adults, and for any type of intervention. Development quality will be assessed using the Core Outcome Set-Standards for Development (COS-STAD) recommendations. Data extracted will include health condition, intervention, and outcome domains. Principles of COS design will be appraised using 11 standards of the COS-STAD. For this study, primary outcomes will be the mandatory core domains and secondary outcomes will be the important but optional domains from each COS. We will perform descriptive analyses.

Results:
We retrieved 10,110 references from the search, and after the removal of duplicates 9,474 were screened by title and abstract. Following screening, 9,377 were excluded leaving 97 full-text references to be reviewed of which another 52 references were excluded. We included 45 references for further data extraction and analysis. COSs identified included: low back pain, whiplash-associated disorder, shoulder pain, hip and knee pain, osteoarthritis, gout, joint replacement, and rheumatoid arthritis. Data extraction and quality assessment are currently being undertaken.

Discussion:
During the protocol stage, and the selection process, there was ambiguity in the definition of musculoskeletal disorders (e.g., COSs for “pain” without clear association with musculoskeletal conditions). Further, it was difficult to ascertain exactly what constitutes a COS, as several definitions have been proposed. Our primary outcomes will be the core domains recommended within each COS and whether there are generic domains relevant for all COS in musculoskeletal disorders.

Submission #: 271
Poster day: 1
Position: E13

The effects of a single exercise session on pain intensity in adults with chronic pain: a systematic review and meta-analysis

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Research Aim/Objective:
The aim of this systematic review and meta-analysis was to determine if a single exercise session reduces pain intensity in adults with chronic pain; including low back pain and neck pain.

Research Methods:
We searched nine electronic databases and trial registries to identify randomised controlled trials evaluating the effects of a single exercise session on pain intensity in adults with chronic pain compared to a non-exercise control. Literature screening, data extraction, evaluation of risk of bias, and assessment of our confidence in the cumulative evidence were conducted in duplicate for the outcomes of pain intensity and adverse events. We used Version 2 of the Cochrane Risk of Bias tool (RoB 2) to evaluate risk of bias, and we used the GRADE approach to assess confidence in our findings. We performed meta-analyses using the metafor package in R. All meta-analyses were conducted using a random-effects model.

Results:
We included 14 trials, comprising of 39 study arms with 621 adults (52% females). Of the 14 included studies, 8 had sufficient data available for meta-analysis (24 study arms with 392 adults [42% females]). The most common chronic pain diagnosis was osteoarthritic knee pain (4 trials), followed by low back pain (3 trials). Meta-analyses showed no significant changes in pain intensity immediately post-exercise or up to 45-minutes post-exercise with a mean difference on a 0-10 scale of –0.02 (95% CI = –0.06, 0.62; I2 = 77.1%) and –0.17 (95% CI = –0.49, 0.16; I2 = 34.2%), respectively. Eleven studies did not state whether adverse events had occurred, and no adverse events occurred in the three studies that reported adverse events. Two trials were deemed to be at high risk of bias, one was deemed low risk, and five had some concerns. The overall confidence in these findings was low /moderate.

Discussion:
These results illustrate that a single exercise session does not reduce pain intensity immediately or up to 45-minutes post-exercise. Notably, increases in pain were not observed either, suggesting that while pain can present as a barrier to initiating exercise, clinicians can educate patients on the unlikelihood of exercise further increasing pain intensity.

Submission #: 92
Poster day: 2
Position: E24

Strengthening health systems globally for prevention and management of musculoskeletal health conditions: development of a global strategy using a three-phased mixed-methods design

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Research Aim/Objective:
A strategic global response to optimise musculoskeletal health and guide national-level health systems strengthening priorities remains absent. Therefore, we aimed to empirically derive priorities and components of a strategic response to guide global and national-level action, relevant across conditions, setting and lifecourse.

Research Methods:
A mixed-methods, three-phase design was used. Phase 1 was a detailed qualitative study with international stakeholders including researchers, service providers/administrators, civil society representatives, clinicians, people with lived experience as the key informants (KIs). The KIs were recruited as representatives of peak international organisations. KIs characterised the contemporary landscape for musculoskeletal health and priorities for a global strategic response. Phase 2 was a scoping review of national health policies to identify contemporary musculoskeletal policy trends and foci across the 30 most populated nations. Phase 3, informed by phases 1–2, was a global two-round eDelphi where multi-sectoral panellists rated and iterated a framework of priorities and detailed components/actions, including identification of essential actions.

Results:
Phase 1: Thirty-one KIs representing 25 organisations were sampled from 20 countries (40% low- and middle-income (LMIC)). Inductively derived themes were used to construct a logic model to underpin latter phases, consisting of five guiding principles, eight strategic priority areas and seven accelerators for action.
Phase 2: Of the 165 documents identified, 41 (24.8%) from 22 countries (88% high-income countries) and 2 regions met the inclusion criteria. Eight overarching policy themes, supported by 47 subthemes, were derived, aligning closely with the logic model derived in Phase 1.
Phase 3: 674 panellists from 72 countries (46% LMICs) participated in Round 1 and 439 (65%) in Round 2. Fifty-nine components were retained with 10 (17%) identified as essential for health systems globally and 15 (25%) identified specifically for LMICs. A total of 97.6% and 94.8% of panellists agreed or strongly agreed the framework was valuable and credible, respectively, for health systems strengthening.

Discussion:
An empirically derived framework, co-designed and strongly supported by multi-sectoral stakeholders, can now be used as a blueprint for global and country-level responses to improve musculoskeletal health and prioritise health system strengthening initiatives. Further exploration of issues and priorities relevant to LMICs is warranted.

Submission #: 89
Poster day: 1
Position: E22

The relationship between continuity of care with a primary care provider and duration of work disability for low back pain: a retrospective cohort study

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Research Aim/Objective:
To understand how continuous the care from a general practitioner is for workers with low back pain, identify factors associated with continuity of care in this population, and investigate if continuity of care is associated with working time loss.

Research Methods:
The study sample comprised a retrospective cohort of 17,994 Australians with an accepted workers' compensation claim for low back pain, at least four general practitioner services, and greater than two weeks working time loss. Continuity of care was measured with the Usual Provider Continuity index, and classified as complete, high, moderate, or low. Ordinal logistic regression models examined factors associated with Usual Provider Continuity score. Quantile regression models examined association between duration of working time loss and Usual Provider Continuity, in four groups with different volumes of general practitioner services.

Results:
Complete continuity of care was experienced by 33.8% of workers, high continuity of care by 37.7%, moderate continuity of care by 22.1%, and low continuity of care by 6.4%. Higher Usual Provider Continuity was associated with fewer general practitioner services, older age, urban areas, occupation, and workers' compensation jurisdiction. In quantiles with working time loss over two months, workers with complete continuity of care consistently had shorter durations of time loss.

Discussion:
Better continuity of care with a general practitioner is associated with less working time loss. This effect was most prominent after one to two months of working time loss and persisted after adjustment for age, sex, jurisdiction, remoteness, and occupation. The evidence suggests that CoC with a GP has greatest impact during the sub acute phase of LBP and may play a role in preventing LBP from becoming persistent.

Submission #: 303
Poster day: 1
Position: E14

“I’ve learned to look at things in a different way”: exploring patients’ perspectives on participation in physiotherapist delivered integrated stress inoculation training and exercise for acute whiplash

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Research Aim/Objective:
To explore patient perspectives of the integrated intervention (intervention arm) of a recent randomised clinical trial that found clinically relevant and sustained benefits of a physiotherapist delivered integrated stress inoculation training (SIT) and exercise for people with acute whiplash-associated disorders (WAD) and at risk of poor recovery.

Research Methods:
Twelve patients from the 53 who participated in the SIT and exercise arm of a randomised controlled trial (StressModex RCT) participated in semi-structured interviews. Data were analysed using inductive thematic analysis

Results:
Five main themes were identified: “balance between the physical and psychological components,” “dealing with stress,” “coping with the injury,” “pain relief and return to function,” and “elements enhancing therapeutic alliance.”

Discussion:
The majority of patients found the SIT techniques to be helpful in managing stress and pain, coping with their injury, and returning to function. The patients also found the exercises useful and acknowledged the importance of both the physical and the psychological aspects of whiplash injury.

Submission #: 77
Poster day: 2
Position: E14

Training of physiotherapists to deliver individualised biopsychosocial interventions to treat musculoskeletal pain conditions: a scoping review

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Research Aim/Objective:
Biopsychosocial interventions vary considerably in effectiveness. Whether the differences are explained by the intervention, training and/or competency of physiotherapists, or fidelity of the intervention is unknown. The aim was to investigate the training, competency assessments and fidelity checking of individualised biopsychosocial interventions for musculoskeletal pain delivered by physiotherapists.

Research Methods:
This scoping review used a methodology based within the Arksey and O'Malley's framework. Seven electronic databases were searched between January to March 2019, supplemented in January 2020 by a bridge search. For inclusion, a biopsychosocial intervention needed to be delivered by a physiotherapist, target the multifactorial components of an individual's pain experience, comprising: 1) biomedical factors (physical components, pain physiology), and 2) psychological (pain behaviours, beliefs, cognitions) or social factors (occupational, family). All clinical settings and any region and stage of musculoskeletal pain condition were included. Group interventions, multidisciplinary care in which the physiotherapist did not deliver the psychosocial elements of the intervention, and studies not published in English were excluded.

Results:
Thirty-five full text peer-reviewed papers, with an individualized biopsychosocial intervention were included. The reported details of the included studies overall were sparse and highly variable. Only four studies reported all components of the TIDieR checklist. There was a broad spectrum of training content and delivery. More sophisticated training involved workshops combining didactic and experiential learning, over longer durations with supervision and feedback. Less sophisticated training was brief, involving lectures or seminars, with no supervision or feedback. Fifteen studies had active experiential elements, only 3 used real patients. Competency assessments were reported in 12 studies, with only 1 study using a competency checklist. Fidelity testing was reported in 22 studies. Training in some interventions may not have facilitated the implementation of skills or techniques to enable the paradigm shift and behaviour change required for physiotherapist to effectively deliver a biopsychosocial intervention.

Discussion:
This study highlighted problematic reporting, training, assessment of competency and fidelity checking of physiotherapist-delivered individualised biopsychosocial interventions. Findings here highlight potential reasons for the large discrepancy in effect sizes across interventions and areas for improvement in training for future interventions, including a proposed reporting guideline. These findings can help inform future training programs to robustly test the efficacy of biopsychosocial interventions for people with musculoskeletal pain.

Submission #: 60
Poster day: 2
Position: E11

Are positive lifestyle behaviours, and positive emotional health factors associated with low back pain resilience?

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Research Aim/Objective:
This study evaluated the relationship between positive lifestyle behaviours, and emotional health factors on low back pain resilience assessed as recovery from low back pain and low back pain sustainability.

Research Methods:
This retrospective longitudinal cohort study utilised participants from the Washington State Twin Registry (WSTR) in USA. The main outcome was low back pain resilience, assessed as recovery (bouncing back), and sustainability (enduring and continuing in the face of pain). A total of 1065 participants with a previous history of low back pain were included.
Predictors: A positive lifestyle behaviour score (0-10) was built using data available for BMI, physical activity, sleep, smoking status, and alcohol consumption. A positive emotional health score (0-6) was built using data available for depressed mood, perceived stress, and active coping.
Resilience outcomes: Recovery was defined as the absence of pain at follow up, and sustainability was assessed through a function/sustainability score (utilising questions regarding task accomplishment, activity limitation and interference to

Results:
After adjusting for covariates there was no relationship between the combined positive lifestyle behaviour score (OR 0.95, 95% CI = 0.87 – 1.03), or the positive emotional health score (OR 0.93, 95% CI = 0.84 – 1.03) and the likelihood of recovering from low back pain at follow–up.
After adjusting for covariates there was a positive association between greater positive lifestyle behaviour scores (β 0.20, 95% CI=0.04 – 0.60), and greater positive emotional health scores (β 0.22, 95% CI=0.00 – 0.43) and greater levels of sustainability.
These results were supported by a within-twin analysis controlling for familial and genetic confounders.

Discussion:
People who adopt optimal lifestyle behaviours such as moderate physical activity, adequate sleep, non-smoking, minimal alcohol consumption, and a healthy BMI as well as positive emotional factors are more likely to be resilient and function better in society despite their low back pain.

Submission #: 140
Poster day: 2
Position: E23

Cultural validation and improving predictive validity of the Keele Start Back Tool in Dutch primary care

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Research Aim/Objective:
Our aim was to translate and evaluate the (predictive) validity of the STarT Back Screening Tool (SBT) in low back and neck pain primary care patients in The Netherlands. In addition, we aimed to improve the predicitive validity.

Research Methods:
A prospective cohort study. General practitioners and physiotherapists included adult patients with low back or neck pain. The SBT was officially translated to Dutch and modified to neck pain. Patients completed a baseline and a follow-up questionnaire at 3 days and 3 months, respectively. We assessed the construct validity between the SBT and the reference questionnaires (Pearson's correlation), reproducibility (quadratic weighted kappa, specific agreement), predictive validity for persisting disability at 3 months (relative-risk ratio (RR)) and content validity (both floor and ceiling effects). Improvement of the predictive validity was done by a) changing the cut-off values based on receiver operating characteristic (ROC) curves; b) replacing items of the SBT with ones from the original questionnaires and c) adding new items.

Results:
Low back pain. Of all 184 patients, 52% were “low-risk”, 38% “medium-risk” and 10% “high-risk”. Kappa was 0.65 and the specific agreements 82% for “low-risk”, 53% for “medium-risk” and 33% for “high-risk”. Predictive validity for persisting disability for “medium-risk” was RR=1.8 (95%CI: 1-3.1) and 2.7 (95%CI: 1.4-4.9) for “high risk” compared with “low-risk”.
The predictive validity improved when we changed the cut-off of the total score to ≤2 and of the subs-core to ≥5, as well as adding the item “duration of the complaints”.
Neck pain. Of all 100 patients, 58% were “low-risk”, 37% “medium-risk,” and 5% “high-risk”. Kappa was 0.58 and the specific agreements 91% for “low-risk” and 67% for “medium-risk”. Predictive validity for persisting disability for “medium-risk” was RR=1.5 (95%CI: 0.9-2.4) compared with “low-risk”.
Overall, the construct validity was moderate to high, and no floor and ceiling effects were present.

Discussion:
For practical reasons, the patients filled out the baseline questionnaire after receiving the first treatment/consultation instead of before it.
The SBT has been successfully translated into Dutch and modified to fit patients with neck pain. For low back pain, the psychometric analysis showed acceptable results and is regarded a valid screening tool in Dutch primary care. The predictive validity improved by adding the item “duration of the complaints” and changing the cut-off values.

Submission #: 158
Poster day: 2
Position: C13

From protection to non-protection: a mixed methods journey of 12 people with disabling non-specific low back pain receiving Cognitive Functional Therapy

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Research Aim/Objective: Understand how 12 people with persistent, disabling low back pain conceptualise relationships between movement, posture, psychological factors, pain, and activity limitation, and how this conceptualisation changes following Cognitive Functional Therapy intervention. Further, we aimed to explore how quantitative changes in movement, posture, psychosocial factors, pain, and activity limitation integrate with

Research Methods: We used a pre-post convergent mixed-methods design in the context of an existing replicated single-case design involving 12 people with persistent, disabling non-specific low back pain. Semi-structured qualitative interviews were conducted with each participant before and after a 12-week physiotherapy-led Cognitive Functional Therapy intervention. Data were analysed using the framework of interpretive description. Qualitative findings were integrated with individualised measures of movement and posture collected using wearable sensors on a weekly occasion during the 5-week baseline and follow up-periods. Self-report questionnaires collecting pain, activity limitation, and psychological factors were also measured before and after the intervention.

Results:
Strong movement and postural beliefs were identified during the baseline interviews. Lived experiences of tension and stiffness characterised the embodiment of 'nonconscious protection', while healthcare and societal messages prompted 'conscious protection'. Protection was associated with fear of damage and functional loss. Through diverse journeys, most participants reported significant shifts at follow-up. 'Less protective' movement and postural strategies ('conscious non-protection') helped reduce pain, positively changing psychological factors. Most returned to automatic, normal, and fearless movements and postures ('non-conscious non-protection'), forgetting about their LBP. The majority reconceptualised movement and posture (that was less protective) as a therapeutic recovery strategy rather than a threatening activity. Faster, greater amplitude, more relaxed spinal kinematics and EMG accompanied positive changes in pain, activity limitation, and psychological factors. For some, less protection still required attention, while one participant reported no meaningful shift, remaining protective.

Discussion:
The findings support the multidimensional interplay between movement, posture, psychological factors, pain, and activity limitation in the construction of a protective pain schema in these 12 people with LBP. The progression towards a non-protective pain schema that encompasses less-protective movements and postures, positive shifts in pain-related cognitions and emotions, and improved pain and activity limitation, raises questions about traditional 'protective' narratives. However, further research in larger numbers would prove beneficial and assist in investigating generalisability.

Submission #: 25
Poster day: 1
Position: A14

‘But I’m an individual’ - The relationship between changes in movement and changes in low back pain. A systematic review of single-case designs

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Research Aim/Objective:
To investigate how often changes in an individual’s volitional spinal movement (including muscle activity) are related to changes in their low back pain (LBP) or activity limitation in studies that accommodated the heterogeneity of individuals. Further, we aimed to investigate how movement changed when it was related to LBP improvement.

Research Methods:
We systematically searched MEDLINE, Embase, CINAHL, and AMED databases from inception to January 2020. Two independent reviewers included peer-reviewed single-case designs that reported objectively measured volitional spinal movement and LBP or activity limitation before and after non-surgical or non-pharmacological interventions in people with non-specific LBP. Data extraction and risk of bias scoring was also completed independently by the two reviewers. We assessed the overall quality of evidence using the GRADE tool and descriptively synthesised the results. Movement, pain and activity limitation changes had to exceed a minimal detectable change for the tool used to be considered real change. If a relationship was identified, we also extracted the direction of movement change related to improved pain or activity limitation.

Results:
We included 23 single-case designs (n = 33 participants). We identified low-quality evidence of a relationship between changes in movement and changes in pain or activity limitation 68% of the time (58 out of the 84 times investigated). The causal direction of these relationships remains unclear and investigation of this was not part of this study.
When changes in spinal movement were related to improved LBP, spinal movement range of motion, velocity, or back muscle flexion-relaxation consistently increased (movement became 'less protective') as LBP improved (97% of the time, or 56 out of the 58 relationships observed). Uncertainty about outcome assessor blinding and the potential effect of sampling bias were strong contributors to the low overall quality of the evidence as assessed by the GRADE tool.

Discussion:
Contrary to existing group-level literature, relationships between changes in movement and changes in LBP among single-case designs were frequently observed. This may be due to single-case designs being readily able to accommodate the heterogeneity of LBP and assess individually relevant movements. Congruent with previous literature, movement consistently became 'less protective' when related to LBP improvement; however, directional relationships remain unclear. Studies in larger populations using assessor blinding and repeated measures would provide useful insights.

Submission #: 261
Poster day: 2
Position: E12

Analgesic medicines for adults with acute low back pain: a systematic review and component network meta-analysis

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Research Aim/Objective:
There is uncertainty of the effectiveness of different analgesic medicines available to adults with acute low back pain. This systematic review and component network meta-analysis evaluated the comparative effectiveness of currently licensed analgesic medicines for adults with acute low back pain.

Research Methods:
We included records of randomised trials written in any language that compared an analgesic medicine (or combination of medicines) to another medicine, placebo/sham, or no intervention in adults with non-specific acute low back pain. We synthesised these data using component network meta-analysis to provide estimates of relative effects between all interventions observed in the trials. The primary outcomes were pain intensity following treatment (mean difference between interventions on 0-100 scale) and the number of participants who experienced an adverse event during treatment (risk ratio).

Results:
We included 96 trials (14,982 participants) that compared 69 different medicines (combinations of medicines). Network estimates indicated pregabalin (-18.3 [95% CI -32.7 to -3.8]), tolperisone (-14.9 [95% CI -23.5 to -6.3]), thiocolchicoside (-14.0 [95% CI -19.8 to -8.1]), and carisoprodol (-12.9 [95% CI -23.9 to -1.9]) might have the largest effects on pain intensity compared to placebo. Methylprednisolone (0.47 [95% CI 0.23 to 0.96]), nimesulide (0.56 [95% CI 0.26 to 1.24]), phenobarbital (0.54 [95% CI 0.13 to 2.28]), and etodolac (0.72 [95% CI 0.34 to 1.54]) may have the lowest risks of experiencing an adverse event, relative to placebo. We judged these networks transitive, however the estimates for pain are heterogenous (global $\tau 2$ = 40.38, global I2 = 69.4%), which may indicate unresolved confounding. Overall, estimation of effects and coherence was limited by the available data, and by high risk of bias in the included trials.

Discussion:
Several analgesic medicines may be effective for reducing pain intensity in adults with acute low back pain; however, these confidence intervals span the minimal clinically important difference. Clinical use of this information should acknowledge effects on both pain and safety. The evidence base might be improved by rigorous trials of several comparisons.

Submission #: 263
Poster day: 1
Position: D24

Test-retest reliability and agreement of the Numerical Pain Rating Scale and Visual Analogue Scale in a population with low back pain

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Research Aim/Objective:
The primary aim was to determine the reliability of the Numerical Pain Rating Scale (NPRS) and Visual Analogue Scale (VAS) in a population with low back pain over two defined time periods: approximately 20 minutes, and 24 hours.

Research Methods:
Adults with low back pain, proficient in English and living in Australia were eligible. Data was collected with an online survey, using REDCap. Participants completed a baseline measurement of their pain intensity on both the NPRS and VAS. They were asked to report their pain intensity over the last 24 hours, as well as over the last 7 days on each scale. They then completed a series of distracting questions before completing the NPRS and VAS again in a pseudo-randomised order at the end of the survey (approximately 20 minutes after time point one). Finally, participants completed the NPRS and VAS 24 hours later in a follow-up survey. An intraclass correlation coefficient(agreement) and the standard error of measurement will be calculated for each PROM.

Results:
At time of submission 163 participants have completed the survey (143 chronic, 20 acute patients). Preliminary data analysis of the first 100 participants suggests that the NPRS (ICC of .90) may be more reliable than the VAS (ICC of .72) over a 24-hour time period, although these calculations are underpowered. Once our target sample size is achieved, we will be able to stratify the population into acute and chronic subgroups. We will then calculate the ICC and SEM for each scale in both subgroups. We will also compare the results of the two defined time-periods, approximately 20 minutes (between time-point one and two), and 24 hours (between time point two and three). Finally, we will compare the reliability of these scales when asking patients to recall their pain intensity over the past 24 hours with their recall of their pain intensity over the past 7 days.

Discussion:
There is a lack of high-quality research investigating the reliability of patient-reported outcome measures. The NPRS and VAS are the two most used scales when assessing pain intensity in low back pain trials. Preliminary data analysis suggests that the NPRS is more reliable than the VAS, however a more comprehensive analysis will follow. Pre-registration: https://osf.io/9e6fq.

Submission #: 186
Poster day: 2
Position: E13

Influence of initial healthcare provider on subsequent healthcare utilisation for patients with a new onset of low back pain: a scoping review

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Research Aim/Objective:
To examine the scope of evidence for the influence of non-medical initial provider on healthcare utilisation and outcomes in low back pain.

Research Methods:
Using scoping review methodology, we conducted an electronic search of four databases from inception to June 2021. Studies investigating the management of patients with a new onset of low back pain by a non-medical initial healthcare provider were identified. Pairs of reviewers screened titles, abstracts, and eligible full text studies. We extracted healthcare utilisation and patient outcomes and assessed methodological quality of included studies using the Joanna Briggs Institute checklist. Two reviewers descriptively analysed the data and categorised findings by outcome measure.

Results:
26,462 citations were screened, and 11 studies were eligible. Studies were primarily retrospective cohort designs using claims-based data. Four studies had a low risk of bias. Five healthcare outcomes were identified: medication, imaging, care seeking, cost of care and healthcare procedures. Patient outcomes included patient satisfaction and functional recovery. Compared to patients initiating care with medical providers, those initiating care with a non-medical provider demonstrated reduced prescription of opioid medication and selective imaging, but increased rates of care seeking. Results for cost of care, healthcare procedures and patient outcomes were inconsistent.

Discussion:
Prioritising non-medical providers at first point of care may decrease use of low value care such as opioid prescribing and imaging referral, but possibly lead to increased number of healthcare visits when caring for patients with low back pain. High quality randomised controlled trials are needed to confirm our findings.

Submission #: 69
Poster day: 1
Position: B23

Europe and Africa

Level of pain and physical function in patient with chronic knee pain visiting Dhulikhel Hospital

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Research Aim/Objective:
To determine the level of pain in chronic knee pain
To determine the level of physical function in chronic knee pain
To determine the demographic characteristics of population with chronic knee pain.

Research Methods:
A cross sectional study was designed and data was collected from physiotherapy and orthopedic outpatient department,Dhulikhel hospital. . The data was collected within 2 weeks of times and the study was done within 6 month of time. A total of 78 participants was recruited after calculating sample size for non-probability convenience sampling method for this study. Individuals of either gender 18 years and above with knee pain for more than 3 months of period were included. Participants were excluded if they had recent knee surgery, trauma, fractures or malignancy. The data was collected, recorded and analyzed using Statistical Package for the Social Sciences (SPSS) version 23.This research was conducted after the approval from Institutional Review Committee, Kathmandu University School of Medical Sciences considering the guidelines.

