Abstract fra verdenskongressen i fysioterapi i Amsterdam 2011

Bilag til artiklen: **Patienter med nakke- og rygproblemer skal klassificeres**

Teaching people about pain (1)

Symposium om smerte

Moseley L., Butler D., Thacker M., Louw A.

Learning objectives: 1. To gain a basic understanding of what is currently known about the biology of pain, with a focus on what occurs when pain persists. 2. To be familiar with principles of conceptual change theory and evidence based strategies to teach people about pain. 3. To integrate the International Association for the Study of Pain core curriculum and modern concepts of pain biology into clinical reasoning.

Description: Pain is ubiquitous and one of the most common reasons to visit a physiotherapist. There has been huge advances in our understanding of the biology that underpins pain, but clinical practice has on the whole failed to keep up. However, the scope of these new findings regarding pain has led to a reconceptualization of pain biology as well as dramatic advances in therapeutic approaches to pain management, although the delay to reach the clinic is substantial. This revolution in pain-related knowledge is of fundamental relevance to the practice of physiotherapy around the world. Physiotherapists are ideally resourced and perfectly placed to take a lead role in bringing clinical practice into line with this new conceptualisation, but they must learn about it first. In fact, a growing body of literature clearly shows that when physiotherapists learn about pain, and, crucially, when they teach their patients about pain, more effective treatments ensue. We contend that new efforts are needed to revitalize pain education - most importantly with an eye to producing measurable improvements for both physiotherapist and patients. This symposium will focus on new models of learning in pain education.

Speakers will discuss: the application of conceptual change and health literacy models to patient-oriented pain education; integration of the International Association for the Study of Pain core curriculum with modern teaching and learning strategies; and a three-pronged approach to practitioner and patient education that serves to change the way people think about pain so as to bring it into line with a modern understanding of pain and its underlying biology.

Implications/conclusions: Every physiotherapist will deal with someone in pain. Evidence demonstrates that if they understand the true biology of pain instead of an outdated understanding of pain, their outcomes will be better. This symposium will bring several world leaders in pain education together to provide a state of the art, and science, in teaching people about pain.

The discriminative validity of 'nociceptive pain' as a mechanisms-based classification of pain in patients with low back (± leg) pain (2)

Smart K., Blake C., Staines A., Doody C.

Purpose: The purpose of this study was to evaluate the discriminative validity of 'nociceptive pain' (NP) as a mechanisms-based classification of musculoskeletal pain.

Relevance: NP, as distinct from 'peripheral neuropathic' (PNP) and 'central sensitisation' (CP) pain, has been proposed as one category of pain within a mechanisms-based classification system for musculoskeletal pain. Empirical evidence of validity is required to justify the use of such mechanisms-based classifications in clinical practice. Classifying patients' pain as being predominantly 'nociceptive' is problematic because i) it is predicated on clinical judgement, and ii) the symptoms and/or signs upon which clinicians base this classification (discriminative validity) are not known. The aim of this

study was to identify a cluster of clinical criteria from which clinicians might infer a dominance of NP mechanisms.

Participants: A convenience sample of four hundred and sixty four patients with low back (± leg) pain (Female: 56%, Mean (SD, range) age: 44 (13.7, 19-85)) were recruited from physiotherapy outpatient, back pain screening and pain clinic settings.

Methods: This study employed a cross-sectional, between-subjects design using the validation by extreme-groups method in order to evaluate the discriminative validity of NP as a mechanisms-based classification of musculoskeletal pain. Each patient was assessed using a standardised clinical interview and examination protocol. Clinicians classified each patient's pain as being attributable to a dominance of NP, PNP or CP mechanisms then completed a clinical criteria checklist specifying the presence/absence of various clinical criteria.

Analysis: A multivariate analysis using binary logistic regression with Bayesian model averaging was undertaken in order to test for and identify a discriminatory cluster of symptoms and signs associated with an assumed dominance of NP. Indices of classification accuracy (sensitivity, specificity, positive and negative predictive values (PPV, NPV), positive and negative likelihood ratios (LR+, LR-)) were calculated in order to assess the classification accuracy of the final model.

