

Small Group Education

Nāu te rourou, nāku te rourou ka ora ai te tangata



Persistent Pain (Osteoarthritis) Changing the Narrative November 2021

South Tyneside UK - Handout

Take Home Messages

- Pain is influenced by much more than what is going on in the tissues
- Take a holistic approach and use personalised care
- Work as a team
- Changing persistent pain e.g. in OA requires treating the whole person
- Exercise is key: hurt does not mean harm
- Best evidence-based interventions are rehabilitation and weight loss
- Imaging does not correlate with level of pain and function
- Medications are of limited benefit
- Do not underestimate the power of the placebo (and nocebo) effect

Changing our approach

Osteoarthritis (OA) was traditionally perceived as a tissue-based disease. However, it is now recognised as a 'whole person' problem with evidence suggesting we need to change our approach:

- Change the message (that we give to patients)
- Change the treatment focus (from the tissues to all biopsychosocial factors)
- Change the ownership (from the Health Care Professional to patient) [Caneiro 2020]

4Ps Framework

The 4Ps framework is a suggested approach to consultations related to persistent pain, including osteoarthritis. It ensures that the focus is on the patient and what is most significant to them. It can also help plan patient specific goals for treatment.

- **Pain:** open questions to establish nature of pain, occurrence etc.
- **Performance:** function related to daily living, mobility, self-care, sleep, work etc.
- **Psychology:** the emotional impact of the pain, stress, anxiety, effect on relationships with whānau and work
- **Past Medical History:** Co-morbidities that add to functional impacts and treatment choice [BPAC 2017]

Personalised Care

Personalised care is part of the NHS Long Term Plan. It allows people to have choice and control of how their care is planned and delivered based on what is important to them. Further information is available here: <https://www.england.nhs.uk/personalisedcare/what-is-personalised-care/>



[Image adapted by CQE 2021]

Radiology

X-ray

Pain and radiographic changes of OA are poorly linked. Imaging is often used in OA as a marker of disease progression and for therapeutic decisions; however abnormal radiological findings are frequently found in *pain free* adults, for example [Bedson 2008, NICE 2017]:

- Up to 31% of subjects with radiological *advanced* knee OA (Kellgren-Lawrence (K-L) G4) did not have pain [Son 2020]
- In a group of individuals (n=25) similar KL scores can be observed in the symptomatic and asymptomatic knees [Vargas E Silva 2020]

(The Kellgren and Lawrence system is a method of classifying the severity of OA using five grades, 0 = none and 4 = severe [Kohn 2016])

Discussing anticipated imaging results with patients (for example: X-ray changes are normal with age and have been shown to not correlate with pain) may help to minimise a nocebo effect. Other strategies can include:

- Describing the changes as 'wrinkles on the inside'
- If an X-ray has been done - it might help to bring the image up and show that there is still a gap i.e. cartilage is still there, and that moving will help maintain that cartilage [Butler 2019]

MRI

MRI imaging shows a similar discordant trend; over 90% of community dwelling adults with no evidence of OA on X-ray have at least one abnormal joint finding [Guermazi 2012, Kumm 2018]

- A recent study also found a 0.1 mm loss of cartilage over two years was associated with only a very small worsening of pain (0.32 on the WOMAC pain scale 0-20), and that this was likely mediated by worsening synovitis [Bacon 2020]

Reconceptualising OA in your practice: changing the words you use

David Butler from Neuro Orthopaedic Institute has produced a video '**OA Wear & Repair: An Osteoarthritis knee story using healthy linguistics**' (11min). It demonstrates how to use linguistics in a framework that is memorable in a more positive way for patients. It provides examples of words to use when discussing OA that emphasise OA as a process that can be changed. The video is available [here](#).

Talking about OA more positively

- OA is not a sentence; it does not mean you will end up needing a joint replacement
- OA is a process of attempted repair, it can be changed and slowed
- People with OA have diverse pain trajectories:
 - A recent systematic review of studies of people with early/moderate OA found over a range of 5-8yrs that pain in some people progressed (7%), but most remained stable (85%) and in 8% pain improved [Previtali 2020]
 - Variation exists, other studies report pain remaining **stable** in 35-60% [Rice 2019a].