Results:
The mean age of the patient was 52.59±14.98 years. More than 3/4th of the participants with chronic knee pain were female. Among 78 participants 80.8% of them were illiterate and 46.2% of them were farmers. Most of the participants were from newar community (37.2%). Chronic knee pain was found to be more in illiterate female patients who were mostly farmer. Bilateral knee pain was found to be prevalent in 59% of the patient with mean duration of 20 month.
The functional level of the population where sitting function was found to be affected in 82.1% of population with mean PSFS score of 2. Similarly carrying load was found to be the most difficult task. Mean pain level of patient with chronic knee pain in Nepali version of numerical pain rating scale was 5 with maximum score of 7 and minimum score of 2.

Discussion:
Chronic knee pain is the frequent cause of limitation of function among the older adults and significantly associated with marked mobility disability and were more prevalent in females which are similar to global prevalence. Combination of tibiofemoral and patello-femoral pain was associated with greater self-reported pain. Sitting increase the tibiofemoral and patellofemoral joint compressive forces leading to greater pain and thus rendering task performance difficult. So Functional focus is important for optimal Rehabilitation.

Submission #: 22
Poster day: 1
Position: A22

A community-based estimation of healthcare seeking behavior for pain in back and extremities during a period of twelve months in rural Gadchiroli, India

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Research Aim/Objective:
To study the healthcare seeking behavior for pain in back and extremities over 12 months, type and choice of care providers sought by the community and factors affecting care seeking in rural adult population in Gadchiroli, India

Research Methods:
Two villages were randomly selected from a cluster of 39 villages in the Gadchiroli district of India. Using predetermined criteria, all resident adults >20 years, were surveyed by the trained community health workers (CHW) by making household visits. Using a structured, pretested questionnaire, they inquired and recorded the history of back pain and pain in the extremities, whether treatment was sought for the pain, whether home remedy were used or treatment from an external health care provider was sought and the type of health care provider in the 12 months preceding the survey. Multiple logistic regression was performed to evaluate the predictors of treatment seeking for PBE.

Results:
Out of 2535 eligible adults in two villages, 2259 (89%) were interviewed. A significant proportion of the participants with back pain and pain in the extremities sought treatment (86.99%). The maximum number of individuals sought care from private providers (64.64%) followed by home remedies (61.64%), government facilities (17.03%), community health workers (CHW) of Society for Education, Action and Research in Community Health (SEARCH) (12.87%), Bengali doctors (5.7%) and traditional healers (6.56%). Almost equal number of participants with any back pain (88.88%) and any extremity pain (88.95%) sought treatment. The care seeking was significantly more for female participants (OR 1.83, 95% CI 1.32 – 2.5), in case of severe pain (OR 2.0, 95% CI 1.29 – 3.12) and in the age group 51 to 60 years (OR 2.04, 95% CI 1.14 – 3.67).

Discussion:
A significant number of the individuals with back pain and pain in the extremities in rural Gadchiroli seek care, mainly from private practitioners and resort to application of home remedies whereas the care seeking from the public health facilities is considerably less. Hence there is need to provide care for back pain and pain in the extremities in the public healthcare system.

Submission #: 61
Poster day: 2
Position: C27

Economic burden of pain in back and extremities in the adult population: a community based estimates in rural Gadchiroli, India

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Research Aim/Objective:
To estimate the economic burden of pain in the back and extremities by measuring the annual cost of a) medical consultation, b) purchasing medications and c) work days lost due to pain in the back and extremities in rural adult population in Gadchiroli, India.

Research Methods:
This population-based, cross-sectional study was conducted in two villages randomly selected from a cluster of 7 eligible villages in Gadchiroli district of India. All adults ≥20 years in these villages were surveyed by the trained community health workers in January 2010 by making household visits. The data were collected using a structured, pretested questionnaire on the history of pain in back and extremities (PBE) and the consequent economic cost of pain during the previous 12 months. Student's t-test was used to assess difference between group means after checking for normality. Differences between percentages were assessed using Chi-Sqaure test. Multivariate analysis using ordinal logistic regression model was used for days of work lost due to PBE and out of pocket expenditure by appropriate categorization.

Results:
Out of the 2259 eligible adults surveyed, 1876 (83%) had an episode of PBE in the preceding 12 months, 617 (27%) sought medical consultation and 1535 (68%) purchased medicines. Total expenditure in the study population (2259) over 12 months for PBE was 62,880 INR on medical consultation and 855,203 INR for purchasing medicines. Total 833 participants lost 24,205 work days due to PBE. The total estimated wages lost at the rate of 100 INR per day were 24,20,500 INR. The total cost of PBE in these two villages over 12 months was 33,38,583 INR. The mean annual economic loss due to PBE per symptomatic adult was 1789 INR which was 4.9% of the annual per capita income of 36286 INR for Gadchiroli in 2009-10. Women and elderly were more likely to lose days at work due to PBE and experience higher out of pocket expenditure on treatment of PBE.

Discussion:
The significant economic burden due to PBE found in rural community in Gadchiroli can contribute to worsening of poverty and adverse health consequences. Hence pain relief must be a public health priority including prevention of pain as well as increasing the availability of generic analgesics and physiotherapy in the community for reducing out of pocket expenditure and the work days lost. It may improve the economic status and the health of the population.

Submission #: 57
Poster day: 1
Position: D31

Digital support for self-management of low back pain – an approach that fits all? - Secondary analysis of the selfBACK randomized controlled trial

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Research Aim/Objective:
The aim was to investigate if the effect of the selfBACK intervention is modified by type of recruitment clinic, age, gender or education.

Research Methods:
The present study presents a sub-group analysis of the selfBACK randomized controlled trial, including 461 participants with low back pain recruited from primary care practitioners (physiotherapists, chiropractors and general practitioners (GP)) in Denmark and Norway and an outpatient clinic in Denmark. Participants were randomized to an intervention group (n=232) receiving the selfBACK program in addition to usual care or to a control group (n=229) receiving usual care alone. Stratified analysis according to type of recruitment clinic, age, gender and education were performed on outcomes from the core set outcomes for clinical low back pain trials including pain related disability, pain intensity and pain self-efficacy. Results from 3- and 9- months follow-up are presented.

Results:
At 9 months the effect of selfBACK on pain disability was larger in the oldest age-group compared to the younger groups (P>0.042, for all comparisons). No differences were observed at 3 months. Further, participants recruited at chiropractors (3 months+ 9 months, P>0.022, for both comparisons) and the out-patient clinic (9 months, P= 0.002) had a larger improvement in pain intensity compared to participants recruited at GPs. The participants recruited from GPs were younger compared to the other recruitment sites. Gender or education of the included participants did not modify the effect of selfBACK for any of the outcomes.

Discussion:
Overall, the demographics of the included participants did not seem to modify the effect of the selfBACK intervention. Our results therefore indicate that the selfBACK intervention is suitable for all, irrespective of age, sex and socioeconomic position. However, older participants may have a larger effect of selfBACK compared to younger participants. Identifying subgroups that benefit more or less from digital health interventions may help to target interventions in the future.

Submission #: 276
Poster day: 2
Position: A21

Responsiveness and Minimal Important Change for core outcomes in low back pain

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Research Aim/Objective:
The objective of this study was to estimate responsiveness and Minimal important change (MIC) of core PROMs for LBP used in patients with chronic LBP and Modic changes, evaluate the credibility of our findings by a standardized set of criteria, and evaluate discordance between direction of change with individual PROMs.

Research Methods:
Based on AIM-trial (Antibiotics in Modic changes) data of patients with age 18–65 years, chronic LBP for more than six months, pain intensity NRS (0–10) ≥5, and Modic changes on MRI, we measured RMDQ, ODI, LBP intensity (0–10 NRS) and EQ5D electronically at baseline, 3- and 12-months follow-up. Global perceived effect (GPE) using 7-point Likert scale (completely recovered (CL), much improved (MI), slightly improved (SI), no change (NC), slightly worsened, much worsened, and worse than ever) was measured at 3- and 12-months. MIC was estimated using cut-points for absolute and relative change based on ROC curve analyses a (GPE dichotomized into CL/MI/SI vs NC) and b (GPE dichotomized into CL/MI vs SI/NC), and responsiveness was assessed by construct and criterion approach, all recommended by COSMINguidelines.

Results:
Core PROMs used in LBP research, the RMDQ, ODI, LBP intensity NRS and EQ-5D, all showed acceptable responsiveness with 75% (5 out of 6) hypotheses for each outcome confirmed (construct approach) and AUC>0,7 (criterion approach). We found moderate credibility for the MIC estimates, and with relative change being more consistent (less dependent on baseline values) compared to absolute change estimates. Our results suggest that minimal important change is a 15-25% reduction in RMDQ, ODI and LBP intensity scores for analyses a, and a 25-40% reduction in RMDQ, ODI and LBP intensity NRS scores for analyses b. There was high discordance between global perceived effect and direction of change for the PROMs (>30% in most individual PROMS, and 13% at 3-months and 17% at 12-months follow-up for all domains) which possibly threat the use of global perceived effect (7-levels) as an anchor when estimating responsiveness and MIC.

Discussion:
Previous estimates of MIC values for recommended core outcomes in LBP are diverse and the credibility had not been evaluated by a standardized set of criteria. Our findings elucidate some reasons for this diversity and possible threats to using global perceived effect, and suggest estimates are at the lower end of previous findings. Our finding that relative change is more consistent (less dependent on baseline values) is in line with previous findings.

Submission #: 275
Poster day: 1
Position: C26

Patient Self-Assessment Tool (BACK-ON-LINE™) for early targeted self-management of low back pain in a workplace: Construct and Discriminate Validation Study

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Research Aim/Objective:
With high prevalence of low back pain (LBP), combined with unprecedented waiting time to access physiotherapy, this study objective was to validate novel, online patient self-assessment tool (BACK-ON-LINE™; BOL), designed for early identification of pain mechanisms (nociceptive [NP] and nociplastic [NC]) likely underlying person's LBP to target early self-management.

Research Methods:
Between December 2019 and June 2021, 211 people with LBP were recruited from two work sectors (healthcare, transport), associated with high prevalence of LBP, to complete an online BOL self-assessment with 4 subdomains (Pain behaviour, Pain perception, Impact of LBP on work and life). Demographics, pain intensity and duration, days of work absence, Rolland Morris Disability Questionnaire (RMDQ) and STarT Back were collected. The construct validity was determined using Spearman's correlation test. The discriminant ability and predictive performance were analysed using BOL subgroup characteristics across reference standards (RMDQ≥7, VAS ≥7, Time off work ≥4 weeks, Pain Duration ≥6 months) with STarT Back as a comparator. Ethical approval was gained from the Health Research Authority and Health and Care Research Wales (HCRW) Ethics committee (Ref no:19/HCRW/0035).

Results:
150 participants (71.1%) aged 20–61 years completed the survey. The proportions of patients allocated to NP and NC subgroups by BOL were 70.7% and 29.3%, respectively. There were significant differences between NP and NC subgroups in RMDQ, STarTBack scores. Significant subgroup differences were also observed in BOL total and subdomain scores. BOL total and most subdomain scores correlated positively with RMDQ and STarT Back except for the 'Impact of LBP on work' domain. Highest correlation coefficient of 0.66 was achieved with STarTBack indicating a good correlation with high statistical significance ($p<0.0001$). Receiver operating characteristic (ROC) curves indicated good discriminant ability and predictive performance of BOL subgroups across reference standards. BOL and STarT Back instruments discriminated similarly well across the reference standards of disability, absenteeism and pain intensity. With pain duration as the reference standard, BOL scored better to STarTBack (Area under the curve [AUCs]): 0.75 and 0.56, respectively; $p<0.0001$).

Discussion:
BOL self-assessment tool was successful in subgrouping working population with LBP based on their pain type. The tool demonstrated high construct validity and discriminate validity equal to STarT Back across most of the reference standards and was better at discriminating patients with LBP over 6 months. Our findings suggest BOL may contribute to the improvement of LBP assessment and potentially support early targeted self-management in workplace..

Submission #: 197
Poster day: 2
Position: A22

A comparative study between traction with straight leg raise, bent leg raise and active release technique on hamstring tightness in sub-acute non-specific low back pain.

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Research Aim/Objective:
Mulligan's traction with straight leg raise, bent leg raise and active release techniques were separately reported to be beneficial in enhancing hamstring flexibility. The purpose of this study is to compare the effect of three techniques on hamstring tightness in individuals with sub-acute non-specific low back pain.

Research Methods:
This study was a double-blinded randomized clinical trial that included 42 subjects with subacute non-specific low back pain. Participants were randomly assigned to one of three groups and were treated three days a week for three weeks. Group A received traction with straight leg raise (TSLR), Group B received bent leg raise (BLR) and Group C received active release technique (ART). Participants in all the three groups were taught home exercise program which included transverses abdominis strengthening with core activation. Outcome measures were taken at baseline and at the end of 3rd week after the intervention using the visual analog scale (VAS), active knee extension test (AKE) and Roland Morris disability questionnaire (RMDQ).

Results:
On within-group comparison of pre and post-intervention values, Paired t-test revealed statistically significant differences in VAS ($p<0.01$), AKE ($p<0.01$) and RMDQ ($p<0.01$) scores after intervention. For between-group comparisons of outcome measures of three groups, One Way ANOVA test was used, the obtained p values in VAS ($p<0.815$), AKE ($p<0.587$) and RMDQ ($p<0.418$) suggested that the difference was not statistically significant.

Discussion:
The results of the present study shows that traction with straight leg raise, bent leg raise and active release technique are effective in improving hamstring flexibility and hence an effective addition to core exercises for improving low back pain. These techniques have also shown a positive impact on pain and disability levels in individuals with sub-acute non-specific low back pain. However there is no superiority of one group among the others.

Submission #: 65
Poster day: 1
Position: B26

Spinal manipulative therapy for acute and subacute low back pain: update of the Cochrane review

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Research Aim/Objective:
To examine the effects of spinal manipulative therapy (SMT) for (sub)acute low-back pain (LBP) compared to 1) all other therapies for pain relief and improvement in function (e.g. exercise, medication), 2) inert interventions, 3) sham SMT and 4) SMT as an adjuvant therapy.

Research Methods:
A comprehensive search was conducted in numerous databases for randomized controlled trials (RCTs) on the effectiveness of SMT in adults with acute (< 6 weeks duration) and subacute (6 to 12 weeks duration) LBP. Studies that examined LBP with a specific aetiology were excluded. The primary outcomes were pain and back-specific functional status. Effects were analysed as a mean difference (MD) and standardized mean difference (SMD).
Two review authors independently conducted the study selection, risk of bias (RoB) assessment and data extraction. GRADE was used to assess the quality of the evidence.

Results:
We identified 34 RCTs (n= 4350). There is moderate evidence that SMT is equally effective as all other for pain relief and improvement in function interventions for pain and function at one month for SMT vs [(Pain: MD: -0.34, 95% CI -0.85 to 0.18; n = 736 ; 5 studies); (Function: SMD: -0.10, 95% CI -0.21 to 0.00; n= 1537 ; 6 studies)] and low-quality evidence that SMT is no better than inert interventions for pain relief and improvement of function[(Pain: MD: -0.67, 95% CI -1.55 to 0.20; n = 366; 3 studies); (Function: SMD: -0.06, 95% CI -0.52 to 0.39; n = 294 ; 2 studies). Similar results were found for the other follow-up moments and comparisons. Certainty of the evidence was affected for the following reasons: many RCTs have a high risk of bias, comparisons included relatively few subjects, and/or there was substantial statistical heterogeneity. Sensitivity analyses

Discussion:
SMT is equally effective as other interventions for pain relief and improvement in function at short-term follow-up, although there is evidence, albeit very low quality, that SMT is no better than inert interventions.

Submission #: 177
Poster day: 2
Position: A23

Spinal Fusions -Sometimes cause more harm than benefits

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Research Aim/Objective:
Freedom from pain is a reality,but sometimes,it becomes a challenge to treat such patient especially in those whom intervention already was done.The patient had a fused spine for pain relief but latter had intractable pain requiring DRGs.

Research Methods:
82 year old underwent spinal fusion at US for disc herniation and nerve impingement,but even after 8months she had intractable pain requiring opioids.She was given fluoroscopy guided caudal epidural along with selective root blocks at higher levels with some pain relief.A trial epidural Catheter was threaded which made a dramatic pain relief and this was followed by DRGS causing major pain relief and her VAS came to 2/10.She latter on have relief from pain and residual spasticity too.

Results:
Target area pain relief which was not even controlled with opioids and the patient had dependence potential along with GI issues ,had wonderful pain relief with dorsal root ganglion stimulation.DRGS is a newer neuromodulation technique which can relieve various neuropathic components including pain due to failed back surgery syndrome,complex regional pain syndrome and chronic post surgery pain as in our case.DRGS is associated with lesser incidence of infections and lead migration.DRGS is an reasonable step in treating these patient who have lost any hope for pain relief.

Discussion:
Spinal fusion surgery was done to provide stability to spine and in this case degenerative disc disease at various levels from L3-S1,but patient continued to complain of back pain and was started on steroids.DRGS turned out to be her saviour and she had excellent pain relief along with productive life.,off narcotics

Submission #: 297
Poster day: 1
Position: C25

The association between patients' illness perceptions and longitudinal clinical outcome in patients with low back pain

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Research Aim/Objective:
To explore whether patients´ initial illness perceptions are associated with clinical outcome in patients with LBP 3 and 12 months after seeking physiotherapeutic primary care.

Research Methods:
Four hundred sixty-seven consecutive patients seeking physiotherapeutic primary care for non-specific LBP in South-East Sweden were included. Patients had a mean age of 45 years and 56% were women. Multiple linear regression analysis was used to explore whether patients´ illness perceptions measured with the Brief Illness Perception Questionnaire (BIPQ) at baseline were associated with outcome in disability, back pain intensity, health related quality of life (HRQoL) and patient enablement at 3- and 12-months follow-up. Outcomes included the Oswestry disability index (ODI), Numeric Rating Scale (NRS-LBP), EuroQol Five Dimensions (EQ-5D) and Patient Enablement Instrument (PEI). The analyses were adjusted for sex, age, duration of current episode of LBP and baseline score on the dependent variable.

Results:
Illness perception dimensions together accounted for 12%-22% of the variance in the clinical outcomes ($p<0.001$). Stronger beliefs that the back problem will last a long time at baseline were associated with worse outcome in ODI, NRS-LBP, PEI at 3 and 12 months and in EQ-5D at 12 months. Negative beliefs regarding treatments ability to improve LBP were associated with worse outcome in NRS-LBP and PEI at 3 and 12 months and ODI at 12 at months. Higher emotional affect in response to the back problem at baseline was associated with worse outcome in EQ-5D at 3 and 12 months and NRS-LBP at 3 months.

Discussion:
Patients´ perceptions regarding LBP prognosis and treatment effects showed to be important for several longitudinal clinical outcomes in LBP patients. These expectations should be addressed when treating LBP, with consideration to individual variation and varying importance of different illness perceptions for different clinical outcomes. Adding to previous research, patients' perceptions are of importance for self-management which might be improved by helping patients make sense of their symptoms and clarify how treatment may lead to improvement.

Submission #: 73
Poster day: 1
Position: B25

An interactive e-learning module to promote bio-psycho-social management of low back pain in healthcare professionals: a pilot study

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Research Aim/Objective:
Despite the recommended bio-psycho-social (BPS) approach, many health care professionals (HCPs) still manage LBP patients mainly from a biomedical point of view. The purpose of this pilot study was to evaluate the feasibility of implementing an interactive e-learning module on the management of LBP in HCPs.

Research Methods:
In total 22 HCPs evaluated the feasibility of the e-learning module with a questionnaire and open questions. Participants filled in the Back Pain Attitude Questionnaire (Back-PAQ) before and after completing the module to evaluate their attitudes and beliefs about LBP.

Results:
The module was structured and easy to complete (91%) and met the expectations of the participants (86%). A majority agreed that the module improved their knowledge (69%). Some participants (77%) identified specific topics that might be discussed in more detail in the module. HCPs knowledge, beliefs and attitudes about LBP significantly improved following module completion ($t = -7.63$, $P < .001$) with a very large effect size ($ds = -1.63$).

Discussion:
The module seems promising to change knowledge, attitudes and beliefs of the participants. There is an urgent need to develop and investigate the effect of educational interventions to favor best practice in LBP management and this type of e-learning support could promote the transition from a biomedical to a bio-psycho-social management of LBP in HCPs. Future studies should evaluate the effects of a revised version of the e-learning on larger samples.

Submission #: 31
Poster day: 1
Position: A23

Supporting self-management of low back pain with an internet intervention in primary care: protocol for a randomised controlled trial of clinical and cost-effectiveness (SupportBack 2)

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Research Aim/Objective:
To determine the clinical and cost-effectiveness of an internet intervention in reducing Low Back Pain (LBP)-related disability over 12 months in UK primary care. In this randomised controlled trial (RCT) we will determine the effectiveness of a stand-alone internet intervention, as well as the internet intervention coupled with physiotherapist telephone

Research Methods:
'SupportBack' is an internet intervention that has been developed specifically for a broad range of people presenting to primary care with LBP. In this RCT (n=806) we are examining 3 arms: 1) Usual care + internet intervention + physiotherapy telephone support, 2) Usual care + internet intervention, 3) Usual care alone. Utilising a repeated measures design, the primary outcome is the Roland Morris Disability Questionnaire (RMDQ) measured over time at 6 weeks, 3, 6 and 12 months. This trial also features a full health economic evaluation and a mixed-methods process evaluation including a longitudinal qualitative study. The mixed-methods process evaluation will be used to develop a programme theory for how the interventions affected LBP-related disability.

Results:
We are currently following-up participants and will report the full results of this trial in 2022.

Discussion:
The SupportBack 2 trial is the largest trial of its kind in the UK. With COVID-19 pandemic pushing forward the provision of digital support, robust effectiveness data for digital provision of self-management packages is critical. In this talk I will discuss the design of the trial, outcomes and planned analysis, as well as potential impact and follow-on research.

Submission #: 300
Poster day: 2
Position: A24

Can retrospective visual pain trajectories describe the actual course of low back pain?

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Research Aim/Objective:
Distinct low back pain (LBP) trajectories can be identified from prospectively captured repeated measures. However, in a clinical setting, clinicians rely upon historical recovery patterns to help predict the future course immediately. This study investigates to what degree pain trajectory patterns identified by patients describe the actual course of LBP.

Research Methods:
We obtained data from 719 Danish chiropractic patients seeking care for LBP. Participants scored their pain intensity (0-10) each week for 52-weeks through SMS. At the end of that period (week 52), participants identified a single visual pain trajectory (from eight options) that best matched their pain course during the previous year. We present preliminary analyses describing the distribution of the prospective data within each visual class. We use three simple constructs to summarize the individual prospective data: i) the mean pain intensity (intensity construct), ii) participants' variation around their mean (fluctuating pattern construct), and iii) frequency of periods of 4+ weeks without pain episodes (episodic pattern construct).

Results:
The results show a meaningful relationship between pain trajectories and the visual classes. However, we also observed wide variations in patterns within each class, with deviations from the expected pattern (e.g., 10% of those choosing an episodic pain class had no pain-free periods in the prospective trajectory SMS data).
Intensity construct: We observed the expected relationship of the mean pain intensity with more severe classes displaying higher mean pain scores.
Fluctuating pattern construct: all classes showed a wide range of individual variation around their mean, with substantial overlaps in distributions between the ongoing visual classes (persistent and fluctuating).
Episodic pattern construct: the episodic classes had a greater number of pain-free episodes than the fluctuating or persistent classes, and the frequency of no pain-free episodes increased as the severity of visual classes increased (single episode 2.9% to intense persistent 71.4%).

Discussion:
Our preliminary analysis suggests that visual pain trajectories provide a valuable indication of the weekly pain intensity and can reasonably distinguish between episodic and ongoing pain. However, it is unclear if visual pain trajectories can distinguish between fluctuating or persistent pain. The high degree of variation observed in this analysis indicates that different individuals may perceive and recall back pain differently.

Submission #: 182
Poster day: 1
Position: B34

Impact of chronic low back pain on activities of daily living among patients with low back pain attended at the Musculoskeletal Department, CRP, Savar, Dhaka

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Research Aim/Objective:
The major aim of the present study was to determine the impact of chronic LBP on activities of daily living and to describe the associations between outcome measures with different variables (i.e. Pain intensity and ADL, Fear-Avoidance Belief on Physical Activity, FAB-PA and ADL, Pain intensity and FAB-PA)

Research Methods:
A descriptive cross-sectional study was carried out, 190 patients with chronic LBP (pain duration >3 months) of age range 18-65 years were recruited. Data was collected through convenience sampling. Tools used were Visual Analog Scale, Low back Specific Version of SF-36 Physical Functioning Questionnaire and Fear Avoidance Belief on Physical activities Questionnaire. Data was analyzed in SPSS-25 version, and tests employed were Chi square ($\chi 2$), Spearman rank correlation, Independent t-test and Multiple regression.

Results:
Mean age was 39.04±11.4 years with high prevalence among females, and majority had difficulty in ADL since 0-5 months. Severe limitation in ADL found were lifting heavy objects, vigorous activities, prolong sitting, bending/kneeling, standing, walking 1km distance, climbing several flights of stairs, getting in and out of the bus/rickshaw, and turning over in bed respectively. A negative, intermediate, significant correlation was found between pain intensity and FAB-PA with ADL (p-value = 0.000) and weak-positive, significant correlation between pain intensity and FAB-PA (p-value = 0.05). Statistical significant difference in mean ADL score was found between male and female but the effect size of these difference was small. A step-wise multiple regression analysis evaluated that pain intensity, FAB-PA and age had significant effect (p-value = 0.000) on patient ADL function.

Discussion:
Functional capacity among CLBP patients is limited either severely or moderately by pain. Pain intensity and FAB-PA found to have the potential to decrease capacity to perform ADL in patients with CLBP.