Results: Missing values for 12 cases reduced the valid sample size from n = 464 to n = 452 (NP: n = 252, PNP: n = 102 CP: n = 98). A dominance of NP was predicted by a model comprising seven clinical criteria; including the presence of three symptoms and the absence of three symptoms and one sign. Indices of classification accuracy for the final model were: Sensitivity: 90.9 % (95% CI: 86.6-94.1), Specificity: 91.0 % (95% CI: 86.1-94.6), PPV: 92.7 (95% CI: 88.7-95.6), NPV: 88.9 % (95% CI: 83.6-92.8), LR+: 10.10 (95% CI: 6.49-15.72), LR -: 0.10 (95% CI: 0.07-0.15).

Conclusions: These findings provide some preliminary evidence for the discriminative validity of NP as a mechanisms-based classification of pain.

Implications: The identification of an empirically derived cluster of symptoms and signs associated with an assumed dominance of NP provides a means with which clinicians might infer a dominance of NP mechanisms in patients with low back (± leg) pain. The identification of NP mechanisms may inform clinical decision-making associated with the assessment, treatment and prognosis of patients' pain.

Referred tactile sensations in association with chronic, non-specific, low back pain patients: A preliminary investigation (3)

Keeves J., Wand B.M., Bourgoin C., Moseley L., O'Connell N.

Purpose: To determine whether referred sensations (RS) were present in chronic, non-specific, low back pain (CNSLBP) patients and to explore the relationships between the presence of RS and clinical status.

Relevance: Referral of tactile stimuli to remote sites reflects disruption within the somatosensory neuraxis, and has been attributed to cortical reorganisation. Certainly, tactile referral has been reported in people with phantom limb pain or complex regional pain syndrome, conditions that are characterised by reorganisation of the primary sensory cortex. There is emerging evidence of cortical reorganisation in CNSLBP patients and some association with clinical status is evident. However, it is not known whether tactile referral is present in people with back pain.

Participants: 24 CNSLBP patients (between 18 and 60 years) were recruited from the Department of Pain Management at Sir Charles Gairdner Hospital (SCGH) and community physiotherapy practices. Patients were required to have had low back pain for at least 6 months.

Methods: In this cross sectional study, participants underwent a brief sensory examination with vision occluded using the modalities of light touch and pinprick. Subjects were asked to state where they felt they were being stimulated, to describe the sensation they felt, and to report if there were any other sensations (similar or different) they felt elsewhere. If referred sensations were reported, subjects were reassessed without vision occluded.

Analysis: Descriptive analysis was used to report specific characteristics of patients who demonstrated tactile referral. Univariate logistic regression analysis and the Mann Whitney U-test determined whether any relationships existed between subjects who perceived RS and clinical variables associated with the CNSLBP condition.

Results: 5 patients (21%) demonstrated tactile referral, which was elicited by both light touch and pinprick. The quality of referred sensations were modality specific but were different to the applied stimulus. These sensations were located on the body part immediately adjacent to the stimulated site as well as on non-adjacent sites, according to functional organisation of the primary sensory cortex. Vision modified the referred sensations in most but not all participants. Kinesiophobia, but no other variable we measured, was positively correlated to the number of referred sensations (Mann Whitney U-test, $p = 0.044$).

Conclusions: Referral of tactile stimuli to adjacent or remote areas occurs in about 1 in 5 people with back pain. This finding appears consistent with disruption of central sensory processing.

Implications: It is not known whether this disruption of sensory processing contributes to chronic back pain, but our results add to a growing body of evidence that this possibility should be investigated.

THE EFFECTIVENESS OF SPINAL MANIPULATIVE THERAPY FOR CHRONIC LOW-BACK PAIN: AN UPDATE OF THE COCHRANE REVIEW (4)

Rubinstein S., van Middelkoop M., Assendelft P., de Boer M., van Tulder M.

Purpose: To assess the effects of spinal manipulative therapy for chronic low-back pain.

Relevance: Low-back pain is a common and disabling disorder in western society. Many interventions exist for the treatment of low-back pain including spinal manipulative therapy, which is a worldwide, extensively practiced intervention by a variety of professions. The efficacy of this intervention for chronic low-back pain is, however, not without dispute.

Participants: Systematic review of randomized controlled trials (RCTs).