Ways to talk about the many things the patient can do to help [Butler 2019]

- Evidence tells us that exercise/weight loss and knowledge can all help
- Prolonged immobilisation can have negative consequences
- Exercise can help make your muscles healthier and stronger, which will help make your knee healthier. Exercise also helps make your mind healthier
- You can help ease the inflammation (relative rest/ice packs/walking aids etc.)

Phrases to counter negative rhetoric

- Hurt ≠ harm
 - It is ok to challenge the knee, to find the right level of exercise
 - Reassurance that exercise is still the best medicine
 - Activity in the presence of pain is safe
- Use phrases like 'bend and mend', 'wear and repair', 'move it and lube it', 'motion is lotion' and 'exercise is excellent' [Butler 2019]
- Exercise is key [Pons 2020]:
 - It promotes optimal joint nutrition, muscle strength, flexibility and tolerance
 - If necessary, try a different therapist as it is important to have a good connection with the person prescribing the exercise
 - Take it slowly and build up exercise over time. A physiotherapist or exercise specialist can help make a programme specific to the patients' needs
 - Consider ESCAPE pain or community physiotherapy referral
- Reassure patients that flare ups are normal and will settle again with correct management
 - Use flare ups as an opportunity to coach patients and reinforce the key messages in managing OA

Education and Exercise

Patient Education:

- Clinicians are encouraged to continually educate patients about variability of disease process, self-care techniques, and to promote hope and a positive expectations from treatment [Bannuru 2019, NICE 2017]
- Booklets and online resources about staying active and good sleep hygiene should be available for patients [Darlow 2020, Geenen 2018, RACGP 2018]
- A Cochrane review that looked at patient beliefs and exercise interventions for people with hip and knee OA found:
 - People's beliefs about persistent pain impacts their attitudes and behaviours and how they manage their pain [Hurley 2018]; personal beliefs can impact on the likelihood of developing persistent pain [Mills 2019]
 - A population based study of people with chronic pain found those who adopted passive coping strategies used three times the amount of health care appointments and had twice the level of disability from pain compared to those that used active strategies (e.g. exercise) [Blyth 2005]
 - Lack of clear education from health professionals led patients to be confused about what they should and shouldn't do leading to fear and avoidance [Hurley 2018]

New research approaches focus on self-management strategies that move away from a disease-based treatment to include neuroeducation to address unhelpful illness/treatment beliefs, and personalised behaviour-graded activities (self-selected physical activity goals) to improve adherence and other brain directed intervention [Nijs 2020, Rice 2019a].

Patient Exercise:

Exercise is thought to help pain in OA by improving descending inhibition, reducing inflammation and having positive psychosocial effects [Hurley 2018, Hurley 2003, Rice 2019a, Rice 2019b]

- **Strength or resistance training** should be undertaken for 2-4 months starting at two sessions a week
 - It should be prescribed at an appropriate level and progressed to ensure a training effect is elicited and that the knee is not overloaded [O'Brien 2019, Rice 2019a]
 - To ensure this, provision of exercise by health professionals with suitable backgrounds (e.g. a physiotherapist) is sometimes recommended [Geenen 2018]
 - As with any training if exercise stops completely a detraining effect occurs so exercise should be regular and booster sessions may be required to ensure adherence [Nicolson 2017, O'Brien 2019, Rice 2019a]
 - Normally functioning muscles can have a protective effect on the joint [O'Brien 2019]
- **Aerobic training** should aim to meet the age specific physical activity guidelines of 150 minutes of exercise a week, more details are available [here](#)
- **Tailored exercise programmes** that incorporate an individual's activity preferences or that target their specific physical activity needs, may improve adherence in the long term [Hurley 2018, RACGP 2018]
- In healthy subjects a single bout of aerobic or resistance training is known to produce **exercise induced hypoalgesia (EIH)**: a generalised reduction in pain and pain sensitivity that occurs during and for up to 30 minutes after the exercise
 - The mechanisms of EIH are not well understood but it is thought that interactions between the opioid and endocannabinoid systems and between the opioid and serotonergic systems may be important [Rice 2019b]