Submission #: 81
Poster day: 2
Position: C26

Recovery trajectories in common musculoskeletal complaints by diagnosis contra prognostic phenotypes

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Research Aim/Objective:
The aim of this study was to explore the one-year recovery trajectories for pain and limitation in function in five musculoskeletal (MSK) phenotypes using key biopsychosocial prognostic factors regardless of pain location and describe these in relation to the course of traditional diagnostic MSK groups.

Research Methods:
A longitudinal observational study of 147 patients with neck, back, shoulder or complex pain in primary health care physiotherapy was conducted. Information on pain intensity and function using web-based questionnaires and mobile text messages over one year were collected. Recovery trajectories were described separately for the diagnostic MSK groups based on pain location and the same patients categorized in phenotype groups based on prognostic factors.

Results:
There was a general improvement in function and a more modest decrease in pain intensity during the year of follow-up for the MSK groups. The patients were spread over all five phenotypes. Different trajectories for recovery and course of symptoms for pain intensity and function appeared for the five phenotypes compared to the MSK diagnosis over one year follow up. Patients in phenotypes 1-3 showed steady and increasing recovery rates for both pain and function, were 2/3 reached recovery during one year, while recovery rates in phenotypes 4-5 were modest, with only about 1/3 recovered during one year.

Discussion:
Prognostic subgrouping revealed more diverse patterns in pain and function recovery over a year than observed in the same patients classified by traditional diagnostic groups and may better reflect the diversity in recovery of common MSK disorders.

Submission #: 160
Poster day: 1
Position: B33

Effect of 12-week Yoga intervention on pain intensity, trunk muscle strength, back pain-related disability and psychosocial function in patients with chronic non-specific low back pain

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Research Aim/Objective:
To explore beneficial effects of Suryanamaskar as a form of Yoga on pain intensity, trunk muscle strength, back pain-related disability and psychosocial function in comparison with conventional exercise among patients with chronic non-specific low back pain.

Research Methods:
Forty-seven participants with chronic nonspecific low back pain were recruited following ethical approval.Participants were allotted to SuryanamaskarGroup(n=24) and Exercise Group(n=23).Outcome was studied using pain intensity(VAS), Trunk muscle strength(BLC dynamometer), Spine-related disability(MODS) and psychosocial function(Back PAQ) were recorded pre and post12-week intervention of Suryanamaskar.

Results:
Suryanamaskar and conventional exercise both demonstrated improvement in pain intensity, trunk muscle strength, leg lift strength and floor lift strength post 12-week intervention. However, Suryanamaskar training demonstrated 6.5%greater improvement in pain intensity(Cohen's d: 0.85) and 3% greater improvement in torso strength(Cohen's d: 0.96) compared to conventional group. Patients in both groups demonstrated a similar curve of recovery from disability caused by CLBP throughout the 12-week intervention (Patients in Suryanamaskar group reported 22% disability in 1st week followed by 13% in 6th week and 10% in 12th week, where as participants in conventional group reported 24% disability in 1st week followed by 13% in 6th week and 9% in 12th week.)The attitudes of the participants about their pain and disability related beliefs demonstratedsignificant (p=0.01) improvement after the training programme.

Discussion:
Activity &participation in Suryanamaskar group was improved much earlier i.e by 6 th week of training as compared to exercise training group where activity and participation was improved by the end of 6 th week and during 12 th week of training. Earlier Improvement in Suryanamaskar group is attributed to the effects of Yoga aiding to minimize disability and maximize function. The attitudes of the participants about their pain and disability related beliefs also demonstrated positive improvement.

Submission #: 78
Poster day: 2
Position: B28

Spinal manual therapy versus nerve root injection for lumbar radiculopathy: vanguard phase proposal of the SALuBRITY randomised clinical trial

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Research Aim/Objective:
Spinal manual therapy (SMT) and corticosteroid nerve root injection (NRI) are commonly used to treat patients with lumbar radiculopathy, but there is a need for high-quality randomised clinical trial evidence. This vanguard phase proposal aims to assess the feasibility of a future main trial at 12 weeks after randomisation.

Research Methods:
Vanguard phase – 12-weeks randomised, double sham controlled, single centre trial in a Swiss university hospital, comparing SMT and NRI in 40 participants with lumbar radiculopathy of less than 12 months duration. Participants will be randomly allocated, in a 1:1 ratio, to active SMT plus sham NRI or active NRI plus sham SMT, each intervention administered during 12-weeks.

Results:
Main outcomes and measures
Vanguard phase – Feasibility outcomes include recruitment rate, completeness of follow-up, and blinding success.
Main trial – Primary clinical outcome will be patient-reported radicular leg pain impact at 12-weeks assessed with the PEG scale (a validated 3-item average composite of pain intensity and pain interference). Secondary outcomes include low back pain and overall pain (back and leg pain) impact, disability, patient satisfaction, analgesic use, global improvement, quality of life, health care utilisation, and adverse events.

Discussion:
The vanguard phase results will inform the feasibility and design of the future main trial. The main trial will assist patients, clinicians, and policymakers with decision-making based on high-quality evidence, and may ultimately help to optimise healthcare delivery for sciatica in Switzerland and worldwide.

Submission #: 44
Poster day: 1
Position: B28

Musculoskeletal healthcare at a Swiss university hospital chiropractic medicine outpatient clinic in 2019: a health services research study

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Research Aim/Objective:
Balgrist University Hospital in Zurich, Switzerland, is an academic hospital focused on musculoskeletal (MSK) disorders. An integrated chiropractic medicine clinic provides chiropractic care to a broad patient population. Our health services study aims to advance understanding of chiropractic healthcare service for quality assurance and healthcare quality improvement.

Research Methods:
We performed an observational clinical cohort database analysis of the Balgrist chiropractic medicine clinic from January 1, 2019 to December 31, 2019. The records of all patients with initial visits or returning initial visits (≥3 months since last visit) and their subsequent visits in this period were used to create the database. Data extracted were demographic characteristics, diagnoses, imaging, conservative treatments, surgeries, and other clinical care services. Descriptive statistics were used to summarize data.

Results:
1844 distinct patients (52% female, mean age 48 ± 17 years) were included in our clinical database. 1742 patients had a single initial visit, 101 had 2 initial visits, and 1 patient had 3 initial visits during the study period. The most common main diagnoses were low back pain (41%), neck pain (21%), and thoracic pain (8%). 29% of our study population had an acute (12 weeks). Patients averaged 7 chiropractic visits during their episode of care, with an average care episode duration of 52 days. Only 49% (95% confidence interval, 47% to 52%) of patient records had an electronically extractable clinical outcome.

Discussion:
Our health services research study provides an initial understanding of the patient characteristics and MSK clinical care delivered in a Swiss outpatient hospital setting for quality assurance. Deeper insights into healthcare services and outcomes will help to facilitate a quality improvement initiative by identifying clinical data and healthcare quality gaps and establishing overall aims and targets for improvement.

Submission #: 99
Poster day: 2
Position: B27

Patients' conceptions of undergoing physiotherapy for persistent low back pain delivered by physiotherapists who had participated in brief training in Cognitive Functional Therapy

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Research Aim/Objective:
The aim of the study was to explore the conceptions of patients with persistent low back pain of undergoing physiotherapy delivered in Finnish primary healthcare by physiotherapists who had participated in brief training in Cognitive Functional Therapy.

Research Methods:
This qualitative study was a part of a larger project exploring implementation of brief training in Cognitive Functional Therapy in Finnish primary healthcare in management of low back pain. We conducted semistructured recall interviews with nine patients with persistent low back pain after they had received care by physiotherapists who had undergone 4 to 6 days of Cognitive Functional Therapy training. During the interviews videoclips of patients' initial physiotherapy appointments were watched together to support recall of the situation. The audiorecorded interview data were transcribed verbatim. Phenomenography was used as a research approach to explore the variation in people's ways of experiencing the phenomenon in question.

Results:
As a result of the analysis, four descriptive categories were identified: ”hung out to dry”, ”stuck”, ”making sense and taking control” and ”holistic approach to care and living”, that varied based on six themes: ”life-course continuum”, ”expectations versus experience”, ”physiotherapist as a person”, ”safety net”, ”pain beliefs” and ”self-management”. Patients' own efforts to make sense of pain and make it work may be seen as a starting point of a journey away from the experience of being hung out to dry. Positive experiences of physiotherapy, wider social support outside of physiotherapy, reassurance and making sense of the situation may be seen as enablers of the patient taking control. Good collaboration with the physiotherapist, a better understanding of the multidimensional nature of pain and appreciation of own efforts may be seen as further aspects of a physiotherapy process that leads towards holistic approach to care and living.

Discussion:
Although the new approach was a surprise for many, the patients accepted the biopsychosocial approach to care well. However, there was significant variation in their conceptions. Some of the patients felt they were left empty-handed as the healthcare system did not enable continuation of their care as for others physiotherapy could be a turning point in their lives.

Submission #: 173
Poster day:
Position:

The effect of Ultrasound therapy on serum levels of cartilage oligomeric matrix protein and hyaluronic acid in symptomatic knee osteoarthritis patients in a Nigerian population

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Research Aim/Objective:
The aim of the study was to determine the effect of Six Weeks Ultrasound Therapy on Serum Levels of Cartilage Oligomeric Matrix Protein (sCOMP) and Hyaluronic Acid (sHA) in Patients with Symptomatic knee Osteoarthritis (OA) in a Nigerian Population.

Research Methods:
This study was a Randomized Controlled Trial. Eighty participants of equal sexes, aged 46- 65 years who gave written informed consent were consecutively assigned into two equal groups; Experimental and Control groups. The American College of Rheumatology clinical classification of knee osteoarthritis was used for the clinical diagnosis of osteoarthritis. Experimental group was treated with Ultrasound Therapy and Quadriceps strengthening exercises while Control group was treated with Quadriceps Strengthening Exercises alone. All participants were treated four times weekly for six consecutive weeks. 10ml blood sample was collected from each participant at baseline, at three weeks and end of six weeks of treatment. sCOMP and sHA levels were evaluated using Enzyme-Linked Immunosorbent Assay.

Results:
At the end of six weeks of intervention, within group comparison revealed that serum COMP levels of participants in the Experimental and Control. groups reduced significantly ($p < 0.05$) from 923.42 +_ 193.19ng/dl (baseline) to 923.04 +_193.41ng/dl (6weeks) and from 916.33 +_ 188.13ng/dl (baseline) to 916.12 +_187.97ng/dl (6weeks) respectively. Serum HA levels of patients in the Experimental and Control groups reduced significantly (p 0.05) in the mean levels of serum COMP and serum HA.

Discussion:
Although, between group comparison revealed that Ultrasound Therapy did not significantly reduce sCOMP and sHA levels; nevertheless, both groups respectively demonstrated reductions in both sCOMP and sHA levels. The reduction in sCOMP and sHA levels in the Experimental group was also superior. One may infer that this superior reduction could be due to the additional effect of Ultrasound therapy received by the Experimental group making ultrasound therapy clinically significant.

Submission #: 273
Poster day: 2
Position: B26

Roland Morris Disability Questionnaire, Oswestry Disability Index, and Quebec Back Pain Disability Scale: which has better measurement properties in older adults with low back pain?

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Research Aim/Objective:
To examine validity, reliability and responsiveness of three commonly used questionnaires for assessing physical functioning (i.e. Oswestry Disability Questionnaire (ODI), Quebec Back Pain Disability Scale (QBPDS) and Roland-Morris Disability Questionnaire (RMDQ)) in older patients undergoing chiropractic care for low back pain (LBP).

Research Methods:
Patients completed the ODI, QBPDS and RMDQ at baseline and after 2 weeks. Reliability was evaluated for internal consistency (Cronbach's α), test-retest reliability (interclass correlation coefficient [ICC]), measurement error (standard error of measurement (SEM), and smallest detectable change (SDC). Structural validity was evaluated through unidimensional confirmatory factor analysis, and construct validity was investigated by a priori hypotheses with other measures. Responsiveness was evaluated testing a priori hypotheses using data at baseline and 2-week follow-up.

Results:
214 patients (53 % males and 47% females) with a mean age 66.2 (SD 7.8 years) were included, of which 193 patients completed the 2 week follow for our responsiveness analysis. The RMDQ, ODI and QBPDS showed sufficient internal consistency (Cronbach's α = 0.89; 0.86; 0.94 respectively) and test-retest reliability (ICC(2,1) was 0.85; 0.89; 0.84 respectively). The SDC for RMDQ was 6.9, ODI 19.1 and QBPDS 23.6, which are values larger than the Minimal Important Change (MIC). None of the measures met all criteria for sufficient structural validity, but RMDQ and ODI exhibited a partial unidimensional fit. The questionnaires displayed sufficient construct validity and responsiveness.

Discussion:
Our study indicates that the RMDQ, the ODI and the QBPDS have sufficient internal consistency, test-retest reliability, construct validity and responsiveness in an older adult clinical population with LBP. The three instruments have similar measurement properties, but other head-to-head clinimetric studies in older adults with LBP are needed, especially for the assessment of content validity.

Submission #: 298
Poster day: 1
Position: D32

Lumbar disc degeneration among middle-aged Finns – prevalence and association with low back pain in the Northern Finland Birth Cohort 1966

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Research Aim/Objective:
Our aim was to investigate the prevalence of lumbar disc degeneration (LDD) among middle-aged Northern Finns and its association with low back pain (LBP). Furthermore, we wanted to evaluate the modifying role of mental distress in the association between LDD and LBP.

Research Methods:
Participants of the Northern Finland Birth Cohort 1966 underwent 1.5-T lumbar magnetic resonance imaging (MRI) including T2-weighted sagittal scan at the age of 46-48. The overall burden of LDD was quantified by constructing a sum score based on Pfirrmann classification (range 0—15, with higher scores denoting heavier burden). The association between LDD and LBP category ("no pain", "mild to moderate pain", "bothersome and frequent pain") was analyzed with logistic regression analysis using sex, smoking, body mass index, leisure-time physical activity, occupational physical exposure, education, and presence of Modic changes plus disc herniations on lumbar MRI as confounders. The moderating role of mental distress (according to Hopkins Symptom Check List-25) in the association between LDD and bothersomeness of LBP was analyzed with linear regression.

Results:
Of the study population (n = 1505), 15.2% had bothersome and frequent LBP, and 29.0% had no LBP. The vast majority of individuals (95.0%) had at least one degenerated intervertebral disc (Pfirrmann ≥ 3). The prevalence of LDD increased towards lower lumbar levels. Higher LDD sum score increased the odds of belonging to the "mild to moderate pain" category (adjusted OR corresponding to an increase of one point in LDD sum score 1.11, 95% CI 1.04—1.18, P = 0.003) and the "bothersome and frequent pain" category (adjusted OR 1.20, 95% CI 1.10—1.31, P < 0.001), relative to the "no pain" category. Mental distress significantly moderated the association between LDD burden and LBP bothersomeness, as a linear positive association was consistently observed among individuals without mental distress (adjusted B = 0.15, 95% CI 0.07-0.24, P < 0.001), but not anymore among individuals with abnormal mental distress.

Discussion:
Almost all middle-aged cohort participants had at least mild LDD at some level. LDD was significantly associated with both mild to moderate and bothersome and frequent LBP. However, the co-occurrence of mental distress seems to diminish the association between LDD burden and bothersomeness of LBP. Our results strongly suggest that mental symptoms affect the pain experience.

Submission #: 108
Poster day: 2
Position: B25

Recommendations for diagnosis and treatment of lumbosacral radicular pain: a systematic review of clinical practice guidelines

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Research Aim/Objective:
This study aimed to: identify international clinical practice guidelines on LRP, assess their methodological quality, and summarize their diagnostic and therapeutic recommendations.

Research Methods:
A systematic search was performed (August 2019) in MEDLINE, PEDro, National Guideline Clearinghouse, National Institute for Health and Clinical Excellence (NICE), New Zealand Guidelines Group (NZGG), International Guideline Library, Guideline central, and Google Scholar. Guidelines presenting recommendations on diagnosis and/or treatment of adult pa-tients with LRP were included. Two independent reviewers selected eligible guidelines, evalu-ated quality with Appraisal of Guidelines Research & Evaluation (AGREE) II, and extracted rec-ommendations. Recommendations were classified into 'should do', 'could do', 'do not do', or 'uncertain'; their consistency was labelled as 'consistent', 'common', or 'inconsistent'.

Results:
Twenty-three guidelines of varying quality (AGREE II overall assessment ranging from 17% to 92%) were included. Consistent recommendations regarding diagnosis are ('should do'): Straight leg raise (SLR) test, crossed SLR test, mapping pain distribution, gait assessment, congruence of signs and symptoms. Routine use of imaging is consistently not recommended. The following therapeutic options are consistently recommended ('should do'): educational care, physical ac-tivity, discectomy under specific circumstances (e.g., failure of conservative treatment). Referral to a specialist is recommended when conservative therapy fails or when steppage gait is present.

Discussion:
These recommendations provide a clear overview of the management options in patients with LRP.

Submission #: 104
Poster day: 1
Position: B31

Guideline adherence of physiotherapists in the treatment of patients with low back pain: a qualitative study

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Research Aim/Objective:
To improve guideline adherence, it is essential to understand the considerations of physiotherapists regarding the assessment and management of low back pain. The purpose of this study is to gain insight in the considerations of Dutch physiotherapists on guideline adherence in the treatment of patients with low back pain.

Research Methods:
This is a qualitative study, using an interpretive phenomenological approach in semi-structured interviews with 14 physiotherapists who regularly treat patients with low back pain.
Thematic analysis was conducted with open coding within an existing framework. This framework distinguishes five components to adherence based on patient factors, provider factors, guideline characteristics, institutional factors, and the implementation process.

Results:
The participants mentioned that the guideline should provide more information about psychosocial prognostic factors and psychosocial treatment options. The physiotherapists experience difficulties in addressing patient expectations that conflict with guideline recommendations. The implementation process of the guideline was considered insufficient. Physiotherapists might rely too much on their experience, and knowledge on evidence-based treatment might be improved. In general, the interviewed physiotherapists thought they were mainly non-adherent. However, when comparing their self-reported clinical behaviour with the actual guideline recommendations they were mainly adherent.

Discussion:
To improve adherence, the guideline should provide more information about psychosocial prognostic factors, and more details about psychosocial treatment options. Guideline adherence might be improved by training Dutch physiotherapists in communication skills to better address patient expectations that conflict with guideline recommendations. A more extensive implementation process is warranted for the next guideline to increase the physiotherapists' knowledge on evidence-based treatment.

Submission #: 162
Poster day: 2
Position: B31

Patients´ experiences and thoughts about presurgery physiotherapy, future exercise and self-treatment in patients with disc herniation or spinal stenosis. A qualitative study

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Research Aim/Objective:
The aim was to describe patients´ experiences from a presurgery physiotherapy intervention and their thoughts about future exercise and self-treatment.

Research Methods:
Individual semi-structured interviews, at two time-points were analysed with content analysis. The informants were recruited from a RCT evaluating presurgery physiotherapy at a spine clinic in a university hospital. The criteria for selection were patients who had been randomized to presurgery physiotherapy and had participated in > 12 sessions. The physiotherapy contained; treatment-based classification, tailor-made supervised exercise and a behavioural approach. Part of the data in the first interviews has been used in a previous publication with another aim than present. The same 18 patients were invited to both the interviews. All of them agreed to participate in the first interview, 0 to 8 months after presurgery physiotherapy and before surgery (if conducted) and 16 patients fulfilled the second interview, 3-14 months after presurgery physiotherapy.

Results:
Three categories emerged from the analysis. The first category; “Personal experiences from pre-surgery participation”; described how wellness improved during pre-surgery physiotherapy, even though participation was perceived as challenging and sometimes stressful. Support from and cooperation with the physiotherapist were considered to be crucial and gave confidence. In the second category “Attitudes to exercise”, the informants described exercise as an action of prevention and rehabilitation not always easily obtained, and that it demands motivation. They further stated that exercise is good for you not only physically but also improving your mental health status. The third category; “Future physical activity - individual responsibility”, described how the informants currently identify themselves as committed to exercise. New knowledge has changed the prerequisites for exercise and increased security in every-day physical activities like lifting a burden. Plans to return to former activities, but also potential challenges and hinders that might appear in the future were

Discussion:
There is a need to support patients to continue with self-care such as exercise when exercise and education, our first line treatment for LBP can reduce recurrences. The study results indicate that participation in pre-surgery physiotherapy may enhance continued exercising, also in the long run. Increased confidence, positive reflections, knowledge about intensity and progression, and the understanding that exercise can be used for pain relief seem to have produced a new mindset among the participants.

Submission #: 266
Poster day: 1
Position: C27

Stratified care for common musculoskeletal disorders in general practice. A planned cluster randomized controlled clinical trial in Norway. The SupportPrim project.

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Research Aim/Objective:
The purpose of the project is to develop stratified care for patients with common musculoskeletal disorders based on the 5 different phenotypes and to investigate the effect of the stratified care approach in general practice in Norway.

Research Methods:
In this study we will present the development of the matched treatment options for the phenotypes and how we match the treatment recommendations to the patient's phenotype and specific characteristics. We will conduct a cluster randomized controlled clinical trial in general practice. General practitioners will be invited to participate and randomized to either the intervention group consisting of the stratified care approach or to control group receiving usual care without access to stratified care. We will include 24 GPs in each group and each GP must include 18 patients, in total 864 patients. Inclusion criteria for the patients is age 18-67 years, seeking general practitioner with musculoskeletal pain in the neck, low back, shoulder, knee, hip or multisite pain as the main problem.

Results:
The patients will be included in the project before the first consultation with the GP. The patients register the baseline data, which the GP can display on the computer at the first consultation. Patients will be stratified in one of five phenotypes, based on the scoring pattern of 11 biopsychosocial prognostic factors. Based on this, the GP will receive matched treatment recommendations for the phenotype of the patient trough the clinical dashboard where the information is displayed. The GP and the patient can then by shared decision making discuss treatment options and agree on a treatment plan. The matched treatment recommendations are based on evidence-based guidelines, experience from the stratified care approach in the STarT MSK programme in UK, discussions with clinical experts, and consensus agreement between experienced GPs. The cluster randomized controlled clinical trial will start 1st march 2022 and results for the primary outcome are expected first

Discussion:
This is the first project to develop and evaluate the effect of stratified care based on phenotypes for patients with musculoskeletal pain in General Practice in Norway.

Submission #: 164
Poster day: 2
Position: C34

Therapeutic alliance: patients' expectations before and experiences after physical therapy for low back pain. A qualitative study with six months follow-up

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Research Aim/Objective:
The aim of this study was to explore patients' expectations before and experiences after physical therapy for low back pain.

Research Methods:
Qualitative in-depth, semi-structured interviews with patients attending physical therapy were performed before, after, and six months after treatment. Data were analyzed from a hermeneutical perspective with decontextualization, recontextualization, and identification of themes.

Results:
Patients' pre-treatment expectations to physical therapy were focusing on exercises and a body-oriented diagnosis. After treatment, reassurance, active listening with explanations and personally adapted strategies for self-managing pain and regaining control over everyday activity were expressed as decisive for a meaningful therapeutic alliance.

Discussion:
Our findings indicate that patients emphasize physical therapists' interactional and pedagogical skills as meaningful aspects of the therapeutic alliance. The therapeutic alliance provided a basis to integrating knowledge on the complexity of pain. The findings have implications for clinical practice and the training of physical therapy students.

Submission #: 33
Poster day: 1
Position: A24

Neck pain outcomes and prognostic factors

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Research Aim/Objective:
The aims of this study were to (1) examine the correlation among commonly used outcomes for neck pain (i.e., disability, health-related quality of life and pain), (2) to investigate how the predictive capacity of well-documented prognostic factors for neck pain differs across commonly used outcome measures.

Research Methods:
This study was part of a one-year prospective observational study. Patients with neck pain from chiropractic practices in Norway, aged 18 years or older, were enrolled in the study. The data collection included questionnaires at baseline and after 12-weeks. The selected set of well-documented prognostic factors were; the previous and expected visual trajectory patterns, radiating pain to the shoulder and/or elbow, number of musculoskeletal pain-sites, educational level, physical leisure activity, and consultation-type. Four different outcomes were used: Neck Disability Index, EQ-5D and pain intensity (Numeric Pain Rating Scale). Association between outcome measures was assessed with Pearson correlation coefficient. Multivariable linear regression models were used to identify differences in explained variance and relationship between predictors and outcomes.

Results:
The study sample included 1313 patients and 932 completed follow-up at 12 weeks. The sample had a mean age of 45 (SD 13) years, and 74% were woman. Small to moderate mean improvements were observed for all outcomes from baseline to 12 weeks. Pearson correlations between outcomes at 12 weeks revealed the weakest correlation between EQ-5D and pain intensity (0.45), and between NDI and pain intensity (0.58), but the strongest correlation between NDI and EQ-5D (0.70). In the final models, the explained variance ranged from adjusted R2 of 0.22 to 0.60, highest with NDI and lowest with pain intensity as outcome. The visual trajectory patterns characterizing patients' neck pain the previous year and expectations of neck pain the upcoming year were strong predictors in all models regardless of the definition of outcome.

Discussion:
The weak to moderate correlation between outcomes imply that patients do not show parallel improvement on outcomes covering different health domains. The large differences in explained variance of the predictive capacity of the included predictors across outcomes suggest construct dissimilarities between outcomes. As patients' indication of their previous and expected visual trajectory patterns were associated with all outcomes after 12 weeks, the predictive capacity of the visual patterns is stable across outcomes.

Submission #: 161
Poster day:
Position:

Cognitive Functional Therapy for people with persistent low back pain in the United Kingdom National Health Service: A mixed methods feasibility study.