Methods: Search methods: An update of the previous review (last searched up to January 2000) was conducted by an experienced librarian who searched multiple databases up to June 2009 for RCTs. Selection criteria: RCTs which examined the effects of spinal manipulative therapy and examined adults with chronic low-back pain were included. The primary outcomes were pain, functional status and perceived recovery. Secondary outcomes were defined as well-being and return-to-work.

Analysis: Two review authors with a background in chiropractic and movement science independently conducted the study selection, risk of bias assessment, and data extraction using pre-determined forms. Any disagreements were resolved through consensus. GRADE was used to

assess the quality of the evidence. Sensitivity analyses and investigation of heterogeneity were performed.

Results: In total, 26 RCTs were identified (total participants = 6,006), nine of which with a low risk of bias. Approximately three-quarters of the included studies (n=19) were new studies not evaluated in the previous review. In general, there is low to very low quality evidence that spinal manipulative therapy is statistically not more effective than no treatment, inert interventions or sham spinal manipulative therapy. There is also low to very low quality evidence that spinal manipulative therapy has a statistically, but not clinically-relevant effect on short-term or intermediate-term pain relief or functional improvement when added to another intervention. There is, however, moderate quality evidence from many studies with a low risk of bias that spinal manipulative therapy has a statistically, but not clinically-relevant effect on short-term and/ or intermediate-term pain relief and functional improvement when compared to other interventions, including both passive or ineffective interventions (n=4 RCTs) and active or effective interventions (n=14 RCTs). Sensitivity analyses suggested the robustness of these findings.

Conclusions: Spinal manipulative therapy is neither superior nor inferior to active or effective interventions in patients with chronic lowback pain. High quality evidence is not available, so future studies with a low risk of bias and adequate sample sizes are still needed.

Implications: Future studies should evaluate the effects of spinal manipulative therapy as an additional or adjunct therapy, for example, in the case of spinal manipulative therapy in multi-modal treatment packages. There is also a dire need for cost-effectiveness studies.

The cost-effectiveness of a treatment-based classification system for low back pain: results of a randomised controlled trial and economic evaluation (5)

Apeldoorn A., Ostelo R., van Helvoirt H., Knol D., de Vet H.C.W., van Tulder M.

Purpose: The objective was to compare the effectiveness, the cost-effectiveness, and cost-utility of treatment according a treatmentbased classification system for low back pain with usual physical therapy in the Dutch primary care setting.

Relevance: Low back pain (LBP) is common and the associated costs are enormous. The effects of physical treatments are at best modest and none is clearly superior from another. Recently, a classification algorithm that is based on the patient's symptoms and clinical presentation was developed to match patients with LBP to interventions that they are most likely to benefit from. It appears that this classification system improves clinical outcomes for patients with LBP (Brennan et al.).

Participants: A sample of 156 patients aged between 18 and 65 years, with a primary complaint of LBP (>6 weeks), who consulted a physiotherapist or manual therapist was recruited between June 2008 and October 2009.

Methods: An economic evaluation alongside a randomized controlled trial was conducted. All patients were examined and classified before treatment by a research physical therapist. After this classification procedure, patients were randomized to either receive treatment based on this classification or receive usual physical therapy treatment. The three classification-based interventions were: 1. A specific directional exercise program. Patients who demonstrated a directional preference during the mechanical assessment were treated with repeated end-range movements into the identified direction of preference. 2. Manipulation. Patients were treated with high-velocity thrust manipulation directed to the lumbosacral region along with instruction in a non-specific lumbar range of motion exercise. The choice of the manipulation technique was left to the therapists' discretion. 3.

Stabilization. Patients in this group were treated with a standardized program of trunk strengthening and stabilization exercises. Patients randomized to usual physical therapy were treated according to the physical therapists' opinion and in line with the Low Back Pain Guidelines of the Royal Dutch College for Physiotherapy. Primary outcomes measures were global perceived recovery (7-point scale), functional status (Oswestry Disability Index [ODI]), and pain intensity (11-point NRS). The economic evaluation was conducted from a societal perspective. Health care costs, patient and family costs, and production losses were assessed using cost diaries and the Prodisq. Utilities were measured using the EuroQol. All were measured by means of patient selfreport (questionnaires). The data were collected at baseline, and 8, 26, and 52 weeks later.