- However EIH appears to be impaired in some chronic pain patients, and so exercise may have an unpredictable effect (hyper- or hypo- algesic) [Naugle 2012]
- Evidence is growing that no harm occurs to joint structure through long term exercise – including running [Bricca 2019, Lo 2018]
 - An observational study found in a group of 1203 >50yo self-selected runners with knee OA there was no structural progression radiographically and **reduced** knee pain compared to non-runners (self-selected meant people may run for shorter durations and intensity) [Lo 2018]
 - Results from a meta-analysis found that in people with OA, long term exercise did not change tibiofemoral radiographic diseases severity, cartilage morphology or synovitis/effusion [Van Ginckel 2019]

However, the true overall effect of running is unclear as many studies include small sample sizes with potential for bias. Sensible advice would be to enjoy running within symptom limits and without adverse reaction, and to ensure graded training into longer distances and adequate rest to avoid muscle fatigue that could impact on normal shock absorbing muscle function [Leech 2016, Leech 2015].

- **Yoga and tai chi:** Mind-body exercise (e.g. yoga and tai chi) is considered a core treatment for knee OA in some guidelines, based on evidence and expert consensus and the low risk. It is strongly recommended for all patients, regardless of comorbidities [Bannuru 2019]
- **Aquatic exercise:** is recommended for patients with knee OA, except in frailty where it may pose a risk of accidental injury. There is modest evidence of benefit on pain and objective measures of function [Bannuru 2019, RACGP 2018]

Referral options

Community Physiotherapy

NHS Physio can be used to support patients, it provides:

- Education and advice
- Movement, tailored exercise and physical activity advice
- Manual therapy is not provided often as mostly phone consults

Waiting times are variable across the UK. In South Tyneside, the wait time is approximately 3 weeks.

- Some patients will choose to self-fund with a private physiotherapy provider instead
- Many of the consults are done over the phone
- Pre-social distancing 40% patients were seen in person/face to face, this figure is now likely to be lower

ESCAPE-pain - Enabling Self-management and Coping with Arthritic Pain using Exercise

<https://escape-pain.org>

ESCAPE-pain is a group rehabilitation programme for people with chronic joint pain that integrates educational self-management and coping strategies with an exercise regimen individualised for each participant. It helps people understand their condition, teaches them simple things they can help themselves with, and takes them through a progressive exercise programme so they learn how to cope with pain better.

There are two programmes:

- ESCAPE-pain for knees and hips: designed to benefit people with chronic knee or hip pain
- ESCAPE-pain for backs: designed to benefit people with chronic low back pain

The programme is delivered to small groups of people twice a week, for six weeks (total 12 classes)
There are also ESCAPE-pain digital support tools.

Robust evaluation shows that ESCAPE-pain:

- Reduces pain
- Improves physical function
- Improves the psychosocial consequences of pain
- Reduces healthcare and utilisation costs

Age Concern Tyneside South -<https://ac-ts.org.uk/>

If the patient is older than 50 years and wishes to increase their activity levels, advise self-referral by phone or email to Age Concern South Tyneside. The service offers:

- A linkage worker for holistic assessment and support to access a suitable activity
- Exercise classes
- Links with other organisations such as Local Authority Leisure Services, Staying Active, Alzheimer's Association, Marden Road Community Centre (Groundwork), Local Community Associations, Veteran Association, Apna Ghar, Arthritis UK, and Parkinson's UK

Operating hours:

- Monday, Tuesday, and Thursday 9.00 am to 4.30 pm
- Wednesday 9.00 am to 6.00 pm
- Friday 9.00 am to 4.00 pm
- Saturday 9.00 am to 12.30pm
- Contacts – Phone (0191) 456 6903 or email info@ac-ts.org.uk

Green Gym -<https://www.tcv.org.uk/greengym/>

Green Gyms are fun, free outdoor sessions where people are guided in practical activities such as planting trees, sowing meadows and establishing wildlife ponds. The emphasis is on health and fitness.