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Research Aim/Objective: To determine the feasibility of completing a definitive randomised controlled trial (RCT), that will evaluate the clinical and cost-effectiveness of Cognitive Functional Therapy (CFT) in comparison to usual physiotherapy care for people with persistent low back pain (LBP) in the United Kingdom National Health Service (NHS).

Research Methods:
A pragmatic two-arm parallel feasibility RCT compared CFT with usual physiotherapy care for people with persistent LBP with sixty participants randomly allocated to either intervention. Data concerning the study processes, resources, management (eligibility, recruitment, retention, participant safety, physiotherapist training and treatment fidelity) and patient reported outcome measures (disability, pain intensity, quality of life and psychosocial function) were collected at baseline, three and six-month follow-up, analysed and evaluated against pre-specified indicators in order to establish feasibility. An embedded qualitative process evaluation explored the acceptability of the research processes and the experiences of the interventions from the perspectives of participants and their treating physiotherapists using semi-structured interviews (patient participants) and focus groups (Physiotherapists). Data were analysed thematically using Framework Method.

Results:
Sixty participants (n=30 CFT and n=30 UPC) were recruited to the feasibility RCT with 71.6% (n=43) retained at six-month follow-up. CFT was delivered to fidelity, relevant and clinically important outcome data were rigorously collected and CFT was tolerated by participants with no safety concerns. The Roland-Morris disability questionnaire was the most suitable primary outcome measure and sample size calculations were completed for a future definitive RCT. Intention to treat analysis indicated a signal of effect in favour of CFT with moderate and large between group effect sizes observed across outcome measures at six-month follow-up. The embedded process evaluation confirmed that the feasibility RCT procedures were acceptable to participants (n=8) and the CFT training programme provided the physiotherapists (n=4) with the necessary knowledge, skills and confidence to deliver CFT as intended. Usual physiotherapy care training was also acceptable to the physiotherapists (n=6) but the intervention was not always delivered to fidelity.

Discussion:
This research confirms that it is feasible to conduct a randomised study of CFT in comparison to usual physiotherapy care for NHS patients and indicates a future fully powered clinical and cost effectiveness RCT could be completed. Novel insights into the feasibility and acceptability of CFT in the context of the NHS have been provided. CFT also appeared to result in improved treatment outcomes, further supporting the need for a definitive RCT to be completed.

Submission #: 308
Poster day: 1
Position: C32

The barriers and facilitators to the implementation of Cognitive Functional Therapy in the NHS: The perspectives of people with low back pain and physiotherapists.

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Research Aim/Objective:
This study aimed to explore the barriers and facilitators to the implementation of Cognitive Functional Therapy (CFT) within the United Kingdom National Health Service (NHS) through the perspectives and experiences of people with persistent low back pain (LBP) and physiotherapists.

Research Methods: Purposive sampling was used to recruit participants who had completed a CFT intervention for persistent LBP and physiotherapists who had previously attended a three-day CFT training workshop. Two male musculoskeletal physiotherapists conducted one to one semi-structured interviews. Topic guides were designed by the research team with reference to previous LBP literature and a priori theories generated from previous qualitative research of CFT. Interviewers had no prior involvement in CFT training or the treatment of participants. The study was situated within an interpretative description framework. Interview data were transcribed verbatim and analysed using thematic analysis and framework method. Data were reported in accordance with the COnsolidated criteria for REporting Qualitative research (COREQ).

Results: The sample consisted of eight people with LBP and ten physiotherapists. The key findings were that UK NHS physiotherapists can be trained to deliver CFT, they valued the training, considered the intervention to be effective and generally felt confident to deliver CFT successfully to patients in UK NHS physiotherapy departments. The physiotherapists also reported a broadened biopsychosocial understanding of LBP and that live patient demonstrations by a CFT tutor were considered fundamental to linking theory with practice. However, ongoing peer support and mentorship following training from an experienced CFT practitioner was deemed necessary for the physiotherapists to sustain changes to their clinical practice.
People with LBP welcomed CFT as they felt it was beneficial and enabled them to self-manage their LBP and they could recognise the difference between CFT and usual care. The barriers, mainly related to the healthcare system, included short appointment times and poor availability of follow-up appointments.

Discussion:
This study established the barriers and facilitators to the implementation of CFT in the UK NHS from the perspectives of people with persistent LBP and Physiotherapists. The findings of this study were used to inform the planning, design and delivery of a feasibility randomised controlled trial of CFT as well as giving insights to clinicians, educators and service providers about the sustainability of implementation of CFT more widely in the UK NHS.

Submission #: 309
Poster day: 2
Position: B32

The modifying role of baseline pain intensity and duration on the effect of app-delivered self-management for low back pain: secondary analyses of the SELFBACK trial

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Research Aim/Objective:
The artificial intelligence-based SELFBACK app supports tailored self-management of non-specific low back pain (LBP) and have been shown to reduce LBP-related disability. In this secondary analysis of the SELFBACK randomized controlled trial, we explore if intensity and duration of LBP at baseline modify the effect of the SELFBACK intervention.

Research Methods:
461 adults seeking care for LBP in primary care or an outpatient spine clinic were randomized to the SELFBACK intervention adjunct to usual care (n=232) or usual care alone (n=229). We classified participants based on baseline score of pain intensity the last week (≤5 points or >5 points) measured by the 0-10 Numeric rating scale (NRS) and duration of the current LBP episode (≤12 weeks or >12 weeks). Outcomes were LBP-related disability measured by the Roland Morris Disability Questionnaire (RMDQ), average LBP intensity, pain self-efficacy, and global perceived effect. Outcomes were measured at baseline, 6 weeks, 3, 6 and 9 months. We compared the mean difference between SELFBACK and usual care, stratified by baseline level of LBP intensity and duration of the current LBP episode.

Results:
461 adults seeking care for LBP in primary care or an outpatient spine clinic were randomized to the SELFBACK intervention adjunct to usual care (n=232) or usual care alone (n=229). We classified participants based on baseline score of pain intensity the last week (≤5 points or >5 points) measured by the 0-10 Numeric rating scale (NRS) and duration of the current LBP episode (≤12 weeks or >12 weeks). Outcomes were LBP-related disability measured by the Roland Morris Disability Questionnaire (RMDQ), average LBP intensity, pain self-efficacy, and global perceived effect. Outcomes were measured at baseline, 6 weeks, 3, 6 and 9 months. We compared the mean difference between SELFBACK and usual care, stratified by baseline level of LBP intensity and duration of the current LBP episode.

Discussion:
Although we observed an overall small favourable effect of SELFBACK for participants with the highest level of symptoms, there was no clear evidence of differences in the effect of a tailored app-delivered self-management intervention in subgroups defined according to baseline level of pain intensity or pain duration. Thus, our findings indicate that clinicians should not refrain from advising individually tailored self-management support for patients with high LBP and persistent symptoms; however, this requires further research.

Submission #: 200
Poster day: 1
Position: C28

Readers' reactions to media coverage of The Lancet Low Back Pain Series: a qualitative content analysis

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Research Aim/Objective:
To explore readers' reactions to the media coverage of The Lancet Low Back Pain Series. Specifically, we aimed to identify if readers' accepted or rejected the Key Messages of the Series.

Research Methods:
Content analysis of 3,949 publicly available media outlet and Facebook comments based on news stories, between March 21, 2018, and May 31, 2019. Pairs of investigators independently coded the comments. The coding framework used a hybrid inductive and deductive approach. This was to both generate new themes from the comments, and assess if readers' agreed or disagreed with specific Series messages, including staying active, staying at work, avoiding unnecessary imaging, medicines, and surgeries. Descriptive statistics (counts and percentages) were used to summarise the results of the content analysis.

Results:
The content analysis suggests that most readers' felt their back pain was dismissed by the media coverage, and that the overall messages were formulated by persons with no experience of low back pain. Messages about reducing lumbar imaging seemed to be interpreted as rationing and unhelpful to the proper diagnosis of low back pain. The message that most back pain is non-specific was heavily rejected with many readers proposing pathoanatomical causes. Messages to stay at work and stay active were often deemed unsympathetic, and lacking nuance and specificity regarding type and intensity. Messages about reducing medicines and surgery were mixed with readers' keen to convey that back pain is individual ('one size does not fit all') and that many non-medical treatments do not work, and so medical treatments such as surgery and opioids should not be dismissed.

Discussion:
Readers commenting on the media coverage of The Lancet Low Back Pain Series tended to reject the Key Messages of the Series. Overall, the media coverage was perceived as dismissive of people's low back pain and related disability. This analysis could help inform future public information and communication strategies about LBP, by pre-emptively addressing specific concerns about the Key Messages.

Submission #: 320
Poster day:
Position:

Comparison of the effectiveness of connective tissue and Swedish massage on pain, functional status, and quality of life in patients with chronic low back pain

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Research Aim/Objective:
Massage therapy has the potential to minimize pain in treating chronic low back pain (CLBP). This study aimed to compare the effectiveness of connective tissue massage (CTM) and Swedish massage (SM) on pain, functional status, and quality of life in patients with CLBP.

Research Methods:
Thirty patients with CLBP were included, allocated into the CTM (13 women, 2 men, age: 51.40±8.81years, body mass index (BMI):31.06±4.67 kg/m2) and the SM (10 women, 5 men, age: 49.66±11.90years, BMI: 28.42±4.14kg/m2) groups. Respective massage applications plus standardized physiotherapy were applied 5 days/week for 3 weeks. The pain intensity with the Visual Analog Scale, the functional status with Oswestry Disability Index, and the quality of life with Short Form-36were assessed at baseline and after a 3-weeks program. T-test and Chi-square test were used for analysis.

Results:
The physical characteristics of the groups were similar ($p<0.05$). After the program, the pain decreased, and the functional status and the quality of life improved in the CTM group ($p<0.05$), whereas in the SM only the pain reduced and the functional status improved ($p<0.05$). Moreover, the functional status got better in the CTM group in comparison to the SM group (p0.05).

Discussion:
In our study, both the CTM and the SM in addition to standardized physiotherapy had similar improvements in pain and functional status for patients with CLBP. In the CTM group, the quality of life also increased. Moreover, the CTM was superior in improving functional status compared to the SM.

Submission #: 75
Poster day:
Position:

Disc, pain generators, percutaneous full endoscopic management

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Research Aim/Objective:
Anatomy and physiology of normal disc, pathophysiology of discogenic back pain, pathophysiology of PIVD related pain and pathophysiology of stenosis related pain and their management by percutaneous endoscopy will be discussed in reference to sinuvertebral and basivertebral nerves in this presentation.

Research Methods:
Review of literature

Results:
Discogenic back pain, PIVD and stenosis can be managed successfully by percutaneous full endoscopic techniques.

Discussion:
Percutaneous full endoscopic techniques are least invasive of minimally invasive spine surgery (MISS) having advantages of minimally invasive surgery (MIS) than open or microsurgical techniques. In near future management of discogenic back pain, PIVD and stenosis will be all percutaneous full endoscopic.

Submission #: 159
Poster day: 2
Position: C31

Content validity of patient reported outcome measurement instruments for patient satisfaction in primary care; a systematic review in patients with musculoskeletal complaints

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Research Aim/Objective:
To evaluate the content validity of patient-reported outcome measurement (PROM) instruments used with patients with musculoskeletal complaints, such as LBP patients, treated in primary care to assess satisfaction.

Research Methods:
A literature search in MEDLINE, EMBASE and CINAHL was undertaken (up to January 2020) to identify studies of the development or evaluation of content validity of a PROM aimed to assess patient satisfaction. A PROM was considered eligible if it aimed to measure satisfaction with care in patients with musculoskeletal complaints. Two independent reviewers performed study selection, quality assessment, and data extraction. Evaluation of content validity of the included PROMs was performed according to COSMIN guidance, which includes the evaluation of the quality of a PROM development, the quality of content validity studies, the content of the PROMs, and rating the quality of evidence with a modified GRADE approach.

Results:
Seven PROMs were identified. Their quality of development was inadequate. No studies evaluating content validity of the satisfaction PROMs were retrieved. The content validity of the satisfaction PROMs was insufficient, and supported by very low quality evidence.

Discussion:
In measuring patient satisfaction among patients with musculoskeletal complaints treated in primary care, such as LPB patients, none of the identified PROMs had adequate content validity. Future studies should address relevance, comprehensiveness, and comprehensibility of PROMs used to measure satisfaction, and emphasise patient involvement during the development of new instruments.

Submission #: 62
Poster day: 1
Position: B27

Association of temporo-mandibular dysfunctions and neck pain among university students in Pakistan

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Research Aim/Objective:
The purpose of this study was to determine whether there was any association between Neck pain and TMD among university students who had a travelling routine of more than 30 minutes.

Research Methods:
This was a cross-sectional survey conducted after ethical approval, during 2019 in Faisalabad Pakistan. Sample size was calculated using epitool and found to be 739 participants. students fulfilling the inclusion criteria from three different universities (two Public and one private) were recruited through Non-probability purposive sampling technique. Written informed consent was taken from each participant. Neck pain was assessed through Neck Disability Index, and TMD were assessed through TMJ index. Chi square was applied to measure the association between, neck pain and TMD, Neck pain and travelling & TMD and travelling time. r value less than 1 was considered significant.

Results:
The mean age of the participants was 22.67±3.43 years. All the participants were enrolled in 4 year graduate programmes. 229 (30.98%) participants were from University of Agriculture, 374(50.60%) from government college university Faisalabad and 136(18.40%) from the university of Faisalabad. more than half 456 (61.72%) were female while 283 (38.28%) were males.
There is strong association between NDI and TMD (r=0.00<1), weak association between travelling time and NDI (r=0.069<1) and there is no association between travelling time and TMD (r=0.089<1).

Discussion:
a systematic review protocol registered on Prospero and published in 2020, will assess the association of symptoms of neck pain and TMD in in adults.
a pilot study published in 2016 by M M Bragatto et al, reported the Associations among temporomandibular disorders, chronic neck pain and neck pain disability in computer office workers. women with neck pain had higher association of TMD as compared to those without neck pain.

Submission #: 318
Poster day: 2
Position: B33

Clinical practice guidelines recommendations for the manual therapy management including risk assessment of neck pain: a systematic review

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Research Aim/Objective:
The aim of this study was to present and compare the content of (inter)national clinical guidelines for manual therapy management of people with neck pain. A second aim of this systematic review was to assess the incorporation of the International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT) cervical screening standard.

Research Methods:
We synthesized guidelines on manual therapy management of neck pain published from 2000 to 2020 following best evidence synthesis principles. We searched MEDLINE, EMBASE, CINAHL, PsycINFO, Cochrane, DARE, National Health Services Economic Evaluation Database, Health Technology Assessment Database, Index to Chiropractic Literature and grey literature between Jan 1st 2000 and November 11th 2020. One guideline per country was included: i.e., the most recently published physical therapy (monodisciplinary) guideline on neck pain, and in the absence of a physical therapy guideline; the most recently published multidisciplinary guideline. Two reviewers critically appraised eligible guidelines using the AGREE II (Appraissal of Guidelines REseach and Evaluation) and AGREE-REX (REcommendation eXcellence) criteria independently of each other. Manual therapy recommendations on Neck Pain, Cervical Radicular Syndrome, Headache and Whiplash were included.

Results:
In total, 19 Clinical Practice Guidelines were critically appraissed; 8 guidelines regarding neck pain, 4 guidelines regarding whiplash, 2 guidelines regarding cervical radicular syndrome and 5 guidelines regarding headache. Most high-quality Clinical Practice Guidelines recommend the use of manipulation or mobilization, with or without exercise. Most eligible guidelines poorly address the values and preferences, editorial independence, applicability, and implementation of the recommendations. Regarding the screening on risk factors for adverse events after MT treatment, only 8 (42,1%) CPGs discussed the risk on adverse events. Of these, only 2 (10,5%) CPG scored ‘present and complete’ and 6 (31,6%) CPGs scored ‘inadequate or incomplete’.

Discussion:
Although recent clinical guidelines are of better methodological quality, this did not seem to influence the recommendations that are given: many recommendations did not change over time. One important finding of this study is that recommendations from the Federation of Orthopaedic Manipulative Physical Therapists Incorporated are poorly included in the appraised guidelines. Caregivers should be guided with regard to treatment of subgroups of patients who are at risk for vascular complications after manual therapy interventions.

Submission #: 307
Poster day: 1
Position: C31

Classification of low back pain according to treatment based classification algorithm: a cross sectional study at tertiary center of Nepal.

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Research Aim/Objective:
Primary Objective:
To classify Low back pain (LBP) patients using the Treatment Based Classification Algorithm (TBC).
Secondary Objective(s):
To evaluate whether the TBC can classify every patient in just one category only or not.
To determine the percentage of patient falling on each sub groups based on the TBC.

Research Methods:
A cross-sectional study was conducted in Dhulikhel hospital, Physiotherapy department using convenience sampling. For LBP patients who were willing to participate, Oral and written consent was obtained. The study was conducted in 65 (Female/35) patients with acute and sub-acute LBP. Patient information on LBP duration, pain diagram, Numerical Pain Rating Scale, and Fear Avoidance Belief Questionnaire were obtained. After standardized Physical and Neurological assessment, patients were categorized according to TBC. The raw data collected were analyzed for descriptive statistics. Frequency distributions were used to present the demographic information of the participants. Dichotomous or categorical data were presented as frequency and percentage, and continuous variables were presented as mean/standard deviation (if normally distributed) and as median (if not distributed normally).

Results:
A total of 110 were screened for inclusion for this study, out of which 45 were excluded. Among 65 patients, 57.69% were female. The median value of duration of LBP was found to be 27.5 days (1-75). Majority (69.23%) of patient did not have prior history of LBP. The mean of present pain score was 4.52 and the worst pain score was found to be 7 with mean FABQ score to be 47.57. Approximately half of LBP patients fell into one subgroup i.e., 47.7%, 27.7% into combination of two or three subgroups and 20% did not meet any criteria for TBC. Similarly, patients falling in specific, stabilization, manipulation and traction sub-groups were 44.61%, 43.07%, 16.92% and 12.30% respectively. Our study concluded that almost half of the patients categorized into one subgroup. Categorization according to TBC is feasible and can be performed to provide an optimal treatment for LBP patients.

Discussion:
Effectiveness of TBC is evident to have better clinical outcome than other classification-based system. Our study concludes with the finding that almost half of the patient with LBP can be classified according to TBC. Careful monitoring of patients' response to treatment may be important for those patients who doesn't fit to any criteria. Further research is needed to be done on larger sample and applying a different strategy to improve patients with unclear classification.

Submission #: 64
Poster day: 2
Position: B34

Effectiveness and quality of implementing a best practice LBP model of care (BetterBack) compared with routine care physiotherapy: a hybrid type 2 trial

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Research Aim/Objective:
To evaluate the effectiveness of implementing a best practice model of care for LBP (BetterBack) compared to routine physiotherapy care (control group) regarding longitudinal patient reported outcomes. A secondary aim was to compare patient outcomes based on the fidelity of fulfilling a clinical practice quality index regarding physiotherapist care

Research Methods:
A stepped cluster randomised design nested patients with LBP in the three clusters which were allocated to routine care (control) or intervention (after implementation). Patient reported measures were collected at baseline, 3, 6 and 12 months and analysed with mixed model regression. Data were analyzed according to an intention to treat principle, using restricted maximum likelihood approach in mixed models adjusted for unstructured covariance structure. The primary outcome was between-group changes from baseline to 3 months for pain intensity and disability. Secondary outcomes were patient satisfaction, patient enablement, patient global impression of change and health related quality of life. The study cohort specific minimal clinically important difference (MCID) was assessed for primary and secondary outcomes at all follow-ups interpreting the within and between-group changes.

Results:
Implementation of the BetterBack MoC did not show any between-group differences in the primary outcomes compared with routine physiotherapy care. However, the intervention group showed significantly higher patient satisfaction at 3 months and clinically meaningful greater improvement in LBP illness perception at 3 months and quality of life at 3 and 6 months but not in patient enablement and global impression of change compared with routine care group. Physiotherapists´ care that adhered to all clinical practice quality indices resulted in an improvement of most patient reported outcomes with a clinically meaningful greater improved LBP illness perception at 3 month and quality of life at 3 and 6 months, significantly greater improvement in LBP illness perception, pain and satisfaction at 3 and 6 months and significantly better enablement at all time points as well as better global improvement outcomes at 3 months compared with non-adherent care.

Discussion:
This is among the first studies indicating that implementation of guideline based physiotherapy practice can improve outcomes among patients with LBP and highlights the importance of guideline based primary care for improving patient reported LBP. Using outcomes addressing enablement and LBP illness perception when evaluating LBP interventions can add value to traditional outcome measures. Since LBP fluctuates and relapse is common, improved patient self-management strategies that sustain over time are of importance.

Submission #: 21
Poster day: 1
Position: A21

Neck and back pain patients treated in primary and specialist health care – are they different?

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Research Aim/Objective:
Neck and back pain patients are treated in primary and specialist health care. Little is known about when and which patients are referred. The aims were to describe and compare patients treated by physiotherapist (PTs) in primary health care (PHC) and by health care professionals in specialist health care (SHC).

Research Methods:
In this cross-sectional study, we used data from the Fysioprim (FP) database and Norwegian Neck and Back Registry (NNRR). FP and NNRR contain data from patients treated by PTs in PHC and by specialists in department for physical medicine and rehabilitation in SHC, respectively. Patients had to be diagnosed with neck or back pain in the period of 2014-2018 and aged ≥18 to be included. Demographics and lifestyle factors, psychological distress (Hopkins Symptoms Checklist-10) , pain, disability (Neck Disability Index/Oswestry Disability Index) and health-related quality of life (EQ5D) were investigated using multiple logistic and linear regression.

Results:
In total, data from 8125 patients were included in the analyses, 584 and 7541 treated in PHC and SHC respectively. Patients in PHC were older and included more women. Further, patients treated in PHC reported less pain and higher health-related quality of life compared to patients in SHC. Psychological distress were similar between groups. Treatment in SHC was most common for patients with pain from 3 to 12 months compared with those with shorter and longer pain duration. Finally, treatment in SHC was associated with lower education, heavier workload, less physical activity and receiving social benefits. We had neither information about the purpose of the referral to SHC nor about the content of treatment in PHC or SHC.

Discussion:
Patients treated by PTs in PHC were less affected by their neck or back pain compared to those in SHC. However, psychological distress, a so-called yellow flag and considered an important clinical factor for referral to SHC, did not differ. Moreover, persistent pain (yellow flag) were positively associated with treatment in SHC. Differences in socioeconomic factors (education, social benefits) between groups are supported by findings in previous studies.

Submission #: 269
Poster day:
Position:

Supported employment interventions to improve competitive employment; a systematic review of studies of people without severe mental illness

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Research Aim/Objective:
To assess the effectiveness of supported employment interventions for improving competitive employment in populations of people with conditions other than only severe mental illness

Research Methods:
Supported employment interventions, with an aim of immediate competitive employment and ongoing case management support, have an established evidence base when used for people with severe mental health problems. These have potential to help people with back pain to return to work. We searched PubMed, Embase, CINAHL, PsycInfo, Web of Science, Scopus, JSTOR, PEDro, OTSeeker, and NIOSHTIC, for randomised controlled trials including unemployed people with any condition, or circumstances, were the entry criteria were not based on severe mental illness alone. Two reviewers assessed risk of bias and four reviewers shared data extraction. Study heterogeneity meant a planned meta-synthesis and meta-regression was not possible.

Results:
We found ten trials with a total of 913 participants. Seven of these trials reported statistically significant findings across a renge of conditions . Just one trial (N=66, 26 with low back pain) reported on people unable to work because of musculoskeletal injuries. A three week job replacement programme using a case-management approach was compared with a self placement group. Overall risk of bias was judged to be high. The relative risk of return to work was 1.38 (95% Confidence interval 1.00 to 1.89).

Discussion:
Supported employment approaches where people are helped to return directly to employment with initial, and ongoing, support from a case manager have evidence of effectiveness for people with a range health problems and adverse social circumstances. It is disappointing that this approach has not been evaluated more fully in a population unable to work because of low back pain.

Submission #: 317
Poster day: 1
Position: C34

Physiotherapists' knowledge, attitude and practice behavior to prevent chronification in patients with non-specific, non-traumatic, acute- and subacute neck pain: a qualitative study.

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Research Aim/Objective:
The purpose of this qualitative study is to generally explore musculoskeletal physiotherapists' knowledge, attitude, and practice behavior in assessing and managing patients with non-specific, non-traumatic, acute- and subacute NP with a specifical focus on how they identify and modify prognostic factors for chronification in these patients.

Research Methods:
A qualitative study using in-depth semi-structured interviews was conducted with 13 physiotherapists working in primary care. A purposive sampling method was used to seek the broadest perspectives. The knowledge-attitude and practice framework was used as an analytic lens throughout the process. Textual data were analyzed using qualitative content analysis with an inductive approach and constant comparison.
The interview guide was developed in advance by the research team. Questions were developed through a literature review, the clinical experience of the research team, and the KAP- framework.

Results:
13 interviews were held with physiotherapists working in primary care across the Netherlands. Seven themes, fifteen categories, and six subcategories emerged from the qualitative analysis, resulting in an adjusted knowledge, attitude, and practice model.
In this study, the physiotherapists had an overall biopsychosocial view regarding patients with non-specific NP. While there was overlap in knowledge about the cause and prognostic factors of chronification of NP, diverse assessment and treatment strategies were reported. Physiotherapists' practice behavior was influenced by individual attitudes towards their professional role and therapeutic alliance with the patient. Furthermore, individual knowledge and skills, personal routines and habits, the feeling of powerlessness to modify patients external factors, and patients' lack of willingness to a biopsychosocial approach influenced physiotherapists' clinical decisions. In addition, almost all physiotherapists pointed out that self-reflection was essential for their learning and personal development as practitioner learn and develop themselves.