Analysis: Estimates of treatment effects, with 95% confidence intervals, between baseline and follow-up measurements were calculated and compared between the two treatment groups. Cost-utility and cost-effectiveness ratios were estimated using bootstrapping techniques.

Results: The results will be available at the time of the congress.

Conclusions: The last data will be collected in October 2010.

Implications: 1. Brennan GP, Fritz JM, Hunter SJ, Thackeray A, Delitto A, Erhard RE. Identifying subgroups of patients with acute/ subacute “nonspecific” low back pain. Results of a randomized clinical trial. Spine 2006;31-6:623-31.

Evaluation of a treatment-based classification algorithm for low back pain (6)

Stanton T., Fritz J., Hancock M.J., Latimer J., Maher C.G., Wand B.M., Parent E.

Purpose: Several studies have investigated criteria for classifying patients with low back pain (LBP) into treatment-based subgroups (eg, manipulation, specific exercises, stabilization exercises, traction). A comprehensive algorithm was recently created to translate these criteria into a clinical decision-making guide. To be clinically useful, an algorithm should be mutually exclusive (place patients into only one treatment subgroup) and it should be comprehensive (able to classify all appropriate patients). To achieve this, modifications to the individual subgroup criteria were necessary. This study investigated the translation of the individual subgroup criteria into a comprehensive algorithm by studying the prevalence of patients meeting each treatment subgroup, more than one treatment subgroup, and none of the treatment subgroups. The reliability of the classification decision was also investigated.

Relevance: The classification algorithm is being used in some areas of the world to guide physical therapy practice. It is therefore important to determine if revisions to the algorithm may be warranted. This is best determined using clinical data.

Participants: A total of 250 consecutive acute/subacute patients seeking care for their LBP were recruited from physical therapy clinics and hospitals in the USA and Australia. Patients had LBP (with or without leg pain) for less than 90 days with a modified Oswestry disability score of = 20%.

Methods: A cross-sectional, observational study was performed. Trained physical therapists performed standardized assessments on all patients. The researchers used these findings to classify patients into subgroups. A sub-set of 31 patients were re-assessed to determine inter-rater reliability of the classification algorithm decision.

Analysis: Proportions with 95% confidence intervals were calculated to express the prevalence of patients meeting each subgroup, more than one subgroup, or none of the subgroups. The kappa

statistic and percentage agreement were used to determine inter-rater reliability of the classification algorithm decision.

Results: Of all patients, 25.2% (95% CI: 19.8 to 30.6%) did not meet any subgroup, 49.6% (95% CI: 43.4 to 55.8%) met only one subgroup, and 25.2% (95% CI: 19.8 to 30.6%) met more than one subgroup. The most common combination of subgroups met was manipulation + specific exercise (68.4% of patients meeting two subgroups). Reliability of the algorithm decision was moderate (kappa= 0.52, 95% CI: 0.27 to 0.77; percentage agreement = 67%).

Conclusions: These findings provide important clinical data to guide future research and revisions to the algorithm. The finding that 25% of patients met more than one subgroup has important implications for the sequencing of treatments in the algorithm. Likewise, the finding that 25% of patients did not meet any subgroups provides important information for potential expansion of the algorithm to include other treatments. Reliability of the algorithm is sufficient for clinical use.

Implications: These findings suggest that changes to the algorithm may be warranted to ensure comprehensive and mutually exclusive classifications which, in turn, may further improve patient outcomes with use of the algorithm. However, until future research can test these changes, use of the 4-treatment subgroup classification algorithm to guide management for LBP is supported by the literature.

A randomised trial of targeted treatment for low back pain compared with current- Best practice: the start back trial [isrctn37113406] (7)

Hill J., Dunn K.M., Lewis M., Mason E., Vohora K., Main C., Konstantinou K., Sowden G., Somerville S., Whitehurst D., Hay E.

Purpose: This randomised controlled trial compared the effectiveness of a low back pain (LBP) subgroup and targeted treatment approach (targeted group) against current best practice (control) in primary care. Our pre-specified subgroup analysis tested whether: i) low risk patients had non-inferior outcomes, and ii) medium and high risk patients had superior outcomes with targeted treatment.