Lifecycle Mental Health Services - <https://www.southtynesidelifecyclementalhealth.nhs.uk/> [Provides mental health services to support people of all ages, includes links to patient resources](#)

Management of acute OA flares

- Short term topical or oral NSAIDs [Bannuru 2019]
- While evidence from clinical trials is lacking, non-pharmacological interventions offer benefit for some individuals and a trial is recommended by several guidelines. These include: ice or heat packs, walking sticks, knee braces, supportive footwear, acupuncture, manual therapy and TENS [Geenen 2018, NICE 2017, RACGP 2018]
- A period of relative rest may be of benefit (e.g. moving from land based to pool based exercise, or from walking to cycling) followed by a graded return to usual activity [NZ Pain Society]
- Utilise self-care strategies: e.g. understanding about pain, learning you can be sore but safe as well as connecting with family/friends or other meaningful activity [Moseley 2017, NICE 2017]
- Planned review [NICE 2017]

Patient specific functional score (PSFS)

The PSFS allows a functional assessment of disability due to pain or injury based on personalised patient activities. An online version of this tool is available here:

[https://www.thecalculator.co/health/Patient-Specific-Functional-Scale-\(PSFS\)-Calculator-1023.html](https://www.thecalculator.co/health/Patient-Specific-Functional-Scale-(PSFS)-Calculator-1023.html)

Clinicians to read and fill in *Functional Goal and Outcome Worksheet*.

Note: Complete at the end of the history and prior to the physical examination.

Read at Baseline Assessment

I'm going to ask you to identify 3 to 5 important activities that you are unable to do or are having difficulty with as a result of your _____ problem. Today, are there any activities that you are unable to do or have difficulty with because of your _____ problem? (Clinician: show scale below)

Supplement: Are there any other activities that you are having just a little bit of difficulty with? For examples, activities that you might assign a score of 6 or more to. List up to 2 activities. (record as Supplementary 1 and 2 (S1 and S2).

Read at Follow-up Visits

When I assessed you on (state previous assessment date), you told me that you had difficulty with (read all activities from list one at a time).

Today, do you still have difficulty with 1 (have patient score each item); 2 (have patient score each item); 3 (have patient score each item); etc.

Patient Specific Activity Scoring scheme (Point to one number):

0	1	2	3	4	5	6	7	8	9	10
Unable to perform activity									Able to perform activity at same level as before injury or problem	

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Evidence for Complementary and Alternative Medicines (CAMs)

Glucosamine

Glucosamine is well tolerated; however further research is required to determine its efficacy. Data from meta-analysis are conflicting as to whether glucosamine improves pain or function in knee OA.

One review of trials lasting at least 12 months found an improvement in knee OA pain however, there was large uncertainty around effect size. It also showed an association with improvement in joint space

narrowing [Gregori 2018]. A second study of OA hip and/or knee (any duration) found no significant effect of glucosamine on pain compared with placebo but some improvement on stiffness [Zhu 2018b]. A recent systematic review and meta-analysis of short-term studies of hand, hip or knee OA found glucosamine clinically ineffective at reducing pain or improving physical function [Liu 2018].

Chondroitin

There is weak evidence from meta-analysis that chondroitin may improve pain or function in knee OA, however evidence is conflicting. While chondroitin is well tolerated, further research is required to determine its efficacy.

Some systematic reviews found improvement, for example one of the knee OA trials lasting ≥ 12 months found an improvement in joint space narrowing, but no improvement in pain [Gregori 2018]. Others found improvement in pain and function, but no difference in stiffness compared with placebo [Singh 2015, Zhu 2018b]. In contrast another review found chondroitin was clinically ineffective at reducing pain or improving physical function [Liu 2018].

Fish oils/omega 3

A 2017 systematic review and meta-analysis found no significant benefit of fish oils in reducing OA pain [Senftleber 2017]. *In vitro* and animal data indicate potential benefit (reducing proinflammatory mediators, increasing joint lubrication, and improvement in OA symptoms), however more robust studies using standardised interventions are required to substantiate an effect in humans [Boe 2015].