Discussion:
It can be questioned if going along with patients' expectations is always the best choice, especially when this ensures that psychosocial prognostic factors are not included in the treatment process. This strategy can lead to sufficient treatment results in the short term, but adverse effects on the chronification of pain and patient therapeutic dependency.
Although all physiotherapists refer to communication as one of the essential skills in their treatment of patients with neck pain, most manual

Submission #: 45
Poster day: 2
Position: C28

Association analysis of HLA variants in patients with chronic low-back pain and Modic changes

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Research Aim/Objective:
To investigate the hypothesis of an autoimmune component in the pathobiology of patients with chronic low back pain and MCs.

Research Methods:
We inferred HLA genotypes using the online tool Phlat on blood-derived RNA sequencing data from patients (n=97) with low-back pain and MCs type I included from the Norwegian AIM study. Data from a published HLA reference panel of healthy Norwegians (n=4514) was used as controls. KIR epitopes were deduced manually from the HLA genotypes. Association analyses of MC status and individual HLA genes (HLA-A, -B, -C, -DQB1, -DRB1), HLA haplotypes and KIR epitopes were performed using the software Unphased v3.0.10. A cooperation with the TwinsUK register and the Northern Finland Birth Cohort 1966 (NFBC1966) has been established to validate and replicate the significant associations.

Results:
Several variants of HLA-A, HLA-B and HLA-C showed evidence of association with low-back pain and MC type I. One of these remained significant after correction for multiple testing (adjusted p-value = 0.018), namely HLA-B*51, which was observed less frequently in the patients than in the controls (1.0% vs 3.5%). Additionally, having both the KIR epitopes Bw4-80I and C1 on the same haplotype was less frequently observed in the patients than in the controls (1.4% vs 3.8%, adjusted p-value = 0.087).

Discussion:
Our preliminary results suggest a role of the HLA system in the etiology of low-back pain and MCs, which could potentially be compatible with an autoimmune origin. We are currently trying to validate our results in data from the TwinsUK and the NFBC1966 registries.

Submission #: 109
Poster day: 1
Position: B32

Associations of low-back pain and pain-related cognitions with lumbar movement patterns during repetitive seated reaching

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Research Aim/Objective:
Development of more effective LBP interventions, requires a robust theoretical framework regarding mechanisms underlying the persistence of LBP.
Aim: To assess variability and stability of lumbar movement patterns, during repetitive seated reaching, in people with and without LBP, and to investigate whether these movement characteristics are associated with pain-related cognitions.

Research Methods:
60 participants were recruited, matched by age and gender (30 healthy and 30 with LBP). Mean age was 32.1 years (SD13.4). Pain-related cognitions were assessed by the PCS, PASS and the task-specific 'Expected Back Strain' scale (EBS). Participants performed a seated repetitive reaching movement (45 times). Lumbar movement patterns were assessed by an optical motion capture system recording positions of cluster markers, located on the spinous processes of S1 and T8. Movement patterns were characterized by the spatial variability (meanSD) of the lumbar Euler angles: flexion-extension, lateral-bending, axial-rotation, temporal variability (CyclSD) and local dynamic stability (LDE). Differences in movement patterns, between people with and without LBP and with high and low levels of pain-related cognitions, were assessed with factorial MANOVA.

Results:
We found no main effect of LBP on variability and stability, but there was a significant interaction effect of group and EBS. In the LBP-group, participants with high levels of EBS, showed increased MeanSD_lateral-bending ($p=0.004$, $\eta 2=0.14$), indicating a large effect. MeanSD_axial-rotation approached significance ($p=0.06$).
In people with LBP, spatial variability was predicted by the task-specific EBS, but not by the general measures of pain-related cognitions. These results suggest that a high level of EBS is a driver of increased spatial variability, in patients with LBP.

Discussion:
The increased variability is in line with the results of Ross et al. (2015), but in contrast with Ross et al. (2017) and Moseley et al. (2006), who found evidence for more rigidly controlled movement, in people with pain and more negative pain-related cognition. Possibly, more rigid control may reduce variability in static postural tasks, but could lead to increased variability during movement. The use of task-specific EBS is recommended in future research.

Submission #: 3
Poster day: 2
Position: C32

Harnessing psychosocial exercise intervention targets to improve outcomes for people with low back pain

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Research Aim/Objective:
This project aims to understand how to prescribe exercise to better target its wider psychosocial benefits and thereby support the delivery of more effective interventions for people with low back pain (LBP).

Research Methods:
1. Perform a realist review with expert stakeholder group to explore context, mechanisms and outputs of exercise for LBP and collate results into a programme theory of how to target wider psychosocial benefits of exercise for people with LBP.
2. Develop an exercise program to better target the wider psychosocial benefits of exercise and develop a supporting online training tool for clinicians, using the components identified in step 1.
3. Explore the acceptability and feasibility of the targeted exercise program and clinician training tool in a feasibility and pilot randomised controlled trial.
4. Develop the protocol for a multi-centre randomised controlled trial with mediation analyses embedded to determine the clinical and cost-effectiveness of the targeted exercise program.

Results:
This project protocol has been submitted for funding. Patient and public involvement and engagement have supported the importance of this research and the need to better understand how exercise works to create behaviour change. Exercise is the most commonly used evidence-based intervention for people with LBP. Exercise is a complex intervention with multiple targets, which are often poorly specified in trials of LBP; when targets are identified they often only focus on body functions (e.g., muscle strength, endurance, or flexibility). However, although guidance exists for the prescription of exercise that addresses these traditional exercise targets there is little guidance on what exercise intervention components should be prescribed to ensure patients achieve the broader psychosocial benefits of exercise, such as: reduced fear of movement or pain catastrophising; greater self-efficacy, greater exercise adherence and use of self-management strategies; increased participation in physical activities.

Discussion:
Previous international consensus identified and prioritised these broader exercise intervention targets, such as reduced fear of movement, increased physical activity, improved confidence and ability to self-manage, and improved attitudes and beliefs about exercise benefits in people with LBP. However, research is needed to establish how to harness these prioritised broader targets of exercise, whether doing so provides greater benefits for patients than focusing only on traditional exercise targets such as strength, endurance and flexibility.

Submission #: 312
Poster day: 1
Position: C33

Development of an online vocational advice module to support people working with back and neck pain

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Research Aim/Objective:
To develop a vocational advice self-management module that can be accessed online to support people working with back and neck pain.

Research Methods:
Self-efficacy has been demonstrated to be an important characteristic in supporting working or returning to work with pain conditions. We reviewed theories of behaviour change to identify the most appropriate model to support people with back and neck pain in working with their condition. Two patient and public involvement and engagement (PPIE) events (n = 5 participants at each event) were then conducted to develop the content of the vocational advice module. These events focused on identifying the important issues to people working with pain grouped as return to work after absence and maintaining work despite pain. These events were further supported by an online assessment of face validity and usability of the module.

Results:
The Health Action Process Approach (HAPA) was the most appropriate behaviour change model to underpin the module. The HAPA model is developed from self-efficacy theory and the theory of reasoned action aimed at changing health behavioral intention – specifically the intention that an individual has about changing their behaviour. PPIE events highlighted the following key topics: working with back and neck pain (providing evidence based information); physical considerations at work; activity pacing; planning work around pain; pain toolkit (practical strategies to employ when in pain); communicating about pain at work; managing financial concerns; emotional wellbeing; action plan; resources. An online module was developed including evidence based information and interactive elements to support people in identifying where they struggle with work and to plan strategies they can employ, tailored to their work situation. Interactive elements are populated into an Action Plan to be used as a tailored resource in the workplace.

Discussion:
We have demonstrated that it is possible to develop a vocational advice self-management module utilising the Health Action Process Approach to behaviour change to increase user's self-efficacy around working with pain. The module has been informed by PPIE engagement ensuring content is targeted at those issues considered important to those working with pain. The content of the module now needs to be evaluated to gain user experiences and iteratively improve the content based on feedback.

Submission #: 315
Poster day: 2
Position: C33

North and South America

Characteristics and prognosis of Brazilian and Australian patients with low back pain: a comparison of prospective cohort studies

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Research Aim/Objective:
(1) to describe characteristics of patients with low back pain (LBP) from Brazil and Australia related to demographics and pain-related characteristics, and (2) to investigate possible differences between the course of these two populations.

Research Methods:
This study is a secondary analysis using data from two prospective cohort studies. Patients with acute low back pain were recruited from primary care general practitioners, physiotherapists, and chiropractors in Sydney, Australia (first sample), and from general practitioners in emergency departments from four public hospitals in São Paulo, Brazil (second sample). After completing a baseline questionnaire, the participants were followed-up at six weeks, three, six, and 12 months. The outcomes were days to recovery from pain, recovery from disability, return to previous work hours and duties, and complete recovery. Baseline characteristics were descriptively described, and tests were conducted for measure between-cohort differences. Cox regression was used to estimate comparisons between the clinical course of cohorts.

Results:
The study sample consisted of 1,339 patients from Australia and 600 patients from Brazil. Differences in baseline characteristics were small between the two samples, except for physical activity, general health and back pain interference. Participants from primary care in Australia had 21% greater chance (HR 1.21, 95% CI 1.09 to 1.36) to recover from pain and 89% greater chance (HR 1.89, 95% CI 1.53 to 2.35) to return to previous work hours and duties compared to Brazil. Participants from emergency departments in Brazil had an 80% greater chance (HR 1.80, 95% CI 1.61 to 2.01) to recovery from disability and 15% greater chance (HR 1.15, 95% CI 1.02 to 1.29) to have complete recovery compared to Australia.

Discussion:
Patients with low back pain in Australian primary care had similar demographic characteristics to patients in Brazilian emergency departments, but they differ in clinical course, especially for recovery from disability and return to previous work ours and duties. Factors such as cultural perceptions of pain or health care systems may impact differently on the course of low back pain in these settings/countries. As a result, observations from one country may not be generalized to another.

Submission #: 87
Poster day: 1
Position: B38

Analysis of control arm quality in trials included in the National Institute for Clinical Excellence (NICE) guidelines for low back pain and sciatica

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Research Aim/Objective:
The aim of this study is to describe and categorize the comparators used in trials included in the National Institute for Clinical Excellence (NICE) clinical practice guideline for low back pain and sciatica.

Research Methods:
Cross-sectional analysis of the comparators in trials used to inform recommendations in the NICE guidelines will be conducted. Comparators will be classified as optimal or suboptimal based on effectiveness according to high-quality systematic reviews. Ineffective or unknown effectiveness treatments, no treatment/waiting list, minimal treatment, usual care if not described in detail, or effective treatment with reduced supervision and/or dose compared to intervention arm will be considered suboptimal comparators. The main outcome is the proportion of trials listed in the guideline that have a suboptimal comparator. Descriptive statistics will be used to present the proportion of trials with a suboptimal comparator based on the type of treatment: non-pharmacological, pharmacological, interventional, and surgical.

Results:
We have already extracted data from 110 trials out of 489 and will be able to present the full results at the conference. Numerous trials reported multiple comparators resulting in a total of 155 comparators extracted currently. Most comparators extracted were effective treatments (46%) followed by treatments with unknown effectiveness (40%) and ineffective treatments (14%).

Discussion:
The recommendations made by clinical practice guidelines have a large influence on research, clinical care, payors, and patients. Limited evidence has been published about the impact of poor trial design on guideline recommendations such as suboptimal comparators, which could influence recommendations and ultimately impact clinical care, health funding allocation decisions, and research. Therefore, these results will help inform the methodological quality of trials used to inform influential guideline recommendations for low back pain and sciatica.

Submission #: 115
Poster day: 2
Position: B36

Is acupuncture associated to exercise effective for chronic low back pain? A meta analysis of randomised controlled trials

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Research Aim/Objective:
To determine the effect of acupuncture combined with exercise therapy compared to sham acupuncture combined with exercise to improve pain intensity, low back pain related disability, and quality of life in patients with chronic low back pain.

Research Methods:
Meta analysis of Randomised Controlled Trials (PROSPERO CRD42020212947). They were searched in December 2020 in PUBMED, Embase and PEDro. We included articles in any language, in any time, in which intervention included acupuncture plus exercises compared with sham or placebo acupuncture plus exercise for chronic musculoskeletal pain in adults. Exclusion criteria was having no exercise as an adjunct treatment. Two independent reviewers applied the criteria. A third reviser resolved disagreements. We extracted data about the population, setting, outcome and other informations. The risk of bias was performeddone using theby PEDro's Scale (0-10).For metanalysis was used the Review Manager® and the Cochrane's recommendation. The Standard Mean Difference with 95% confidence intervals were calculated to measure effect size. The data were screened for chronic back pain.

Results:
From 3.172 studies, 32 were screening. 03 studies were included (537 patients). The type of acupuncture used was Traditional Acupuncture or ear acupuncture. As exercise they used stretching for the back and hamstrings but not disclosed details. The studies showed low, moderate and high risk of bias, with a mean of 6 points on PEDro's Scale. For pain pos treatment and in the follow up the intervention has a moderate effect [-0.75 (-1.18, -0.33) I^2=78%; -0.61 (-0.95, -0.27) I^2 = 64%]. For short and long time, the effects were -0.75 (-1.18, -0.33) I^2 = 78% and -0.71(-0.98, -0.44) I^2 = 72%. For disability pos treatment, the intervention had a moderate effect [-0.67 (-1.16, -0.18) I^2 = 77%]. For quality of life, the control group had worst score [0.70 (0.40, 1.01) I^2 = 59%].

Discussion:
Our review provided evidence that associate acupuncture combined with exercise seems to enhance the therapeutic effect to improve pain intensity, disability and quality of life post treatment in adults with chronic low back pain when compared to treatment with sham acupuncture associated with exercise with moderate certainty of evidence for pain by GRADE. We recommend studies to be clearer in exercise therapy descriptions. Other modalities of acupuncture need to be analyzed.

Submission #: 292
Poster day: 1
Position: C38

Is it time to rethink disability assessment in low back pain? Measurement properties of the Brazilian WHODAS 2.0 for chronic low back pain.

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Research Aim/Objective:
The World Health Disability Assessment Schedule 2.0 (WHODAS 2.0) assesses disability based on the ICF-functioning framework. Knowing its adequacy for the Brazilian population with LBP is necessary. We examined the Brazilian WHODAS 2.0 reliability, internal consistency, and construct validity in community-based patients with chronic LBP.

Research Methods:
The Brazilian WHODAS 2.0 was applied to 100 volunteers, aged 18-80 years, with chronic nonspecific LBP. Test-retest reliability, and internal consistency were assessed using the Spearman's correlation test and Cronbach's alpha (α) coefficient, respectively. Construct validity between WHODAS 2.0 and Oswestry Disability Index (ODI), Roland-Morris Disability Questionnaire (RMDQ), and Fear Avoidance Beliefs Questionnaire (FABQ), was analysed with Spearman's correlation test. Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS).

Results:
The mean age of the sample was 44.87 (± 15.99) years. Mean total WHODAS 2.0 was 35.98 (± 21.27). WHODAS 2.0 showed satisfactory test-retest reliability with a strong correlation for total WHODAS 2.0 ($r=0.75$, $p<0.05$). Internal consistency was adequate for all domains, also for total score ($\alpha = 0.82$-0.96). Regarding construct validity, WHODAS 2.0, ODI ($r=0.70$, $p<0.05$), and WHODAS 2.0 and RMDQ ($r=0.71$, $p<0.05$) had significant correlation. Total WHODAS 2.0 correlated moderately with the FABQ-Phys subscale scores ($r=0.66$, $p<0.05$), but not with FABQ-Work. The WHODAS 2.0 domains, including cognition, mobility, self-care, getting along, life activities, and participation, correlated moderately with the ODI, RMDQ, and FABQ-Phys subscale scores.

Discussion:
The Brazilian WHODAS 2.0 proved to be a valid and reliable tool for patients with chronic nonspecific LBP. Multiple factors, whose interaction contributes to disability in patients with chronic LBP, can be overlooked while using instruments that are currently proposed as patient-reported outcome measurement for this outcome. Therefore, the WHODAS 2.0 can be a useful addition to assess disability and health in this population.

Submission #: 210
Poster day: 1
Position: C43

Associations between paraspinal muscle characteristics and spinal curvature in conservatively treated patients with adolescent idiopathic scoliosis. A systematic review.

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Research Aim/Objective:
Adolescent idiopathic scoliosis (AIS) is a common tridimensional spinal deformity among adolescents that may compromise their physical and psychological well-being. While some prior studies found unique paraspinal muscles characteristics in these patients, no systematic review has summarized the relationship between various characteristics of paraspinal muscles and spinal curvature.
To summarize the

Research Methods:
Five scientific databases (i.e., CINAHL, Academic Search Premier, MEDLINE, Scopus, and PubMed) were searches from the inception to 30 October,2020 to identify relevant articles. Two independent reviewers screened abstracts and full-text articles, assessed methodological quality of the included papers using relevant risk of bias tools based on study designs, and extracted relevant data.

Results:
Of 1,473 identified publications, 96 full-text were screened. 15 studies were included. One prospective, four cross-sectional, and ten case-control studies were rated as low to moderate quality. Limited evidence suggested that greater asymmetry of cross-sectional area or fatty infiltration in paraspinal muscles were related to greater Cobb angles in patients with AIS. Very limited evidence supported that PIEZO2 is a gene believed to be related to proprioception. However, no evidence showed that genes such as Ladybird Homeobox1(LBX1), Paired box gene 3(PAX3),Piezo Type Mechanosensitive Ion Channel Component 2(PIEZO2) were related to Cobb angles. Additionally, limited evidence found increased numerical proportions of type I fiber on convexity and type II fiber on concavity and positive correlations between curve severity (Cobb angle and AVT) and some fiber type-specific morphological/cellular characteristics (CSA, myonuclei density, total/activated SC density) in AIS, especially for type I fiber have been demonstrated.

Discussion:
While our results substantiated significant relationships between paraspinal muscle characteristics and spinal curvature in AIS cases, future studies should clarify their causal relationships.

Submission #: 7
Poster day: 2
Position: A31

The effects of osteopathic manipulative treatment on pain and disability in patients with chronic neck pain: a single-blinded randomized controlled trial

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Research Aim/Objective:
There is a paucity of studies evaluating the efficacy of osteopathic manipulative treatment (OMT) in the management of chronic, nonspecific neck pain (NP). Therefore, the objective of this study was to evaluate the efficacy of OMT in reducing pain and disability in patients with chronic NP.

Research Methods:
This single-blinded, cross-over, randomized controlled trial was conducted at a university-based, osteopathic manipulative medicine outpatient clinic. 97 participants, 21-65 years old, with chronic (lasting longer than 3 months), nonspecific NP were randomized to two trial arms: immediate OMT intervention or waiting period first. The intervention consisted of 3-4 OMT sessions delivered over 4-6 weeks, using a high-velocity, low-amplitude thrust technique to the cervical spine region and any combination (or none) of soft tissue, muscle energy, myofascial, and articulatory techniques. The primary outcome measures were pain intensity (average and current) and Neck Disability Index. Secondary outcomes included PROMIS-29 health domains and Fear Avoidance Beliefs Questionnaire. Outcomes obtained prior to the cross-over allocation were evaluated using general linear models and after adjusting for baseline values.

Results:
38 and 37 participants were available for the analysis in the OMT and waiting period groups, respectively. The results showed significantly better primary outcomes in the immediate OMT group for reductions in average pain (-1.02, 95%CI:(-1.72, -0.32), p=0.005), current pain (-1.02, 95%CI:(-1.75, -0.30), p=0.006), disability (-5.30%, 95%CI:(-9.2%, -1.3%), p=0.010) and improved secondary outcomes (PROMIS) related to sleep (-3.25, 95%CI: (-6.95, -1.54), p=0.003), fatigue (-3.26, 95%CI:(-6.04, -0.48), p=0.022), and depression (-2.59, 95%CI:(-4.73, -0.45), p=0.018). The effect sizes were within the clinically meaningful range of 0.5 and 1 standard deviation. No study-related serious adverse events were reported.

Discussion:
Our study demonstrated that OMT intervention is effective in reducing pain and disability along with improving sleep, fatigue, and depression in patients with chronic NP in the timeframe of this study. OMT applied to the cervical region is relatively safe, as are other manual interventions, and could be recommended as an effective option in the management of chronic NP.

Submission #: 144
Poster day: 2
Position: B44

Pain-related interference and pain-related distress of three different phenotypes of patients with chronic low back pain

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Research Aim/Objective:
To compare pain-related interference and pain-related distress among subgroups of chronic low back pain by their phenotypes, including localised low back pain, peripheral neuropathic back pain, and widespread back pain. Secondarily, compare pain characteristics among the groups.

Research Methods:
A cross-sectional study was conducted in 444 participants with chronic low back pain, recruited from outpatient physiotherapy clinics and community advertisements. Localised low back pain was identified when participants presented pain only in the low back region. Peripheral neuropathic back pain was classified based on the International Association for the Study of Pain classification. Widespread back pain was determined by the generalised pain criterion (pain in at least 4 of 5 regions in the Widespread Pain Index). Pain-related interference was investigated by Brief Pain Inventory and Patient-Specific Functional Scale. Pain-related distress assessment included psychosocial factors from Brief Screening Questions and maladaptive beliefs from Back Beliefs Questionnaire, self-efficacy, and expectation questions. Pain characteristics included pain intensity and pain duration. Ethical approval was granted.

Results:
A one-way ANCOVA presented statistically significant differences among the groups. Participants with widespread back pain presented higher pain-related interference by Brief Pain Inventory [$F(2,441) = 11.97$, $p<0.001$], and pain-related distress regarding symptoms of anxiety [$F(2,441) = 3.85$, $p=0.022$], symptoms of depression [$F(2,441) = 6.74$, $p=0.001$], social isolation [$F(2,441) = 6.54$, $p=0.002$], catastrophising [$F(2,441) = 9.72$, $p<0.001$], perceived stress [$F(2,441) = 3.93$, $p=0.020$], maladaptive beliefs [$F(2,441) = 6.89$, $p=0.001$], and expectation [$F(2,441) = 6.66$, $p=0.001$] compared to localised low back pain group. Participants with peripheral neuropathic back pain and widespread back pain presented with similar phenotypes. Participants with localised low back pain reported a lower current pain intensity [$F(2,441) = 6.77$, $p=0.001$], and participants with widespread back pain presented a higher pain duration [$F(2,425) = 9.83$, $p<0.001$] compared to other groups.

Discussion:
The broad implication of this research is that participants with different phenotypes present with different clinical and psychosocial outcomes. Participants with widespread back pain presented the highest pain-related interference, pain-related distress, pain intensity, and pain duration compared to the other phenotypes. Clinicians and researchers should consider the phenotype when addressing patients with chronic low back pain since they have different observable features that may require tailored treatment.

Submission #: 26
Poster day: 1
Position: A34

Neural management plus advice to stay active on clinical measures and sciatic neurodynamic for patients with chronic sciatica: protocol for a controlled randomised clinical trial

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Research Aim/Objective:
To compare the effects of adding neural management to advice to stay active versus advice to stay active alone in improving pain intensity and functional limitation. Secondarily, to compare the effects of the experimental intervention in the sciatic neurodynamic, pain modulation, and psychosocial factors.

Research Methods:
A parallel-group, controlled, examiner-blinded superiority clinical trial randomised at a 1:1 will be conducted in 210 participants with chronic sciatica, recruited from outpatient physiotherapy clinics and advertisements. Intervention group will receive neural management for 10 weekly sessions, plus advice to stay active on their daily living activities for 5 biweekly sessions lasting 30 minutes/session each. Control group will receive only advice to stay active. Primary outcome will be reduction in pain intensity and functional limitation. Secondary outcomes will include neuropathic symptoms, sciatic neurodynamic, pain modulation, and psychosocial factors. Data will be collected at 5, 10, and 26 weeks. Adverse events and patient satisfaction will be assessed. Ethical approval and trial registration has been granted (RBR-3db643c). Intention-to-treat analysis will determine between-group difference using mixed linear models.

Results:
It is expected that participants in both groups will show clinical improvement in their condition. However, we expect participants in the intervention group to have greater reduction in pain intensity, improved function, and improved neurodynamic of the sciatic nerve after the treatment period in a superior manner when compared to the control group. We anticipate none to minimum adverse events to occur, and participants will be positively satisfied with the treatment in both groups.

Discussion:
Patients with sciatica are unrepresented in clinical practice guidelines for low back pain. This project has considerable relevance due to the high social impact generated by the offer of free care and subsequent monitoring of these who suffers from chronic sciatica from the metropolitan area of Rio de Janeiro, Brazil. It has also the potential to contribute to the literature by the evidence of the used treatment protocol in clinical practice and in future research.

Submission #: 185
Poster day: 2
Position: C37

Which factors influence patient beliefs regarding the use of imaging? A cross-sectional study in the context of a middle-income country

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Research Aim/Objective:
To determine the proportion of patients with low back pain with inadequate beliefs regarding the use of imaging in the management of back pain and to investigate which factors are associated with imaging beliefs.

Research Methods:
This study uses baseline data from a randomized control trial investigating the efficacy of educational materials to change patient's beliefs about low back pain. Patients with non-specific low back pain seeking physiotherapy treatment were recruited from outpatient physiotherapy clinics in Belo Horizonte, Brazil. Data collected included beliefs about the importance of imaging for low back pain, demographic information, low back pain history and general beliefs about back pain. Descriptive statistics and multivariate logistic regression were used to analyse findings.