Relevance: A potential method to increase treatment effectiveness and reduce treatment variability is to account for LBP heterogeneity by tailoring treatments to different subgroups. One untested approach is to target treatment according to risk subgroups (low, medium and high) using prognostic screening tools for prolonged disability.

Participants: We invited 2793 adults with LBP (+/- radiculopathy) consulting at 10 general practices in England, to receive initial treatment at a community back pain clinic.

Methods: At clinic an administrator telephoned a remote trials unit that used random computer sequence selection of stratified blocks with a 2:1 ratio, to randomly assign 851 participants to targeted or control treatments. Outcome assessors were masked to group assignment, not patients or therapists. Targeted treatment therapists used risk subgroup information to stream patients into specifically developed low, medium and high risk (combined physical and psychological) treatment pathways. Control treatment therapists made decisions regarding further usual physiotherapy treatment using clinical judgement, unaware of patients' risk subgroup.

Analysis: Intention-to-treat analysis focused on adjusted mean differences using model-based multiple imputation for missing data. The primary outcome was the Roland-Morris Disability Questionnaire (RMDQ) at 12-months, plus the Pain Catastrophising Scale (PCS) for pre-specified high risk subgroup analysis.

Results: The 4 & 12-month follow-up for targeted participants (baseline n=568) was 82% & 77%; and for controls (baseline n=283) was 79% & 74%. No adverse events were reported. Baseline mean [SD] RMDQ scores were 9.8 [5.6] for targeted and 9.7 [5.8] for control groups, with significantly larger mean reductions for targeted versus control groups at both time-points (4.8 [5.9] at 4-months, and 4.6 [5.9] at 12- months, compared to 3.1 [5.0] and 3.5 [5.4] respectively). Between-group adjusted mean RMDQ differences of 1.8 (95% CI 1.1, 2.5) at 4-months and 1.2 (95% CI 0.4, 2.0) at 12-months equated to effect sizes of 0.32 and 0.21 respectively. 12-month RMDQ subgroup analysis demonstrated; a) non-inferior targeted low risk subgroup reductions (means [SD] of 1.6 [3.7] compared to 0.9 [4.2] in controls), b) significantly greater reductions with medium risk subgroup targeting (5.1 [5.7] compared to 4.4 [5.4]), and c) larger but nonsignificant reductions among the high risk subgroup of 6.2 [6.8] compared to 4.6 [5.6]. Larger 4-month RMDQ mean differences were observed across targeted medium and high risk subgroups ($p<0.05$). Targeted high risk patients had significantly less catastrophising at 4-months (mean [SD] PCS reduction of 10.3 [12.4] compared to 6.8 [10.4] in controls); 12-month PCS differences were not significant.

Conclusions: Significant clinical benefits (4 and 12-months) were demonstrated using a subgroup and targeted LBP treatment approach in primary care.

Implications: Future studies should identify ways to implement LBP screening and targeting into mainstream clinical practice, whilst better sustaining substantial short-term effects among high risk patients using combined physical and psychological treatments.

Does targeted treatment for low back pain improve patient satisfaction and better - Meet expectations compared to current best care? (8)

Mason E., Hill J.C., Lewis M., Dunn K.M., Hay E.M.

Purpose: To report treatment acceptability within a randomised controlled trial (the STarT Back Trial ISRCTN37113406) conducted in UK Primary Care, which demonstrated that targeted treatment for low back pain (LBP) delivered by physiotherapists improves outcomes compared to current best practice. Secondary outcome measures of patient satisfaction and expectations of treatment are reported.

Relevance: Patient acceptability of a targeted LBP treatment approach, in terms of their satisfaction and whether their expectations were met is unknown.

Participants: Male and female patients aged 18 and above who consulted their GP with non-specific LBP (+/- leg pain) were invited to attend a Community Back Pain Clinic; 851 patients consented to take part.