Results:
A total of 159 patients were included. The mean age was 49.59 ± 18.04 years and 89 (56%) were women. Our findings showed that 88.1% (95% CI: 83, 93.1) believed that imaging was necessary for the best medical care for low back pain and 62.9% (95% CI: 54.7, 70.4) believed that everyone with low back pain should obtain imaging. Among all variables, only general beliefs about back pain (OR = 0.90, 95% CI: 0.81, 0.99) was associated with beliefs that imaging was necessary and only low educational attainment (OR = 0.36, 95% CI: 0.16, 0.80) was associated with beliefs that everyone with low back pain should obtain imaging.

Discussion:
Nine out of ten patients seeking physiotherapy care would consider low back imaging to be necessary. Our findings suggest that patients may be an important drive for overutilization of low back pain imaging. General beliefs about back pain and low educational attainment should be considered when developing new interventions.

Submission #: 243
Poster day: 1
Position: C41

Group-supervised neuromuscular training programs in the treatment of soldiers with musculoskeletal disorders – a protocol of a randomized controlled trial

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Research Aim/Objective:
Access to rehabilitation services for musculoskeletal disorders has been hindered in Canadian Army Forces due to resources limitations. To overcome this issue, supervised-group programs have been developed. The objective is to compare the effectiveness of supervised-group programs to that of one-on-one physiotherapy for the treatment of chronic low back pain.

Research Methods:
This randomized clinical trial will include 60 Canadian Army Forces' soldiers from Valcartier military base suffering from chronic low back pain. They will be randomly assigned in a 1:1 ratio to either a 12-weeks supervised-group programs (n=30) or one-on-one physiotherapy care (n=30). One-on-one physiotherapy will include the usual intervention modalities (e.g., strengthening, manual therapy). Supervised-group program will include neuromuscular and proprioceptive trainings performed in a group setting, and the level of supervision is adapted to the soldier's needs. Primary outcome will be functional limitations as measured with the Brief Pain Inventory at baseline, 6, 12 and 26 weeks after baseline. Secondary outcomes will include pain severity, health-related quality of life, pain-related fears, and pain catastrophizing. Two-way repeated-measures ANOVA will be used to compare both interventions.

Results:
We hypothesized that supervised-group program will be at least as effective as one-on-one physiotherapy to decrease functional limitations and pain severity, and improve health-related quality of live. Given that supervised-group program will be performed in a supervised-group setting and that the supervised exercises use a task-oriented approach with gradual exposure to functional and occupational tasks, the individuals in the supervised-group program should achieve more important decrease in pain-related fear and pain catastrophizing.

Discussion:
The validation of the supervised-group programs effectiveness could provide a novel approach to manage musculoskeletal disorders among Canadian Army Forces' personnel, improving timely access to adequate rehabilitation care. This project has the potential to generate direct improvements to the health and quality of life of Canadian Army Forces' members. If their effectiveness is demonstrated, these interventions could be extended to the general population.

Submission #: 110
Poster day: 2
Position: B38

Pre-operative educational interventions in spine surgery: a scoping review

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Research Aim/Objective:
Scoping review of English language medical literature characterizing effects of pre-operative education on patients undergoing elective lumbar spinal surgery.

Research Methods:
Database search on 6/28/21 using keywords limited to 2004-2021 in Ovid Medline, Embase via Embase.com, EBSCO CINAHL, The Cochrane Database of Systematic Reviews via Wiley and PEDro. Preregistration was posted to OSF. Four reviewers screened in pairs for consensus using DistillerSR following PRISMA guidelines for scoping reviews. Included studies reported clinical or economic outcomes in human subjects age 18 or older undergoing elective spine surgery who participated in a pre-operative intervention involving education in addition to standard care. Duplicates were removed using EndNote. Study design, study population, surgery type(s), prehabilitation intervention type(s), timing of intervention, clinical and economic outcome measures reported, and implementation strategies were extracted.

Results:
12 studies were identified. 6 were randomized controlled trials (RCT), 2 retrospective cohort studies, 2 qualitative studies, 1 case series, and 1 prospective. 4 revealed pre-operative education decreased pain catastrophizing and anxiety. 4 reported most patients were more satisfied with their surgical outcomes after pre-operative education. 3 found reduced overall post-op medical costs in patients (37% to 45% less) or reduced post-op emergency room visits (12 less). 4 reported no improvement in patient reported outcomes (disability, pain, or quality of life) ranging from 2 days to 3 years post-op. 2 found patients rated pain education and outcomes of spine surgery as important topics.

Discussion:
Education-based pre-operative interventions may be used to improve patients' anxiety and knowledge levels. Other benefits were increased satisfaction of surgical outcomes and reduced medical expenditures. However, there is little to no evidence in support of improving post-op disability using educational strategies. Future studies are needed that test pre-operative educational interventions in combination with other strategies, such as exercise-based strategies to reflect the recommendations of guidelines to incorporate multimodal approaches to pre-operative care.

Submission #: 321
Poster day: 1
Position: D41

The challenges of conducting a telerehabilitation randomised clinical trial for elderly low back pain.

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Research Aim/Objective:
The aim of this study is to identify, describe and reflect on the challenges faced in conducting a telerehabilitation randomised clinical trial for elderly low back pain.

Research Methods:
This work is derived from the experience in conducting a telerehabilitation trial and is directly related to a randomised clinical trial study protocol that investigates the effectiveness of Cognitive Functional Therapy (CFT) compared to Pilates, both by the telerehabilitation modality, in the disability of elderly individuals with low back pain.

Results:
In addition to evaluating and treating the patient at a distance, the physiotherapist needs to master other skills, such as clear and nocebo-free communication, besides knowing and applying all available technology resources in order to offer an accessible, inclusive and quality care.

Discussion:
The Covid-19 pandemic brought light to new rehabilitation modalities and approaches. Telerehabilitation is a reality that is here to stay and demands that health professionals, such as physiotherapists, be trained to apply it with excelence in research projects as well in their clinical practice.

Submission #: 238
Poster day: 2
Position: D38

Macrophage migration inhibitory factor; a potential biomarker for chronic low back pain in patients with Modic changes

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Research Aim/Objective:
The etiology of low back pain remains poorly understood. Finding relevant biomarkers may lead to better understanding of disease mechanisms. The objective for this study was to identify possible serum biomarkers for LBP in patients with MCs.

Research Methods:
In this case control study serum levels of 40 cytokines were analyzed in patients with LBP and MC type 1 (n=46) or type 2 (n=37) and healthy controls (n=50) using a 40 plex human cytokine multi-bead assay (Bio-Rad, Norway). Data was recorded by Luminex IS 100 instrument (Bio-Rad, Hercules, CA, USA) and protein concentrations were determined using recombinant standard curves. We used ANOVA to compare serum cytokine levels between groups, clustering and prinicipal component analyses were performed to identify and visualize potential patterns of clustering of samples and cytokines.

Results:
Analyses identified significantly higher levels of six out of 40 cytokines in the MC type 1 group (MC1), and five in the MC type 2 group (MC2) compared with healthy controls. Five cytokines were moderately correlated with pain. Principal component analyses revealed clustering and separation of LBP patients and controls, capturing 40.8% of the total variance, with ten cytokines contributing to the separation. Macrophage migration inhibitory factor (MIF) alone accounted for 92% of the total contribution. Further, ROC analysis revealed that MIF showed an acceptable ability to distinguish between patients and controls (AUC = 0.79).

Discussion:
These results suggest that cytokines may play a role in LBP with MCs. The clinical significance of the findings is unknown. MIF strongly contributed to clustering of LBP patients with MCs and controls, and might be a biomarker for MCs. Ultimately; these results may guide future research on novel treatments for this patient group.

Submission #: 40
Poster day: 1
Position: A33

Clinician’s views on triggering factors for an acute episode of low back pain

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Research Aim/Objective:
Despite the existing evidence on risk factors for low back pain, the clinicians' knowledge on this subject is unclear. Therefore, the aim of this survey was to identify clinicians' views on risk factors for the development of an acute episode of low back pain.

Research Methods:
This was an observational cross-sectional study with convenience sample recruitment. To be included, participants should have a bachelor’s degree in physical therapy or medicine and present professional experience with patients with low back pain. Information about the clinician’s characteristics, professional background and clinical experience was collected using an electronic survey. Clinicians were also asked to nominate up to five short- and five long-term exposure factors that would be most likely to trigger a sudden episode of LBP, based on their views. Answers were grouped into risk factors categories and subcategories by two independent authors. The inter-examiner reliability between both raters was analyzed using Cohen's kappa test. Descriptive analyzes were performed to describe sample characteristics and frequencies of the risk factor categories and subcategories.

Results:
The survey was completed by 1002 clinicians. The sample consisted of 107 (10.7%) physicians and 895 (89.3%) physical therapists. The mean age of clinical experience was 10.1 years (SD ± 7.4) with an average of 9.7 years (SD ± 7.1) of experience attending patients with low back pain. The inter-researcher agreements for coding the risk factors were almost perfect (k= 0.99) for the main categories as well as for the subcategories (k= 0.99). The most mentioned short-term exposure main categories were physical stress (52.3%) and psychological stress (18.3%). The most mentioned long-term exposure main categories were poor general health (44.7%) and physical stress (21.2%). The most mentioned short-term risk factors subcategories were weightlifting (12.2%), stress (12.2%), and fall (7.6%). The most mentioned long-term risk factors subcategories were sedentarism (15.9%), overweight (8%), and stress (6.7%).

Discussion:
We were able to identify that clinicians may overestimate some risk factors that still have little or conflicting evidence in the literature. The opposite also happens, as clinicians underestimated important risk factors for low back pain with strong evidence in the literature. This may be related to the lack of knowledge or even outdated knowledge. These results may also reflect a higher education deficiency in teaching concepts of evidence-based practice and literature search methods.

Submission #: 134
Poster day: 1
Position: B35

Low back pain education in primary care: empowering health professionals and the community in the northeast of Brazil

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Research Aim/Objective:
Actions to bridge the gap between low back pain (LBP) science and Primary care settings are needed, especially in lower-income areas. We aimed to develop an online course on LBP for Primary Care-based health professionals and students and to deliver self-management materials for patients with LBP and the general community.

Research Methods:
This project consisted of: 1) the development of a 40-hours online course for Primary Care professionals in Fortaleza, Brazil, composed of four modules based on the 2018 Lancet series on LBP for content guide and followed the ADDIE model of instructional design for analysis, design, developing, implementation and evaluation. We surveyed those enrolled about LBP beliefs using questionnaires (HC Pairs and Back-PAQ-Br) before and after course' completion. 2) the design and development of a self-management booklet for consumers at Primary Care with chronic LBP, based on the Delphi method with panels including experts and patients; 3) the design and development of digital materials on LBP information for the general community using input from technology developers and consumers from the general community with and without LBP.

Results:
We developed an umbrella project including actions for clinicians, patients, and the community. We produced nine video lessons; one animated infographic lecture; diverse educational support materials with two podcasts and one videocast; one participants' online testing; one post-course survey for those who wished to be certificated. The online course was offered in December 2020 and 310 participants joined in total. 132 eligible responses revealed that both post-course HC-Pairs and Back-PAQ-Br scores showed more positive beliefs about LBP, compared to pre-course scores. The course received overall positive feedback about comprehensibility, didactics, and accessibility. Additionally, we provided printed and ebook booklets for professionals to hand out to patients during consultation in two health care units supported by the University. For the general community, we delivered one mobile-friendly interactive infographic, and one animated video, both disseminated through social media.

Discussion:
We have developed diverse evidence-based education material for health professionals, students, and the community to facilitate low back pain information dissemination. This community-outreach-designed project can facilitate changes in beliefs and attitudes towards LBP; it can contribute towards efficient LBP management in Primary care in areas where resources are scarce, while also helping to develop self-management skills in those with the complaint. Collaborative work is needed to expand these actions.

Submission #: 217
Poster day: 1
Position: B41

The challenging scenario of beliefs and attitudes toward chronic low back pain among final year undergraduate students: a cross-sectional investigation

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Research Aim/Objective:
To identify the beliefs and attitudes of students in four health courses about chronic low back pain (CLBP) management, and to investigate personal and undergraduate training-related factors associated with their beliefs.

Research Methods:
Cross-sectional study conducted with 173 Brazilian medicine, physiotherapy, nursing, and pharmacy students. Participants provided information on age, personal experience with LPB, training or class on CLBP management, and contact with patients with CLBP, followed by their first therapeutic choices. HC-PAIRS (0-90) was applied to understand the beliefs and attitudes related to CLBP. We built a One-Way ANOVA with Tukey post hoc tests to compare the results among courses. We built multivariate linear regression models to investigate associated factors with HC-PAIRS score.

Results:
Mean HC-PAIRS for all participants was 49.8 (± 10.2). Physiotherapy students presented more positive CLBP beliefs compared to medicine, pharmacy, and nursing students. Only 41.67% of the responses about the first therapeutic choices were according to the main guidelines of care for CLBP. Total HC-PAIRS score was positive and significantly associated with being a student from medicine, nursing, and pharmacy.

Discussion:
Physiotherapy students had more positive beliefs about the association between pain and disability in those with CLBP. Still, the beliefs and attitudes of the majority of health students concerning CLBP are not yet in line with the current management framework.
(https://doi.org/10.1016/j.msksp.2021.102375)

Submission #: 213
Poster day: 1
Position: C37

Physical activity supported by mobile technology program (PAT-Back) for older adults with low back pain at Primary Care: a feasibility study protocol

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Research Aim/Objective:
Back pain (LBP) is disabling in older adults. Primary care-based interventions for this population are needed. We will investigate the feasibility of a study to evaluate a primary care program of exercise therapy and pain education, supported by mobile technology, for older adults with LBP, compared to best practice advice.

Research Methods:
This parallel, two-arm randomized pilot trial will take place in Fortaleza, Brazil. We will randomly allocate 40 adults aged 60 years and older with chronic LBP into two groups. The experimental group (PAT-Back program) will consist of an 8-week group program based on pain education, exercises, graded activities, and in-home physical activity. Mobile text messages will be sent to promote adherence to in-home exercises. The control group will receive an evidence-based educational booklet given during one individual consultation. Outcomes will include recruitment rate, adherence and retention rates, level of understanding of the intervention content, perception of the utility of mobile technology, compliance with the accelerometer in a sub-sample of patients, and adverse events. This protocol adheres to the "Consolidated Standards Of Reporting Trials" statement.

Results:
Not applicable

Discussion:
The results of this study will form the basis for a large randomized controlled trial. This innovative approach to managing LBP in primary care settings for older adults, if proven to be effective, can bring an important advance in the knowledge of chronic LBP management to this population. This protocol was registered at the Clinical Trials Registry (REBEC RBR-653xcn) and was approved by Federal University of Ceará Human Research Ethics Committee (4.565.335/2021).

Submission #: 90
Poster day: 2
Position: C42

Misinformation about spinal manipulation and boosting immunity: an analysis of Twitter activity in the first year of the COVID-19 pandemic

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Research Aim/Objective:
During the first three months of the COIVD-19 pandemic, we observed an increase in social media activity regarding the unsupported claim that spinal manipulative therapy (SMT) improves human immunity. One year into the pandemic, our goal was to determine if social media misinformation related to SMT/immunity has changed.

Research Methods:
Social media searching software (Talkwalker) was used to collect data from Twitter. A previously published search was conducted from 1/1/2020 to 3/31/2020 (*pandemic declared on 3/11/2020) and included terms related to SMT (adjust* OR manipulat* OR smt), professions (chiro* OR physio* OR "physical therap*" OR naturo* OR osteo* OR napra*) and immunity (immun*). We have now repeated this search a year later using only chiro* as profession. A previously reported protocol was used to code Tweets into those promoting or refuting an SMT/immunity association. Tweets were also coded for associations between immunity and specific interventions (chiropractic care, SMT, nutritional supplements, health advice and other interventions). Finally, Tweets were evaluated for their geographic origin and their engagement with other Twitter users (likes and retweets).

Results:
Over the study period, the number of monthly Tweets promoting or refuting SMT/immunity decreased by 40% while the proportion of Tweets promoting versus refuting SMT/immunity remained constant (49% vs 51%). While this proportion remained constant, promoting Tweets that described a relation between SMT/immunity decreased by 12%. Tweets describing a relation between immunity and more general concepts (chiropractic care, nutritional supplements, health advice, or non-SMT therapies) increased 13%. With respect to user engagement, Tweets refuting SMT/immunity consistently had 10x more retweets and likes compared to tweets that promoted SMT/immunity. The United States produced the greatest percentage of Tweets increasing from 66% to 75% over the study.

Discussion:
Many regulators, associations, and institutions now actively counter misinformation by professionals. This likely explains the decrease in Twitter traffic regarding SMT/immunity. The 1:1 ratio of promoting and refuting tweets is likely a reflection of promoting Tweets being posted first, then countered by refuting tweets. Disturbingly, Tweets promoting a sole association between SMT/immunity decreased with a proportional rise in "Trojan Horse" tweets that link SMT/immunity with interventions perceived as beneficial for immunity (e.g. exercise).

Submission #: 145
Poster day: 2
Position: C38

Spinal movement impairments in people with acute low back pain

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Research Aim/Objective:
People with chronic low back pain (LBP) display spinal movement impairments that are associated with their LBP and functional limitations. The purpose of this study was to determine if people with acute LBP display these impairments and determine whether the prevalence was similar to that of people with chronic LBP.

Research Methods:
This is a secondary analysis of clinical examination data from 183 people with LBP (age: 41.8 ± 13.3; 55% female; 28% acute; average pain: 5.2 ± 2.3). People performed 9 clinical movement tests that were organized into five groups based on testing position (standing: 3 tests; sitting: 1 test; supine: 1 test; prone: 2 tests; quadruped: 2 tests). Reliably trained clinicians identified whether an impairment was present with each test. The frequency of tests positive for an impairment was calculated for each test within each of the 5 testing position groups. For each testing position group, a Chi-square test of independence was used to test for differences in impairments between people with acute LBP and people with chronic LBP.

Results:
Standing: The proportion of tests positive for impairments in people with acute LBP (1= 51%, 2= 24%, 3= 4%) was not significantly different from people with chronic LBP (1= 46%, 2= 17%, 3= 1%) (X^2=6.23, p=.09). Sitting: The proportion of tests positive for impairments in people with acute LBP (16%) was not significantly different from people with chronic LBP (30%) (X^2=3.70, p=.05). Supine: The proportion of tests positive for impairments in people with acute LBP (4%) was not significantly different from people with chronic LBP (14%) (X^2=3.67, p=.06). Prone: The proportion of tests positive for impairments in people with acute LBP (1=35%, 2=12%) was not significantly different from people with chronic LBP (1=35%, 2=26%) (X^2=4.86, p=.09). Quadruped: The proportion tests positive for impairments in people with acute LBP (1=24%, 2=4%) was not significantly different from people with chronic LBP (1=39%, 2=8%) (X^2=5.84, p=.05).

Discussion:
People with acute LBP displayed impairments across different test positions. While the groups were statistically similar across all 5 positions examined, people with acute LBP tended to display fewer impairments than people with chronic LBP. However, given the importance of impairments in people with chronic LBP, the impairments could be an important treatment target for people with acute LBP. Further examination of the role of impairments in people with acute LBP is warranted.

Submission #: 129
Poster day: 1
Position: B36

The effect of modifying spinal movement impairments in people with acute low back pain

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Research Aim/Objective:
Spinal movement impairments are important and modifiable factors in people with chronic low back pain (LBP). The purpose of this study was to determine if impairments were associated with acute LBP symptoms and if modifying the impairments improved symptoms.

Research Methods:
This is a secondary analysis of clinical examination data from 18 people with acute LBP (age: 35.8 ± 9.3; 72% female; average pain: 4.6 ± 2.2). Participants initially performed 6 clinical tests using their preferred movement strategy in positions of standing (n=3 tests), sitting (n=1 test), and prone (n=2 tests). Tests that provoked symptoms indicated an impairment was present. These tests were immediately followed by a modification to improve the impairment. Participants reported whether symptoms changed with the modification compared to the initial test. For each testing position, the average proportion of people with an increase in symptoms with the initial test was calculated. A Chi-square goodness of fit test was performed to test for differences in symptoms with modification of the impairment.

Results:
Standing: Initial test: 52% ± 17% of people had an increase in symptoms. Modification: A significant proportion of people had an improvement in symptoms (86% ± 4%; $X2= 14.29$, $p=<0.01$). Sitting: Initial test: 50% of people had an increase in symptoms. Modification: A significant proportion of people had an improvement in symptoms (78%; $X2= 2.78$, $p=.10$) Prone: Initial test: 44% ± .4% of people had an increase in symptoms. Modification: A significant proportion of people had an improvement in symptoms (93% ± 10%; $X2= 11.27$, $p=<0.01$).

Discussion:
In people with acute LBP, spinal movement impairments were associated with increased LBP across a variety of clinical tests. The majority of people reported an immediate improvement in LBP symptoms when the impairment was systematically modified. Future work should examine if treatment targeting impairments in the acute phase improves short- and long-term outcomes.

Submission #: 130
Poster day: 2
Position: B41

Measurement properties of the Pain Self-Efficacy Questionnaire in populations with musculoskeletal disorders: a systematic review

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Research Aim/Objective:
To conduct a systematic review that would identify, appraise and synthetize the psychometric properties of the Pain Self-Efficacy Questionnaire.

Research Methods:
The Pain Self-Efficacy Questionnaire (PSEQ) is a 10-item questionnaire, originally developed in English, aimed to assess the confidence of people with persistent pain to achieve different activities despite their pain. Embase, Medline and CINAHL databases were searched for publications reporting on psychometric properties of the PSEQ in populations with musculoskeletal disorders before January 29th 2021. The methodological quality was measured with the COSMIN risk of Bias tool. Reliability, validity and responsiveness values were extracted and synthetized.

Results:
After applying selection criteria on identified citations, 28 studies (9853 participants) were included. Risk of bias varied from Adequate to Very good for most measurement properties. Results showed weighted mean Intraclass Correlation Coefficient (ICC) of 0.86 (range: 0.75-0.93) for test-retest reliability for the original 10-items PSEQ and minimal detectable change at 95%CI was 11.52 out of 60 points. Effect size and standardized response mean values were 0.53 and 0.63 respectively, while minimal clinically important difference ranged from 5.5 to 8.5 in chronic low back pain (LBP) patients. Internal consistency (Cronbach's Alpha) ranged from 0.79 to 0.95. Results also showed that the PSEQ has low to moderate correlations with measures of quality of life, disability, pain, pain interference, anxiety, depression and catastrophizing. Finally, the PSEQ has been adapted and validated in 14 languages.

Discussion:
Overall, results demonstrate that the PSEQ has excellent validity, reliability and responsiveness. The results of this study suggest that clinicians can use the questionnaire with confidence to measure pain self-efficacy state of patients with musculoskeletal disorders and LBP as well as their change in time. Further high-quality studies are needed to determine responsiveness in populations other than chronic LBP.

Submission #: 113
Poster day: 2
Position: B37

Are paraspinal muscle morphology and composition associated with lumbar spinal stenosis: a systematic review

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Research Aim/Objective:
There is growing interest in the association of paraspinal muscle phenotypes and painful spinal conditions, with a rapid increase in related publications over recent years. This review aims to synthesize current evidence on the association of paraspinal muscle morphology and composition with lumbar spinal stenosis (LSS) presence and severity.

Research Methods:
Relevant studies were identified from a prior systematic review (Cooley et al., 2018), followed by an updated search from six databases (EMBASE, PubMed, SPORTDiscuss, Cinahl, Web of Science and PEDro). Observational studies investigating the association between paraspinal muscle morphology and composition with LSS were included. The Item Bank for Assessment of Risk of Bias and Precision for Observational Studies of Interventions or Exposures was used to assess the risk of bias in the individual studies. Two independent reviewers performed data extraction and risk of bias assessment for each article prior to conducting a narrative synthesis to summarize the results. The study protocol was prospectively registered: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42021246492 on 05/01/2021.

Results:
Thirteen studies were included in the review. Multifidus (n=10) was the most frequently studied muscle, followed by psoas (n=7) and erector spinae (n=6). Muscle CSA and fatty infiltration were the most common phenotypes, investigated in ten and six studies, respectively. Reporting, and selection and confounding, were the most common biases indicated in seven and six studies, respectively. Evidence suggests an association of multifidus size, composition, and asymmetry with the presence of LSS. However, in patients with LSS, evidence was conflicting regarding an association of paraspinal muscle morphology and composition with pain and function.

Discussion:
There is high variability in approaches used to measure muscle morphology and composition, which creates challenges in synthesizing findings to identify clear trends. Despite those challenges, the results suggest muscle morphology and composition are associated with the presence of LSS but associations with pain and function are conflicting. Further research utilizing standardized paraspinal muscle measurements, including advanced methods, while adjusting for confounding factors (e.g., age, sex, and BMI), is required to confirm results.

Submission #: 218
Poster day: 1
Position: C36

Treating children and adolescents with low back pain

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Research Aim/Objective:
To provide an overview of evidence-based treatment approaches for low back pain in children and adolescents.

Research Methods:
We conducted a simple search on PubMed aiming to find systematic reviews about treatment for low back pain in children and adolescents. A total of 58 systematics reviews were yielded and screened to guide the recommendations. In addition, the researcher's expertise was considered to improve the recommendations when evidence was not sufficient.