Methods: Patients were randomised to receive either treatment targeted according to their risk subgroup for prolonged disability (low, medium or high risk according to the STarT Back Screening Tool) [n=568] or current best practice (non-targeted control) [n=283]. Targeted intervention 'low risk' patients received a minimal treatment in clinic, while 'medium risk' and 'high risk' patients received further treatment from physiotherapists trained to deliver specifically developed targeted pathways. Patients randomised to receive current best care were assessed by physiotherapists masked to subgroup allocation, who decided whether to refer patients for further physiotherapy using clinical discretion alone. Questions about patient satisfaction with information and care received, perceived outcome of care and whether expectations for treatment were met were asked in the 4 month follow-up questionnaire.

Analysis: Between-group differences were analysed using the Chi-Squared test for trend for responses to Likert scale questions, and the independent 2-tailed t-test for numerical scale responses.

Results: 625 (73.4%) 4 month follow-up questionnaires were returned (targeted treatment n=422, non-targeted control n=203). Results show statistically greater satisfaction with information and care received, more treatment expectations met, and improved perceived outcome of care (p=<0.05) in the targeted treatment group compared to non-targeted controls. At a subgroup level, there was significantly greater satisfaction with care and information, and a higher proportion reported their expectations for treatment had been met in the targeted treatment 'medium' and 'high risk' subgroups compared to current best practice. There were no statistically significant differences in the 'low risk' subgroup.

Conclusions: A subgrouping and targeted treatment approach is acceptable to patients with LBP. Patients in the 'medium' and 'high risk' subgroups were more satisfied with the targeted treatment approach compared to current best practice, whilst targeted 'low risk' patients showed little difference in satisfaction ratings compared to the group receiving current best practice. This suggests that a minimal treatment for patients in the 'low risk' subgroup is just as acceptable as receiving more treatment in current best practice.

Implications: This finding supports and provides further evidence for the recommended practice of subgrouping and targeted physiotherapy treatment for patients with LBP in primary care. It is important for future take-up of the approach in primary care practice as treatments with improved acceptability are more likely to result in better compliance with care.

CONSUMERS' PERCEPTIONS OF THE SMALLEST WORTHWHILE EFFECT OF INTERVENTIONS FOR NON-SPECIFIC LOW BACK PAIN (9)

Ferreira M., Ferreira P., Latimer J., Barrett B., Ostelo R., Grotle M., Herbert R.

Purpose: The aim of this study was to determine what people with non-specific low back pain considered to be the smallest worthwhile effects of treatments for their pain.

Relevance: Over the last decade extensive research has been conducted evaluating the efficacy of interventions for back pain using randomized controlled trials. These trials provide estimates of the mean effects of interventions. Researchers, clinicians and patients need to consider whether the estimated effects of these interventions make the interventions' costs, risks and inconveniences worthwhile.

Participants: 100 people with chronic non-specific low back pain seeking physiotherapy care participated in the study.

Methods: Subjects were interviewed by telephone before treatment commenced. The benefit-harm trade-off method was used to obtain estimates, for each participant, of the smallest worthwhile effect of non-steroidal anti-inflammatory drugs (NSAIDs) and a course of physiotherapy for treatment of low back pain. The approach was as follows: a brief description of each treatment was provided to each subject, along with an estimate of the expected benefit of treatment. Subjects were asked if they would choose to have the treatment. From there, the size of the hypothetical benefit was varied up and down, in progressively smaller increments, until it was possible to identify the smallest expected benefit of intervention for which the participant would choose to have the intervention, considering its costs, harms and incoveniences.

Analysis: The distributions of estimates of smallest worthwhile effect were plotted as frequency histograms. T-tests were conducted to compare the smallest worthwhile effect of physiotherapy and NSAIDs for both pain and disability. Regression methods were used to quantify associations between estimates of SID and baseline pain intensity, disability, and duration of pain.

Results: On average patients with chronic low back pain need to see a 28% (SD 20%) reduction in pain and a 31% (18%) reduction in disability to consider NSAIDs worthwhile. Smaller reductions in pain and disability were required for participants to feel physiotherapy was worthwhile (19% (18%) and 18% (18%) for pain and disability, respectively). Typically, participants felt they needed to recover 6 days sooner to consider NSAIDs worthwhile, and 2 days sooner to consider physiotherapy worthwhile. Severity of symptoms was not found to be associated with estimates of the smallest worthwhile effect of NSAIDs or physiotherapy.

Conclusions: These are the first published data in which the smallest worthwhile effect of interventions for low back pain has been expressed in terms of between-group differences in outcomes. In general, patients with chronic low back pain need to see a greater improvement in pain and disability to consider a course of NSAIDs worthwhile than they do with physiotherapy.

Implications: Estimates of the smallest worthwhile effect should be used in sample size calculations and to interpret effect sizes reported in clinical trials of low back pain.

Lumbar bone mass predicts low back pain in males (10)

Hoozemans M., Koppes L., Twisk J., van Dieën J.

Purpose: The objective of the study was to investigate whether low bone mineral content (BMC) and bone mineral density (BMD) values at the age of 36 years are related to the prevalence of low back pain (LBP) at the age of 42 years.

Relevance: LBP is associated with substantial health care costs. Knowledge concerning the causative mechanisms of (non-specific) LBP is necessary to develop preventive measures and treatments that can be applied by Physical Therapists. Results of clinical and in vitro studies indicate that a fracture of the vertebral endplate, caused by compression forces, may be a primary cause of LBP. A logical inference from this hypothetical causative mechanism is that the compressive strength of (lumbar) vertebrae, approximated by BMC and BMD, would be a determinant of LBP.

Participants: The Amsterdam Growth and Health Longitudinal Study, which started in 1976, was designed to explore the natural development of growth, health and lifestyle in a cohort of Dutch adolescents. For the analyses described in the present paper 292 participants (142 males and 150 females) were included for which the lumbar BMC and BMD were determined in 2000 at a mean age of 36.0 (SD 0.7) years.

Methods: At the age of 36 years the lumbar BMC and BMD was determined by dual-energy x-ray absorptiometry (DEXA). As outcome variable for the proposed hypothesis the 12-month prevalence of LBP was assessed with a structured interview in 2006 at a mean age of 42.0 (SD 0.7) years.

Analysis: Logistic regression analyses were performed to determine the relationship between BMC/BMD and LBP, adjusted for stature, bodyweight and physical activity.

Results: BMC and BMD at the age of 36 years were significantly related to the reported 12-month prevalence of LBP at the age of 42 years. This relationship was only observed for males and not for females. Men within the quartile with the lowest BMC or BMD values had significant adjusted OR's for LBP of 4.21 (95% CI: 1.36-13.0) and 3.14 (95% CI: 1.12-8.82) respectively, with the quartile with the highest BMC or BMD values taken as reference.

Conclusions: For a male population that is not characterised by osteoporosis or old age, lower lumbar BMC and BMD values are associated with a higher risk of reporting LBP in the future.

Implications: Combined with the relationship between physical activity and bone mass, these findings support physical activity and exercise, in particular weight-bearing activity, as a preventive measure to decrease the risk of developing LBP.

Exercise therapy for neck pain: a cochrane systematic review update (11)

Kay T., Gross A., Rutherford S., Voth S., McCall R., Santaguida L., Graham N., Goldsmith C., Burnie S., Haines T., The Cervical Overview Group

Purpose: To assess the ability of exercise therapy to decrease pain and disability, improve function, patient satisfaction, quality of life and global perceived effect in adults with neck pain.

Relevance: Neck disorders are common, disabling and costly. The effectiveness of exercise as a physiotherapy intervention remains unclear.

Participants: Single intervention randomized controlled trials that investigated the use of exercise therapy as a treatment in adults with neck pain with or without cervicogenic headache or radicular findings were included.

Methods: Computer-assisted searches of CENTRAL, MEDLINE, EMBASE, MANTIS, CINAHL, and Chirolars, without language restrictions, was conducted from their beginning up to July 2010. Two authors independently conducted study selection, data extraction and risk of bias assessment. A framework for classifying exercise types was adopted to facilitate comparisons of exercises between trials. Two authors independently assessed clinical relevance of included studies and the quality of the evidence was assessed using the Grade approach.

Analysis: Using a random effects model, relative risk and standardized mean difference were calculated. After judging clinical and statistical heterogeneity (p=0.10, I2 = 0.40), meta-analyses were performed on data from trials that utilized similar exercise protocols.