Results:
Physical intervention may reduce pain and disability post-treatment compared to usual or active medical care, but the evidence is very uncertain. Physical interventions are recommended ahead of passive interventions. Psychological interventions slightly reduce pain intensity post-treatment, compared to active medical care, usual care or waiting list. Psychological therapies are mostly delivered as a component of a multidisciplinary treatment programme. Pharmacological interventions should not be delivered as a standalone intervention and should be managed in combination with physical and psychological interventions. Opioids should only be used if appropriate and prescribed by specialist providers. The evidence base is insufficient to justify recommending using holistic or complementary therapies for children with back pain. An interdisciplinary approach is considered the gold standard for persistent pain in children and adolescents. Communication between health professionals, children and parents is a key part of the therapeutic alliance and it is directly associated with intervention adherence.

Discussion:
Low back pain in children and adolescents is prevalent and needs to be appropriately managed. Physical, psychological, and pharmacological interventions, particularly delivered in combination, are effective in reducing pain intensity and improving disability. The effectiveness of other interventions, including holistic and complementary therapies is uncertain. We recognise that there is a dearth of high-quality evidence to guide treatment decisions, and it is hoped that ongoing and future research will add to the evidence base.

Submission #: 131
Poster day: 1
Position: A31

Physical activity and education about physical activity for chronic musculoskeletal pain in children and adolescents: a Cochrane review

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Research Aim/Objective:
To evaluate the effectiveness of physical activity, education about physical activity, or both, compared to usual care (including waiting-list and minimal interventions such as advice, relaxation classes, or social group meetings) or active medical care in children and adolescents with chronic musculoskeletal pain.

Research Methods:
We included randomised controlled trials or crossover-controlled trials in this systematic review. The primary outcomes were pain intensity, disability, and adverse events. Electronic searches were performed at CENTRAL, MEDLINE, Embase, CINAHL, PsycINFO, PEDro and LILACS databases, and other two trials registers and reference lists. Risk of bias for each study was assessed using the criteria outlined in the Cochrane Handbook for Systematic Reviews of Interventions. The overall quality of the evidence for each outcome was assessed using the GRADE approach.

Results:
A total of 851 records were retrieved and three studies met the inclusion criteria (four publications, n = 211 participants). We did not find any cross-over controlled trials. The mean age of the participants was 11 years (SD = 2.5). All three studies included children and adolescents with juvenile idiopathic arthritis. We found very low certainty evidence that physical activity reduces pain intensity (2 studies, 118 participants, SMD -0.45, 95% CI -0.82 to -0.08, re-expressed as an MD of -12.80), and improves disability (3 studies, 170 participants, MD -0.37, 95% CI -0.56 to -0.19) compared to usual care at post-intervention assessment. Adverse events were not assessed. We did not conduct comparisons for physical activity compared to active medical care, education about physical activity or physical activity plus education compared to any control since no studies were found evaluating these interventions.

Discussion:
We found very low certainty evidence whether physical activity potentially reduces pain intensity and improves disability at post-intervention assessment compared to usual care. Due to the uncertainty of the evidence, further studies are likely to influence the effect estimates. Further randomised controlled trials with high-quality methodology and large sample size are urgently needed and it is important for future studies sufficiently powered to detect between-groups differences.

Submission #: 82
Poster day: 2
Position: B42

Cross-cultural adaptation of the Delphi Definitions of Low Back Pain Prevalence (DOLBaPP) questionnaire in French

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Research Aim/Objective:
The aim of this work was to perform the cross-cultural adaptation of the Delphi Definitions of Low Back Pain Prevalence (DOLBaPP) in Québec French and to validate them among French-speaking workers.

Research Methods:
To enable practical use of the DOLBaPP in different contexts, their presentation was adapted in the form of a questionnaire (referred to as "DOLBaPP questionnaire"). The process of cross-cultural adaptation of the DOLBaPP questionnaire in French was conducted according to the most recognized recommendations for the cultural adaptation of measuring instruments. The resulting questionnaire and an evaluation form were then submitted to a sample of 82 workers to assess the validity of the French adaptation of the questionnaire.

Results:
A total of 41 participants (50%) reported low back pain. A high proportion of participants (89.0%) stated that it took them less than 5 minutes to complete the questionnaire. More than 62% of them did not find any question poorly worded or confusing. Nearly 80% of the participants found the questionnaire easy to understand. The cross-cultural adaptation process suggested minor modifications to the original English DOLBaPP questionnaire.

Discussion:
This study has produced a valid adaptation of the DOLBaPP questionnaire in Québec French that will enable French-speaking populations to share the benefits of using standardized definitions of low back pain in epidemiological studies.

Submission #: 209
Poster day: 1
Position: B44

Long-term cumulative exposure to psychosocial stressors at work and low back pain

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Research Aim/Objective:
Many factors contribute to develop low back pain, including psychosocial stressors at work. Evidence, however, comes from cross-sectional studies conducted on heterogeneous populations. The aim of this study was to assess the association between long-term cumulative exposure to psychosocial stressors in white-collar workers and the prevalence of low back pain.

Research Methods:
Data for this study were drawn from the PROspective Quebec Study on Work and Health, a cohort of 9 188 white-collar workers of Quebec City, Canada, recruited in 1991–1993 (T1) with follow-ups 8 (T2) and 24 (T3) years later. After excluding deaths and losses to follow-up at T3, 6 662 workers were included (participation: 75%). Psychosocial stressors (high psychological demands, low job control, and 'job strain') were measured at T1 and T2 with the Karasek's questionnaire. Low back pain (severe enough to limit daily activities for more than one day) was assessed at T3 with a standardized questionnaire (DOLBaPP-F). Multivariate regression models were used to assess whether one-point and cumulative exposure to psychosocial stressors at work influenced the prevalence of low back pain.

Results:
The prevalence of low back pain at T3 was 10% (9.3% in men and 10.7% in women). Exposure to job strain at T1 or T2 was associated with higher prevalence of low back pain at T3 (Relative Risk (RR) and 95% Confidence Interval (95%CI): 1.32 (1.12 - 1.55) $p<0.01$), but cumulative exposure (at both T1 and T2) was not associated with higher prevalence of low back pain at T3 than exposure at a single follow-up (RR and 95%CI: 1.18 (0.83 – 1.67) $p=0.07$). However, cumulative exposure to high psychological demands alone was associated with higher prevalence of low back pain at T3 (RR and 95%CI: 1.81 (1.16 – 2.83) $p<0.01$).

Discussion:
These results confirm the importance of psychosocial stressors at work in developing and/or maintaining low back pain. While cumulative exposure to job strain does not seem more important than exposure on a shorter term, long-term cumulative exposure to high psychological demands alone was associated with higher prevalence of low back pain. Further work in other populations should add psychosocial factors outside the work environment in the equation.

Submission #: 196
Poster day: 2
Position: C36

No association between text neck and neck pain in adults: a longitudinal study

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Research Aim/Objective:
The aim of this study was to investigate the association between text neck and neck pain in adults.

Research Methods:
The sample was composed of 396 volunteers without neck pain aged between 18 and 65 years. Sociodemographics, anthropometrics, lifestyle (physical activity level, smoking habits, sleep quality), psychosocial (anxiety, depression, social isolation), and smartphone use-related questions were assessed by a self-reported questionnaire. Text neck was assessed by measuring the cervical flexion angle of the participants standing while typing a text on their smartphones, using the Cervical Range of Motion (CROM) device on baseline. Two questions were used to assess the point prevalence and frequency of neck pain one year after the baseline: 'Have you had neck pain today?'' With the following ''yes'' or ''no'' answer options and ''How often do you have neck pain?'', the response options were ''very often,'' ''often,'' ''occasionally,'', ''rarely,'' and ''never.

Results:
Of the total, 84.6% (n=335) of the participants completed the one-year follow up. Neck pain was reported by 10.1% (n=40) of the sample. The mean of the cervical flexion angle of the standing participant using a smartphone was 34.23 degrees (SD=12.15). Multiple logistic regression analysis showed that cervical flexion angle of the standing participant using a smartphone did not associate with neck pain (OR=1.01; 95% CI: 0.98–1.04; p=0.64) or frequency of neck pain (OR=1.01; 95% CI: 0.99–1.03; p=0.44) one year after the baseline. Of the potential confounders, sleep quality was associated with neck pain (OR=1.76; 95% CI: 1.18–2.62; p=0.006) and frequency of neck pain (OR=1.53, 95% CI: 1.19–1.96; p=0.001). When compared to active, insufficiently active participants presented an increased odds of neck pain (OR=2.42; 95% CI: 1.04–5.63; p=0.04).

Discussion:
Text neck was not associated with neck pain or frequency of neck pain in adults, These results challenge the belief that inadequate neck posture while using smartphones leads to neck pain and can help mitigate the impact of negative information regarding the cervical spine..

Submission #: 207
Poster day: 2
Position: C35

Longitudinal association between health-related quality of life and costs in patients with non-specific low back pain: an individual participant data analysis

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Research Aim/Objective:
The aim of this study is to investigate the longitudinal association between health-related quality of life and costs in patients with non-specific low back pain.

Research Methods:
Individual-participant data from economic evaluations performed alongside randomized controlled trials or prospective cohort studies including patients with non-specific low back pain were included. Sociodemographic data, clinical status, intervention details, longitudinal health-related quality of life measures and costs were extracted. Outcome measures were health-related quality of life (at baseline, post-test and follow-up) and costs measured from the healthcare perspective and/or societal perspective. Multilevel regression analysis has been conducted to estimate the longitudinal association between health-related quality of life and costs (healthcare and/or societal costs) using individual-participant data.

Results:
A brief search was conducted in PubMed (from inception to September 2021) to identify eligible studies. We used the terms “economic evaluation”, “cost-effectiveness”, “cost-utility”, and “low back pain”. Thirty studies that met inclusion criteria for the study were identified. First and last authors of these studies were contacted by email to request individual-participant data. A list of the variables required for the analysis was provided. Data were strictly anonymous making it impossible to identify individual participants. Authors who agreed to participate signed a data-sharing agreement. This study is ongoing. Currently, we have 13 studies with a total of 5,014 participants. Most studies were conducted in high-income countries (Australia=2, Germany=1, Israel=1, The Netherlands=1, Norway=1, Sweden=1, Switzerland=1, United Kingdom=3). One study was conducted in lower-middle-income country (Ghana) and one study in upper-middle-income country (Brazil). We will be able to present the first results at the conference in November.

Discussion:
Low back pain is the leading cause of years lived with disability worldwide, which leads to a negative impact on health-related quality of life and high costs. Research has been conducted to identify patient characteristics related to higher costs due to low back pain. However, there is a lack of studies investigating the longitudinal association between health-related quality of life and costs in patients with low back pain.

Submission #: 201
Poster day: 1
Position: B42

Do national health priorities align with the disease burden? An analysis of national health plans and official governmental websites

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Research Aim/Objective:
To investigate the alignment of national health priorities with a country's burden of disease as measured by disability-adjusted life years (DALYs).

Research Methods:
We conducted internet searches to identify priorities in national health plans. We identified the 20 most burdensome conditions for each country as measured by DALYs from the 2017 Global Burden of Disease study. We computed point-biserial correlations between DALYs and being nominated as a health priority and the pooled proportion (95% confidence intervals [CI]) of the 20 most burdensome conditions nominated as a priority across countries.

Results:
We identified national health plans and official governmental websites from 145 countries. There was little correlation (rpb = 0.06, 95% CI: 0.02 to 0.09) between national DALY data and whether or not a condition was nominated as a priority. The pooled proportion of the 20 most burdensome conditions nominated as priorities across countries was 45.4% (95% CI: 42.1 to 48.7). HIV/AIDS was the most commonly nominated health priority, being nominated by 51 out of 62 (82%) countries containing HIV/AIDS among their top 20 most burdensome conditions. Low back pain, headache disorders, and congenital birth defects had the lowest proportion of nominations as health priorities in countries where they were in the top 20 most burdensome conditions (6%, 6% and 11%, respectively).

Discussion:
Globally, national health priorities do not seem to align with objective data on disease burden. Failing to prioritise health priorities according to burden may mean that insufficient resources have been directed to improve health outcomes for people with those health conditions.

Submission #: 124
Poster day: 1
Position: B37

Sedentary behavior as a risk factor for developing low back pain: A systematic review of prospective cohort studies

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Research Aim/Objective:
To investigate the association between sedentary behaviour and the development of low back pain in adults.

Research Methods:
Literature searches were performed in five electronic databases from their inception up to July 2020. Prospective cohort studies investigating the association between sedentary behaviour and the risk of developing low back pain at follow-up were considered eligible. Two independent authors selected the included studies, extracted the data from included studies, and assessed the risk of bias using the Quality In Prognosis Studies (QUIPS) tool. The meta-analyses were performed using random effect models to obtain a pooled risk ratio (RR) and its respective 95% confidence intervals (CIs). An adapted version of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach was used to assess the overall quality of the evidence.

Results:
Thirteen studies were included in the review, with a total sample ranging from 107 to 57,504 participants and mean age ranging from 21.7 to 53.6 years. Most studies (n=10) assessed sedentary behaviour using self-reported methods, including validated questionnaires or single questions. Two studies assessed sedentary time using objective measures (eg, accelerometer), and one study used video recording. The overall risk of bias of the included studies was low. Pooled analysis showed that people classified as sedentary or spending more time in sedentary activities were not more likely to develop low back pain (10 studies, RR 1.01, 95% CI 0.98-1.04, I2= 9%). The overall quality of evidence for this analysis was moderate (downgraded for investigation phase because most studies were conducted as exploratory research).

Discussion:
The evidence has increased from three to 13 prospective cohort studies since the last review. The combination of studies using different methods to assess and classify sedentary behaviour may be considered a limitation of our review. However, our meta-analysis showed low heterogeneity (I2= 9%), which means that this may have had minimal influence on our findings. Additional studies are needed using objective measures to assess sedentary behaviour in a representative sample of the general population.

Submission #: 279
Poster day: 2
Position: D37

Quality of life of Brazilian and Dutch with acute back pain: Follow up from the Back Complains in Elders (BACE)

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Research Aim/Objective:
Back pain prognosis in elders may negatively impact quality of life (QoL), but evidence in low-middle-income countries is scarce, making international comparisons problematic. We verified the influence of the place of residence of elders (Brazil/Netherlands) in the association between level of pain intensity and functioning with quality of life.

Research Methods:
In this prospective cohort study, we assessed data on QoL (SF-36) and clinical characteristics from Brazilian (n = 602, 67.7 ±7.0 years) and Dutch (n = 675, 66.4 ± 7.6 years) elders from the BACE consortium.
The analysis was carried out in three steps: description of the sample; models at individual level to verify the association between pain and disability with quality of life in the Netherlands and Brazil and in the total sample; a multilevel model was later built to verify if the place of residence of the elderly influenced this relationship. An analysis will be carried out with the total sample and another stratified one, in Brazil and the Netherlands. Models were adjusted by sex and age.

Results:
Data analysis with the models, especially from the total sample, showed that there was an association between pain intensity and quality of life for all domains. We found no association between disability and quality of life. The multilevel analysis, takinge into account the country of the elder carried out for pain and quality of life, and not for disability. Results revealed that the quality of life is influenced by the country of origin, as well as there was association between low back pain and quality of life.

Discussion:
In this study, there was an association between pain and quality of life in all domains, as well as an association between country and quality of life, influencing the effect of pain in all domains, except for the physical aspect.

Submission #: 294
Poster day: 2
Position: D43

Impact of a new management model for people with non-specific low back pain in a primary care clinic in Quebec: a study protocol.

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Research Aim/Objective:
Although evidence supports the effectiveness of non-pharmacological interventions for low back pain, access to these interventions is often limited. The objective of this study is to evaluate the impact of a new management model led by a physiotherapist in a primary care clinic for persons experiencing low back pain.

Research Methods:
A prospective quasi-experimental study will be conducted among adults presenting with non-specific low back pain in one of two primary care clinics in Québec (Canada). Two types of interventions will be compared: 1) management by a physiotherapist based on risk stratification for persistent disability, and 2) usual medical management. The data will be collected from patient and administrative records, as well as from questionnaires administered before and after the initial visit and 4, 12 and 24 weeks later. Descriptive statistics will be performed as well as two- factor ANOVAs (group X time).

Results:
The results of this new intervention model will be measured for the following clinical outcome variables: perceived disability (Oswestry scale), pain intensity (numerical pain rating scale), as well as health related quality of life (ED-5D-5L).

Discussion:
In addition to expected clinical benefits for individuals experiencing low back pain, this innovative model could lead to improved care trajectories and a better use of resources (e.g. imaging, pain medication, consultations).

Submission #: 232
Poster day: 1
Position: C35

Perceptions and experiences of health care utilization among individuals waiting for admission in a pain clinic

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Research Aim/Objective:
Individuals living with a rheumatic pain condition face delays in accessing pain clinics, which prevents them from receiving timely treatment. The aim of this study was to explore the perceptions and experiences of these persons regarding healthcare utilization while waiting to access a pain clinic.

Research Methods:
This was a qualitative study. Semi-structured interviews were conducted with adults who A) had pain related to a rheumatic condition (e.g., osteoarthritis, rheumatoid arthritis, fibromyalgia) and B) had been waiting for admission in a pain clinic, had been referred but then denied services, or who had received services during the previous six months. The interviews were transcribed verbatim and a thematic content analysis was performed.

Results:
Twenty-six adults were interviewed (22 women and 4 men; mean age 54 ± 10 years). Three salient themes emerged from the interviews. The participants expressed 1) lacking guidance from primary care physicians to identify services that could answer their complex and multidimensional needs, 2) struggling to obtain and maintain services due to systematic access barriers, such as limited coverage for services, as well as 3) displaying resilience through a search for accessible and sustainable self-management strategies.

Discussion:
Based on the results of this study, current management and structures of health services fail to adequately answer the needs of individuals experiencing painful rheumatic conditions. Important shifts are required in medical education, in increasing access to multidisciplinary approaches at the primary care level and in breaking down barriers individuals with chronic pain face in receiving appropriate and timely care.

Submission #: 228
Poster day: 2
Position: C44

Comparing pain neuroscience education followed by motor control exercises with group-based exercises for chronic low back pain: a randomized controlled trial

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Research Aim/Objective:
To Compare an individualized treatment involving pain neuroscience education (PNE) plus motor control exercise (MCE) with group-based exercise (GE) in patients with chronic nonspecific low back pain.

Research Methods:
In this single assessor-blind, 2-arm randomized controlled trial, 73 patients with chronic nonspecific low back pain were randomly assigned into the pain neuroscience education followed by motor control exercise group (experimental= 37) and group-based exercise group (control= 36). Participants in experimental group received individualized 3 sessions pain neuroscience education followed by 16 sessions of motor control exercise and patients in control group received 16 sessions group-based exercise for 8 weeks. Pain intensity, disability, fear-avoidance beliefs, and self-efficacy were assessed at baseline and 8 weeks post-intervention. A 2 times 2 variance analysis (treatment group times time) with a mixed-model design was applied to statistically analyze the data.

Results:
Both groups showed significant within-group improvements in all the outcome measures, with a large effect size (P 0.05) between the 2 groups.

Discussion:
By improving patients' understanding of chronic pain, reframing their opinions of pain toward the more biopsychosocial self-management approach and improving sensorimotor control by deep muscle activation, individualized pain neuroscience education followed by motor control exercise seem to be better than group-based exercise at reducing pain intensity and disability. However no differences were observed for fear-avoidance beliefs and self-efficacy between the groups. Regarding the superiority of individualized interventions over group-based ones, more studies are warranted.

Submission #: 47
Poster day: 1
Position: C37

The effects of photobiomodulation and transcutaneous electrical nerve stimulation on chronic neck pain: a double-blind, randomized, placebo-controlled trial

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Research Aim/Objective:
This study investigated the efficacy of isolated and combined photobiomodulation (PBM) and transcutaneous electrical nerve stimulation (TENS) in treating neck pain.

Research Methods:
One hundred and forty-four individuals with chronic neck pain were randomized into 4 groups: PBM+TENS, PBM, TENS and Placebo. Individuals underwent 10 sessions of PBM (active or placebo) followed by TENS (active or placebo). Primary outcome: post-treatment pain intensity at rest. Secondary outcomes: pain intensity at rest one month post-treatment and pain intensity during movement post-treatment.

Results:
PBM+TENS, PBM and TENS reduced pain intensity at rest compared to placebo post-treatment and one-month post-treatment (all ps < 0.05). PBM+TENS, PBM and TENS reduced pain intensity during movement compared to placebo post-treatment (all ps < 0.05).

Discussion:
This study hypothesized that the combined use of PBM and TENS could have a faster and/or more lasting analgesic effect. However, our findings show that the combined or isolated use of PBM and TENS decreases pain intensity at rest and during movement in patients with non-specific chronic neck pain. Then, the hypothesis this study was not confirmed, given that the same benefits were found with the isolated application of resources.

Submission #: 322
Poster day: 1
Position: D38

Domain-specific physical activity and chronic low back pain in community-dwelling older adults: does the context matter?

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Research Aim/Objective:
To investigate the association between specific domains of physical activity and chronic low back pain in community-dwelling older adults.

Research Methods:
A cross-sectional study with community-dwelling older adults (≥ 60 years), randomly recruited from five regions (east, west, north, south, central) of the city of Presidente Prudente (207,610 inhabitants), Brazil. Data collection included sociodemographic and anthropometric characteristics, physical activity (modified Baecke questionnaire for older adults), presence of chronic low back pain, smoking, and comorbidities. Participants in the top quartile of physical activity score were identified as “more active” and the remaining participants identified as “less active”. Binary logistic regression was used to test the association of domains of physical activity with the presence of low back pain. Sociodemographic, behavioral, and health variables were used as potential confounders.

Results:
A total of 516 older adults were included. The mean age was 71.8 ± 8.0 years and 354 (68.6%) were women. The prevalence of chronic low back pain was 45.3% (n = 234), and 152 (29%), 139 (27%), 130 (25%) and 159 (31%) participants were identified as more active in the household, sports, leisure and total physical activity domains, respectively. After controlling for potential confounders, less active participants in sports (OR = 1.59 [95% CI: 1.03 to 2.46]), leisure (OR = 1.83 [95% CI: 1.17 to 2.85]) and total (OR = 1.65 [95% CI: 1.08 to 2.51]) physical activity domains were more likely to have chronic low back pain, when compared to more active older adults.

Discussion:
In this study, lower levels of sports, leisure and total physical activity were associated with the presence of chronic low back pain in community-dwelling older adults. These findings shed light on the domain-specific association between physical activity and low back pain (e.g., the physical activity paradox) and reinforce that a more active lifestyle must be encouraged among older adults. Future high-quality longitudinal studies should be conducted to refute or confirm these findings.

Submission #: 203
Poster day: 1
Position: D43

The impact of pain and disability on the transition between frailty levels in older women with low back pain: longitudinal data from BACE-Brazil

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Research Aim/Objective:
The aim this study is to assess the transition between baseline frailty levels in relation to 12 months of follow-up, and to investigate the transition relationship between frailty levels with pain and disability in older women with acute low back pain.

Research Methods:
This study involved a longitudinal analysis of the Back Complaints in the Elders (BACE) – Brazil (COEP UFMG, ETIC 0100.0.203.000-11) database. Women (≥ 65 years) of the Belo Horizonte community that presented new episodes (acute) of LP. The study excluded the elders with cognitive alterations detected through the Mini-Mental estate examination, according to scholarity, visual, auditory and/or motor deficiencies that prevented the mobility tests. The evaluation of frailty throughout time was made with Generalized Estimated Equations, considering multinomial ordinal outcomes. In the first stage of the modeling only the transition over time was considered, and later, co-variables for incapacity and pain were added, to verify its possible associations with the transition. A significance level of 0,05 was adopted.

Results:
The total sample consisted of 155 elderly women, with a mean age of 70.4 (± 5.4). Mean pain intensity was 5.5 (± 3.3) and disability was 13.4 (± 6.0). A mentioned reference was shown between the frailty levels according to the criteria proposed by Fried et al. at follow-up periods ($p < 0.01$). Chance of changing the frailty profile, considering the general follow-up over time, was (OR = 2.83, 95%CI 1.987-4.678). After the inclusion of the pain variable ($\beta = -0.73$; $p < 0.01$) in the baseline of the transition model, an association of pain intensity with the transition of the elderly to frailty levels was observed. The same happened when an incapable variable was included in the model ($\beta = -0.74$; $p < 0.01$).

Discussion:
The transition between the levels of frailty in the elderly population was observed in this study, factors such as prevalent pain and disability that are closely linked to this phenomenon. This pioneering study also made it possible to fill a gap in the literature regarding the analysis of the transition of elderly women regarding the items of the frailty phenotype during a one-year follow-up

Submission #: 216
Poster day: 1
Position: D42

Moderating effect of back pain on the association of multimorbidity with physical capacity in older adults: a population-based study

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Research Aim/Objective:
Multimorbidity is associated with worse long-term function in older adults with back pain. This study aimed to determine if back pain moderates the relationship between the number of chronic conditions at baseline and 1) physical performance and 2) self-reported physical capacity one year later among community-dwelling older adults.

Research Methods:
We performed a cohort study using the National Health and Aging Trends Study, a nationally representative survey of adults ≥65 years in the USA. We included community-dwelling participants at Round 1. Bothersome back pain and 12 chronic conditions were self-reported at Round 1. Physical capacity outcomes were assessed one year later (Round 2). Physical performance was measured with the Short Physical Performance Battery (SPPB) (scored 0-12, higher = better functioning), and self-reported physical capacity was assessed with a composite score of self-reported ability to do six pairs of activities (scored 0-12, higher = better functioning). We tested for effect modification of back pain on the association of number of chronic conditions with each outcome by an interaction term in linear regression models, adjusted for confounders.

Results:
The sample consisted of 6,783 participants, and 2,438 (36%) reported bothersome back pain. The median (interquartile range) number of chronic conditions was 2 (1 to 4). Median SPPB scores at Round 2 for those with and without back pain were 8 (4 to 11) and 9 (6 to 11), respectively. Median self-reported physical capacity scores at Round 2 for those with and without back pain were 9 (5 to 11) and 11 (8 to 12), respectively. In adjusted models, the average difference in SPPB scores between those with and without back pain changed by -0.09 points (95% Confidence Interval (CI): -0.02, 0.02; p=0.103) for every additional chronic condition. In contrast, the average difference in the self-reported physical capacity score between those with and without back pain changed by -0.11 (95% CI: -0.19, -0.02; p=0.014) for every additional chronic condition.

Discussion:
Among community-dwelling older adults, the negative impact of multimorbidity on self-reported physical capacity was greater in those with rather than without back pain. Similar but non-significant relationships were found for physical performance. The self-reported measure may better capture impacts of multimorbidity and back pain versus the SPPB because it includes more tasks, such as kneeling and bending over. Individuals with multimorbidity and back pain may be an important subgroup to address with population health strategies.

Submission #: 13
Poster day: 2
Position: A32

Translation, cross-cultural adaptation and measurement properties of the Psychosomatic Questionnaire for Children and Adolescents with Musculoskeletal Pain into Brazilian-Portuguese

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Research Aim/Objective:
1) To translate, and cross-culturally adapt the Psychosomatic Questionnaire for Children and Adolescents to Brazilian-Portuguese and English; 2) To measure ceiling and floor effects, rate of missing data and measurement properties in Brazilian children and adolescents with musculoskeletal pain (Brazilian-Portuguese version).

Research Methods:
The study was approved by the Human Ethics Committee of Universidade Cidade de São Paulo (UNICID) (CAAE: 18752219.0000.0064). The translation and cross-culturally adaption process (from Dutch to Brazilian-Portuguese and English) followed six steps proposed by Beaton et. al. Interviews were conducted with 33 Brazilian children and adolescents to Brazilian-Portuguese version. We recruited children and adolescents from schools to test the measurement properties of the Brazilian-Portuguese version. The questionnaire was completed twice with a 7-day interval. We assessed ceiling and floor effects, rate of missing data, internal consistency (by Cronbach's Alpha), reliability (by Intraclass Coefficient Correlation), measurement error and construct validity.

Results:
During the process of translation and cross-cultural adaptation process, there was no need to change anything, except the term "uitslag" (rash) amended to "redness" for better understanding. No major difficulty answering and understanding the questionnaire was reported by children and adolescents. No further changes were necessary. 107 children and adolescents with musculoskeletal pain were included to test measurement properties with a mean age of 10.9 (SD: 2.1) years old. The questionnaire did not show ceiling or floor effects and had minimal missing data (0.37%). Internal consistency measured by the Cronbach's Alpha was 0.69. Test-retest reliability measured by the Intraclass Correlation Coefficient was 0.75 (95% CI 0.64 to 0.84). The smallest detectable change was 6.5 points out of 18 points. The measurement error was 2.3 (13% of the possible total score). We observed a moderate correlation of 0.54 ($p<0.01$) with the Spence Children's Anxiety Scale, in line with our prior hypothesis.

Discussion:
The Brazilian-Portuguese version of the Psychosomatic Questionnaire for Children and Adolescents adequately measures psychosomatic symptoms in children and adolescents with disabling musculoskeletal pain. Caution is needed regarding repeated analysis and change scores. The Psychosomatic Questionnaire for Children and Adolescents seems to be a good option for assessing psychosomatic symptoms in clinical practice and research.

Submission #: 121
Poster day: 2
Position: D42

Prevalence, incidence, and prognosis of back pain in children and adolescents: a 12-month prospective cohort study

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Research Aim/Objective:
1) To estimate the 1-month prevalence of back pain in children and adolescents; 2) To estimate the 12-month incidence and prognosis of back pain in children and adolescents.

Research Methods:
The study was submitted and accepted by the Human Ethics Committee of Universidade Cidade de São Paulo (UNICID) (CAAE: 18752219.0000.0064). We followed children and adolescents aged 8-18 years old with and without back pain during 12-months from public and private schools in Brazil. At baseline, parents (or guardians) answered questionnaires on sociodemographic characteristics and perception of sleep quality of their children and adolescents. Children and adolescents answered questionnaires including sociodemographic characteristics, presence of back pain, pain intensity, quality of life, and psychosomatic symptoms. At the follow-ups periods, children and adolescents answered questions about the presence of back pain during the past 1-month in each time point (3, 6, and 12-months). The prevalence, incidence and prognosis were measured by absolute frequency, percentage and confidence intervals (CIs).

Results:
615 children and adolescents were included. 163 had back pain and 452 with no back pain at baseline. The mean age of the participants was 11.6 years (SD 2.5), and most of the sample were female (n=362; 59%). The 1-month prevalence of back pain was 26.5% (95% CI 23.2 to 30.1). Children and adolescents with back pain were heavier, taller, had more negative psychosomatic symptoms and worse quality of life and sleep quality than children and adolescents without back pain. The incidence rate of back pain over 12 months was of 35.2% (95% CI 30.9 to 39.7). From 163 participants who reported back pain at baseline, 83.4% (95% CI 77.0 to 88.4) had recovered by 12 months. Of those that recovered within the first 6 months, 30.9% (95% CI 23.7 to 39.1) had a recurrence of back pain over the next 6 months.

Discussion:
Similar to the adult population, back pain in children and adolescents seems to be a burden in low- and middle-income countries. Most of the children and adolescents seem to recover in 12 months, however, 30% will probably have a recurrence. Therefore, further epidemiological and clinical efforts are necessary to understand how to treat and possibly prevent back pain in children and adolescents, mainly in low- and middle-income countries.

Submission #: 122
Poster day: 1
Position: D36

Prevalence of disabling musculoskeletal pain in children and adolescents: a cross-sectional pilot study.

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Research Aim/Objective:
1) To determine the prevalence of disabling musculoskeletal pain in children and adolescents; 2) To compare children and adolescents with and without disabling musculoskeletal pain regarding to age, psychosomatic symptoms, quality of life, sleep quality and pain intensity; 3) To compare the reporting from parents with children and adolescents.

Research Methods:
This is a cross-sectional pilot study approved by the Research Ethics Committee of the Universidade Cidade de São Paulo (UNICID) (CAAE: 18752219.0000.0064). Data was collected from public and private schools in three cities of Sao Paulo state. The prevalence rate of disabling musculoskeletal pain and the disagreement rate between children and adolescents report and their parents report regarding the presence of disabling musculoskeletal pain were all measured by absolute frequency and percentage. We also compared baseline characteristics of children and adolescents with and without disabling musculoskeletal pain regarding to age, psychosomatic symptoms, quality of life, sleep quality and pain intensity. This comparison is presented by mean difference (MD) and 95% confidences intervals (CIs).

Results:
618 children and adolescents were included. Most were girls 362 (58.6%) with a mean age of 11.8 years old (SD 2.7). The prevalence rate of disabling musculoskeletal pain in children and adolescents was 29% (178 participants). From all children and adolescents with disabling musculoskeletal pain, in 115 (64.6%) of the cases, their parents reported they did not think their child had pain. Children and adolescents with disabling musculoskeletal pain showed to have poorer quality of life (MD 6; 95% CI 3.6 to 8.4) and higher levels of pain intensity (MD -1.6; 95% CI -2.0 to -1.2) than children and adolescents without disabling musculoskeletal pain.

Discussion:
We concluded that disabling musculoskeletal pain is highly prevalent (29%) and underestimated by parents. We also observed that children and adolescents with disabling musculoskeletal pain had poorer quality of life and higher levels of pain intensity than children and adolescents without disabling musculoskeletal pain. Further studies need more deeply investigated the association of quality of life and pain intensity with disabling musculoskeletal pain in longitudinal studies.

Submission #: 302
Poster day: 2
Position: D41

Motor control exercise for chronic low back pain: a Cochrane review update

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Research Aim/Objective:
To evaluate the effectiveness of motor control exercises in patients with chronic non-specific LBP

Research Methods:
We conducted electronic searches in CENTRAL, MEDLINE, EMBASE, five other databases and trials registers from their inception up to March 2019. We included randomised controlled trials (RCTs) that examined the effectiveness of motor control exercises in patients with chronic non-specific LBP. Primary outcomes were pain intensity and disability. We considered function, quality of life, return to work and recurrence as secondary outcomes. Two independent review authors screened the search results, assessed risk of bias and extracted the data. A third independent review author resolved conflicts if needed. We combined results in a meta-analysis expressed as mean difference (MD) and 95% confidence interval (CI). We assessed the overall quality of the evidence using the GRADE approach.

Results:
We included 53 trials (n = 3675) in this review. There is moderate to high certainty of evidence that motor control exercise is not clinically more effective than other exercises for all follow-up periods and outcomes tested. There is moderate certainty of evidence that motor control exercise is effective for improving pain and function compared with minimal interventions at short, intermediate and long-term follow-ups with medium effect sizes. There is moderate to high certainty of evidence that there is no clinically important difference between motor control exercise and manual therapy for all follow-up periods and outcomes. Minor or no adverse events were reported in the included trials.

Discussion:
Motor control exercises appear to be a clinically useful type of exercise for treating people with chronic low back pain. Given the evidence that it is not superior to other forms of exercise, the choice of exercise should probably depend on patient preferences, therapist training, costs and safety.

Submission #: 310
Poster day: 1
Position: C44

Feasibility, Usability and Implementation Context of an Internet-Based Pain Education and Exercise Program for Chronic Low Back Pain

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Research Aim/Objective:
To evaluate the feasibility, usability, and implementation context of a self-management internet-based program based on exercises and pain education in people with chronic low back pain.

Research Methods:
This is a parallel pilot study of a randomized controlled trial. The study included patients between 18 and 60 years, with internet access and chronic back pain (more than 12 weeks). Patients were randomized to a 8-week self-management internet-based program (n = 22) or online booklet (n = 28). We measured implementation outcomes and program fit with the Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM) and Feasibility of Intervention Measure (FIM), and the System Usability Scale after treatment. We measured costs by the estimate of intervention costs, healthcare utilization costs (visits to a general practitioner, physical therapist, alternative therapists, medical specialists, as well as the use of emergency, hospitalization, and medication), patients costs (transportation), and loss of productivity costs (hours of work absence).

Results:
The participants were mostly women (67%), with a mean age of 39.5 (SD 11.3), mean pain intensity of 6.3 points (SD 1.6) and the median duration of symptoms 36 months (IQR 11 to 90 months). Adherence to the program was high (mean of 7.2 (SD: 1.4) weeks accessing the website. The health coaching was successful in reaching 92% of the patients. For patients in the intervention group, satisfactory scores were found in 100% of responses for AIM, IAM and FIM scales. For patients in the control group, satisfactory scores were found in 95% to 99% of responses for AIM, IAM and FIM scales. Overall, patients in both groups had high acceptability. Most patients rated the usability of the system as excellent or best imaginable. A total of US$278.3 per patient were expended by the intervention group and US$141.52 per patient was expended by the control group.

Discussion:
We found that the program is feasible, appropriate, and acceptable from the users' implementation perspective. The system has been considered usable by all participants and the main trial seems feasible. Cost data were viable to be collected and the program is unlikely to cause harm as no adverse events were reported during the intervention period. Both groups reported being overall satisfied with the platform and the proposed program content.

Submission #: 138
Poster day: 2
Position: B43

Risk factors associated with transition from acute to chronic low back pain in US patients seeking primary care

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Research Aim/Objective:
Acute low back pain (aLBP) is highly prevalent, with a presumed favorable prognosis. However, LBP becomes a disabling condition once it turns chronic. This study explored various factors associated with the transition from acute to chronic LBP (cLBP).

Research Methods:
Cohort study conducted alongside a multisite cluster randomized trial. 5,233 adult patients with acute LBP stratified with the STarT Back tool (SBT) were enrolled from 77 primary care practices in 4 regions across the US, with 6-month follow-up. Patient demographic characteristics, clinical factors, and concordance with LBP guidelines of care were obtained via electronic medical records.

Results:
Analysis of SBT scores revealed: 34% low risk, 41% medium risk and 25% high risk. Overall transition rate to chronic LBP at six months was 32% (1,666 patients). SBT risk stratum was positively correlated with transition to cLBP; high-risk group had 2.4 times the odds of transitioning to cLBP compared to the low-risk group. Patient and clinical characteristics associated with transition to cLBP included: obesity, smoking, severe baseline disability and depression/anxiety. After controlling for all other variables, there was a positive correlation between rates of transition to cLBP and non-concordant care. Patients exposed to 1, 2 or 3 non-concordant processes of care were 1.39, 1.88 or 2.16 times more likely to transition to cLBP compared with those with no exposure.

Discussion:
The transition from acute to cLBP was substantial and the SBT was a robust prognostic tool. Early exposure to guideline non-concordant care was independently associated with the transition to cLBP after controlling for all other patient demographic and clinical characteristics. These findings challenge the assumption that aLBP is a self-limiting condition and suggest that alternate models of primary care management of aLBP are needed, such as greater utilization of physiotherpapists and chiropractors as first-contact providers.

Submission #: 224
Poster day: 2
Position: C43

Pragmatic trial of acupuncture for chronic low back pain (cLBP) in older adults

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Research Aim/Objective:
Moderate quality evidence indicates that acupuncture is effective for improving pain and function in adults with chronic low back pain (cLBP). However, little data exist for older adults who need safer, more effective treatment options. This pragmatic trial is designed to evaluate acupuncture for older adults with cLBP.

Research Methods:
Participants (n=789) with uncomplicated cLBP (with or without leg pain) in this pragmatic trial will be recruited from four health care systems and randomized to one of three treatment arms (263 patients in each arm: standard acupuncture (up to 15 treatments over 90 days), enhanced acupuncture (an additional up to 6 treatments over an additional 90 days beyond the standard course of treatment. Acupuncture is delivered by providers in the medical clinic (1 site) or community acupuncture offices (3 sites). Data will be collected by questionnaire at 3-, 6-, and 12-months post-randomization. Primary outcome is back-related disability (Roland Morris Disability Questionnaire) at 6-months.

Results:
Key secondary outcomes include the PEG. Other important measures include patient global rating of improvement, fatigue, social role symptoms, positive screen for anxiety or depression, sleep duration, physical function and safety outcomes. Shortly monthly surveys will provide additional information on the PEG and physical function. Baseline data collection will allow for adequate characterization of the patient population, which is projected to mirror the US Medicare population (of older adults) in terms of age, sex and race/ethnicity. Our primary analysis will be a longitudinal analysis including the continuous outcome, change in Roland Morris Disability Questionnaire (RMDQ) from baseline (primary outcome) measured at all follow-up times, in one model estimated using generalized estimating equations (GEE). Most secondary analyses will be similar, although dichotomous "responder analyses" will also be conducted.

Discussion:
our trial is designed to obtain clear results regarding the value of acupuncture for older adults with chronic low back pain. These results should be informative for the US Medicare system about the value of acupuncture as a treatment for chronic low back pain.

Submission #: 212
Poster day: 2
Position: C41

The ESCAPE trial for older people with chronic low back pain: protocol of a randomized controlled trial

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Research Aim/Objective:
The primary aim of this controlled trial is to investigate efficacy of the group-based exercise on pain and disability in older people with chronic nonspecific low back pain. The secondary aim is to investigate efficacy on global impression of recovery, frequency of falls, fear of falling and physical activity level.

Research Methods:
This is a prospectively registered, open, two-arm randomised controlled trial comparing the group-based exercise and waiting list. Participating in the study are patients aged 60 years old or over who seeks primary health care or a university outpatient physical therapy center in Diamantina, Brazil. Will be assessed the pain intensity, disability, global impression of recovery, frequency of falls, fear of falling; and physical active level. The randomisation sequence to the groups of interest will be computer-generated. Allocation will be concealed in sequentially numbered, sealed, opaque envelopes. Follow-ups will be conducted in post-treatment (8 week) and 6- and 12-months post-randomisation. The analysis of mixed linear models (random intercepts and fixed coefficients) will be conducted, which incorporated terms for treatment, time, and the treatment-time interactions.

Results:
Our hypothesis is that group-based exercise will be better than waiting list in reducing pain and disability in older peoples with low back pain. In addition, we expect positive global impression of recovery, reduced frequency of falls and fear of falling and increased physical active level.

Discussion:
The practice of individualized exercise has been studied for the management of low back pain in older people. However, the group exercise, even showing high quality evidence for the improvement of several important outcomes in this population, has been ignored until now. Thus, the results of this study have the potential to indicate a viable and accessible strategy for managing nonspecific low back pain in the older people.

Submission #: 71
Poster day: 1
Position: A32

Clinical course of pain and disability in older peoples with low back pain: descriptive data of a systematic review

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Research Aim/Objective:
The aim of this study is to present the descriptive data of a systematic review to investigate the clinical course of pain intensity, disability, quality of life and coping in older peoples with low back pain (LBP).

Research Methods:
This systematic review of prospective longitudinal study followed PRISMA checklist and methods recommended by the Cochrane Prognosis Group. The protocol of this systematic review was registered a priori in Open Science Framework. Searches strategies were conducted on MEDLINE, EMBASE and COCHRANE without language or date restrictions. We included prospective longitudinal studies that assessed pain, disability, quality of life and coping after a new episode of non-specific and radicular LBP in older people. Conference reports, randomized controlled trials, retrospective longitudinal studies and case-reports were excluded. Studies including participants with serious spinal pathologies were also excluded. Two independent reviewers initially screened relevant articles based on titles and abstracts and full text. then they evaluated the methodological quality and the extracted the data.

Results:
Two studies fulfilled all inclusion criteria. Both studies showed a low risk of bias for the domains: participation in the study; outcome measures; and presentation of the statistical analysis. Furthermore, both showed high risk of bias for attrition in the study. The mean disability decreased from 9.8 (95% CI 9.7 to 9.9; n= 4253) at baseline to 9.2 (95% CI 9.11 to 9.22; n= 4229), 9.0 (95% CI 8.91 to 9.08; n= 4221), 8.9 (95% CI 8.82 to 8.97; n= 4157) at 3-, 6-, and 12-month of follow-up respectively. In turn, the mean of pain intensity decreased from 5.3 (95% CI 5.16 to 5.23; n= 4253) at baseline to 3.9 (95% CI 3.86 to 3.93; n= 4229), 3.8 (95% CI 3.76 to 3.83; n= 4221), 3.6 (95% CI 3.56 to 3.63; n= 4157) at 3-, 6-, and 12-month follow-up respectively. There were no studies reporting quality of life and pain

Discussion:
The clinical course of LBP has been reported as good in the adult population. Although our descriptive data also indicate a reduction in pain intensity and disability in the older people, this reduction is of lesser magnitude. Thus, the improvement in the clinical course may have been overestimated in older people. Continuing this work, will be carried a meta-analysis of individual patient data to better understand the clinical course of LBP in older people.

Submission #: 72
Poster day: 2
Position: A33

Prevalence and associated factors of the spinal and pelvic disorders during pregnancy: a systematic review with meta-analysis

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Research Aim/Objective:
The aim of this study was to conduct a systematic review of the prevalence of spinal and pelvic disorders during pregnancy and the factors associated with each disorder.

Research Methods:
A search was performed in the PubMed, Embase, CINAHL and SPORTDiscus databases in July 2021. Observational studies on the prevalence and/or factors associated with spinal and pelvic disorders (such as low back pain, pelvic pain, lumbopelvic pain and back pain) in habitual-risk pregnant women were included. The risk of bias assessment was performed using an instrument adapted for this systematic review. Prevalence data were pooled in meta-analyses according to disorder, period of prevalence and gestational age. The prevalence rates of the spinal and pelvic disorders were reported as the number of the cases per 1000 pregnant women. Data on the associated factors were analyzed descriptively. The most recurrent associated factors, with statistical significance in two or more studies, were grouped for each disorder.

Results:
Seventy-eight studies were included in this systematic review. Most studies (92%) were classified as moderate and low risk of bias. The prevalence of disorders during pregnancy were: lumbopelvic pain=738/1000 pregnant women (95% confidence interval [95%CI]: 655, 814); low back pain=593/1000 pregnant women (95%CI: 533, 650); pelvic pain=347/1000 pregnant women (95%CI: 164, 558); and back pain=560/1000 pregnant women (95%CI: 438, 678). The point prevalence of disorders were: lumbopelvic pain=605/1000 pregnant women (95%CI: 508, 698); low back pain=570/1000 pregnant women (95%CI: 484, 655); and pelvic pain=358/1000 pregnant women (95%CI: 173, 567). Lumbopelvic pain and low back pain showed an increase in mean prevalence rate with advancing gestational age. Most meta-analyses showed high heterogeneity between studies. Ten factors were associated with the presence of spinal and pelvic disorders. Presence of the disorder previously, presence of the disorder in previous pregnancies and multiparity were common in all disorders assessed in this systematic review.

Discussion:
Spinal and pelvic disorders have a substantial prevalence during pregnancy. However, the lack of a clear definition of these disorders makes it difficult to classify low back pain, pelvic pain, lumbopelvic pain and back pain in the studies included in this systematic review. This lack of definition of disorders can contribute to the high heterogeneity and to obtaining very different prevalence values between studies.

Submission #: 311
Poster day: 2
Position: B35

Stratifying low back pain patients in an interprofessional education and self-management model of care: results of a latent class analysis

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Research Aim/Objective: Low back pain (LBP) management is associated with highly variable patient expectation and reported outcomes. Based on patient factors, we aimed to identify clinically-relevant 'classes' among primary-care LBP patients to enable pragmatic sub-group outcome prediction by front-line clinicians. Performance of class-specific prediction for pain and disability outcomes was evaluated.

Research Methods:
Prospective patients completed intake questionnaires: demographic, health, psychosocial characteristics. LBP pattern was clinician-classified (CORE Back Tool). LBP-related measures were completed at intake and six-month follow-up. Primary outcome measures were numeric pain rating scale (NPRS) and Oswestry Disability Index (ODI). Missingness in other measures was addressed with multiple imputation. Respondents were randomly allocated to equal-sized discovery and prediction samples.
Discovery: A latent class model (LCM) was developed considering intake factors and six-month outcomes. The optimal number of classes was established based on clinical reasoning and several fit statistics.
Prediction: Most likely class membership was determined by applying the above LCM. Outcome prediction models were then generated for clinically-important improvement (CII; NPRS: 2pt, ODI: 10pt) and minimal pain/disability (NPRS: 0-3, ODI: 0-20). Performance was assessed using c-statistic.

Results:
1330 participants (58% female, mean age 53) were allocated to discovery (N=667) and prediction (N=663) samples. Discovery: Four classes emerged: 1) young with sciatica (16% of population); 2) older, extension-aggravated back/leg pain (18%); 3) young, flexion-aggravated LBP (34%); and 4) severe pain/disability with no predominant LBP pattern and poor mental/physical health (32%).
The classes varied widely in six-month outcomes. Class 1: Substantial improvement (NPRS:100% CII, 87% minimal pain; ODI: 94% CII, 84% minimal disability). Class 2: moderate improvement (NPRS: 58% CII, 29% minimal; ODI: 39% CII, 28% minimal). Class 3: mild symptoms at intake and follow-up (NPRS: 59% CII, 53% minimal; ODI: 40% CII, 70% minimal disability). Class 4: persistent symptoms (NPRS: 33% CII, 2% minimal; ODI: 29% CII, 2% minimal).
Prediction: The class-based prediction model had relatively good performance. Overall c-statistics were 0.72/0.67 for six-month CII in NPRS/ODI, and 0.65/0.78 for minimal pain/disability at six months.

Discussion:
This study shows that LBP patients can be pragmatically grouped into four identifiable clinical phenotypes that have distinctly different trajectories of pain and function. Class-dependent outcome prediction achieved good performance. Simple identification of these four LBP classes by frontline clinicians may enable combined patient-clinician informed discussions about LBP prognosis in the absence of more involved and advanced point-of-care prediction tools.

Submission #: 289
Poster day: 1
Position: C42

Within-session effects of treating spinal movement impairments in people with acute low back presenting to the Emergency Department

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Research Aim/Objective:
Visits to the emergency department (ED) for acute low back pain (LBP) are highly prevalent and the primary reason for the visits is pain relief. Our aim was to examine the within-session effects of a treatment of spinal movement impairments in people with acute LBP presenting to the ED.

Research Methods:
Participants were people presenting to the ED with acute, non-specific LBP (n=20; 54% female; age: 40±13.4; pain: 8.0±1.7). Participants were cleared by the ED physician and then consented for participation. Before receiving any ED usual care a trained therapist obtained a brief history and performed a standardized examination to identify spinal movement impairments during clinical tests. Treatment was practice to improve person-specific spinal movement impairment(s) during (1) trunk forward bend and return and (2) sit to stand to sit. Pre- and post-measures included (1) the numeric rating scale of current LBP (0-10), and (2) LBP reports with each activity (no change, increased, decreased). Based on reports with each activity, LBP status post-treatment was categorized as same, improved, or worsened compared to before treatment.

Results:
Overall, current LBP improved (change = -3.7±1.9; $p<.01$). Post-treatment no participants reported worsened LBP with performance of the 2 activities. LBP status with performance of each activity post-treatment was as follows: trunk forward bend: 45% same, 55% improved; trunk return from forward bend: 26% same, 74% improved; sit to stand: 100% improved; stand to sit: 5% same, 95% improved.

Discussion:
Before receiving any treatment in the ED, treatment of spinal movement impairments in people with acute, non-specific LBP resulted in clinically important improvement in current LBP. For the majority of participants, practice to change the impairments during 2 common activities resulted in a decrease in LBP with each activity. No one reported a worsening of LBP. In people with acute LBP in the ED, treating the impairments during performance of activities warrants further investigation.

Submission #: 285
Poster day: 2
Position: D36