Results: Eight of the16 selected trials had low risk of bias. Low to moderate quality evidence (441 participants, 5 trials) showed that specific cervicoscapular region resisted exercises were beneficial for pain relief post treatment (SMDp -0.26, 95%CI: -0.53, 0.00) and at intermediate follow-up (SMDp -0.31, 95% CI: -0.57, -0.06) and improved function (SMDp -0.67, 95%CI: -1.23, -0.11) for chronic neck pain. Low quality evidence (1 trial, 136 participants) supported neck strengthening exercise for acute onset cervical radiculopathy for pain relief but not function in the short term. Low to moderate quality evidence supported C1/2 self-SNAG exercise, craniocervical endurance exercise and low load endurance exercise in reducing pain and improving function in the long term for chronic neck pain with or without cervicogenic headache. Moderate quality evidence (344 participants, 2 trials) showed that chronic neck pain does not respond to upper extremity stretching and strengthening. Low quality evidence showed isometric neck exercise (47 participants, 1 trial) and eye-neck coordination exercises (60 participants, 1 trials) were beneficial for chronic neck pain but general exercise was not beneficial. No evidence using single exercise interventions was available for acute WAD.

Conclusions: Moderate quality evidence supports the use of specific cervical and scapular strengthening exercise for chronic neck pain post treatment and intermediate term, and cervicogenic headaches in the long term. Moderate evidence suggests that some upper extremity stretching and strengthening exercises may not change chronic neck pain. Future trials should consider using a common classification system for exercise to establish similarity between protocols. Standardized representation of dosage is essential. Future trials must be of adequate sample sizes. Factorial trials

would help to determine the active treatment agent within a treatment regimen. Standardized reporting of side effects and harms is needed for balancing the likelihood of treatment benefits over potential harms.

Implications: Consider neck and scapular strengthening exercise when treating chronic neck pain and cervicogenic headache.

Treatment of chronic whiplash: a systematic review and clinical guidelines (12)

Rebbeck T., Stewart M., Cameron I., Stewart J.

Purpose: To conduct a systematic review of chronic whiplash in order to inform a national multi-disciplinary clinical guideline for the treatment of chronic whiplash.

Relevance: Approximately 50% of people with acute whiplash do not recover and progress into the chronic phase of the condition. Furthermore, the rehabilitation of chronic whiplash accounts for the greatest costs after a motor vehicle accident. Despite this, to date there have been no systematic reviews for the treatment of chronic whiplash.

Participants: Clinical trials were eligible for inclusion if they were randomized controlled trials and evaluated an intervention for the management of chronic (>3 months duration) whiplash.

Methods: We conducted a systematic review of databases including MEDLINE, CINAHL, EMBASE and the Cochrane Library from inception until September 2010, followed by citation tracking and contact with experts. Two independent reviewers determined if trials were eligible for inclusion, with differences resolved by a third independent reviewer. Eligible trials were then rated for quality using the PEDro scale.

Analysis: Effects of the intervention were extracted or calculated as mean difference (95%CI) for continuous data and relative risks (95%CI) for categorical data. Recommendations for treatment were graded from A to D and were determined using the Australian National Health and Research Council (NHMRC) body of evidence.

Results: Thirteen trials were eligible for inclusion in the review. Interventions with the highest grade of evidence of benefit included active exercise (mean difference of 6% and 8% for short term disability outcomes) and radiofrequency neurotomy (mean difference of 255 days (11.6 to 498.4) until 50% return of pain). Interventions with a lower grade of evidence of benefit included co-ordination exercises and cognitive behavioral therapy. Interventions with a lack of benefit included intra-articular and analgesic injections and jaw exercises. There was inconsistent evidence with regard to the efficacy of botox injections.

Conclusions: Active exercise is recommended as the treatment of choice for the management of chronic whiplash based on the results of this systematic review. Although radiofrequency neurotomy reached an equal level of evidence, its use should be restricted to carefully selected patients.

Implications: This is the first extensive and multi-disciplinary systematic review assessing the effect of treatment for chronic whiplash. The recommendations for clinical practice have become part of a national multi-disciplinary clinical guideline for whiplash. Importantly, the treatments that reached the highest level of evidence are under the domain of physiotherapy, highlighting physiotherapy as effective for the treatment of this condition. It is anticipated that by following these clinical guidelines for chronic whiplash, that health outcomes for this condition will improve.