Deer antler velvet

Studies of the effect of deer antler velvet in animal joint cartilage suggests it may have beneficial effects [Yao 2021], however any beneficial effect (or safety) in OA in humans is yet to be established.

Turmeric (curcumin, *Curcuma longa*)

Some studies suggest turmeric extracts may improve OA pain and/or function compared to placebo; however, effect size is mostly small and studies of poor quality. Not all turmeric supplements show an effect. One study suggests it may be comparable to ibuprofen 1200 mg/day for reducing knee pain. However, it was not beneficial when used as an adjunct to diclofenac 25 mg daily [Perkins 2017]. Several spontaneous reports of acute hepatotoxicity with turmeric use exist [Lombardi 2021].

Others:

A systematic review and meta-analysis of supplements for OA of the knee, hand, or hip (including 69 studies; 20 supplements) found large and clinically important effects for L-carnitine, Pycnogenol, curcumin, *Boswellia serrata*, passion fruit peel extract, and collagen hydrolysate when compared with placebo for short term (≤ 3 months) pain relief. However, data were mostly very limited and/or of poor quality. There was no increase in adverse effects for these CAMs compared to placebo; however, safety was investigated in only a limited number of trials. Of the studies investigating long-term outcomes (>6 months, $n = 17$), no supplement had clinically important effects on pain [Liu 2018].

Surgical Intervention

Surgical intervention is a last resort in the management of knee OA. Despite this, there is still a lot of focus on surgery as a treatment [Nijs 2020]. HealthPathways criteria for referral include severe pain and functional limitation *and* all non-surgical options have been exhausted [CCHPW 2021]. A poor response to non-surgical treatment is more likely in patients with low expectations of treatment, poor knee function, a greater degree of varus frontal knee alignment and severe degenerative change of the medial compartment [O'Leary 2020].

The UK National Joint Registry (NJR) contains data on 1.3 million primary knee replacements with a follow up of maximum 16.75 years. From this data, 96.6% list osteoarthritis as the sole indication for a knee replacement. The median patient age is 70 years, with more women (56.6%) than men (43.4%) receiving the procedure. In 2019, 103,617 surgeries were reported to the NJR. Regional data show the following number of knee replacements:

	2020	2021
North East Region	2514	2322
South Tyneside District Hospital	51	84

[NJR 2021]

A recent longitudinal study of people referred for surgery found that non-operative treatment may delay or even prevent the need for surgery at 5-7 years in more than 50% of patients with mild to moderate knee OA. However, the authors note that patients with severe radiological changes are more likely to require surgery and it should not be delayed in patients who have not responded to conservative measures [Gwynne-Jones 2020a].

TKAs are considered highly successful from a surgeon's perspective when survival, performance of the prostheses and revision rates are considered. Data from the NZ Joint Registry show:

- 3.4 % of replacements require revisions (top reasons being pain +/- deep infection)
- Average time to revision is ~4 years
- ~90% of replacements are revision-free after 20 years [NZ Orthopaedic Association 2020]
- Longer life expectancy than the general population [Lao 2019]

However, this does not necessarily translate to patient satisfaction:

- 25% of patients surveyed by the NZ Joint Registry reported a 'fair' or 'poor' outcome at 6 months
 - For those who did not require revision; satisfaction in the following 5, 10 or 20 years was rated as 'fair' or 'poor' in 16%, 18% and 25%, respectively.
 - For those who required revisions, 46% rated their satisfaction as 'fair' or 'poor' [NZ Orthopaedic Association 2020]
- ~20-30 % of patients report pain for months to years after surgery as well as functional impairment. Pain for >6 months increased the risk of depressive symptoms [Ditton 2020]

Predictors of poorer surgical outcomes

Factors associated with poorer outcomes after a TKA include:

- A low, preoperative Oxford Knee Score (patient-completed) [Gwynne-Jones 2020b]
- Living in a poorer area
- Unrealistic or negative expectations
- High body mass index (BMI > 40 have poorer prosthesis survival)
- Patient-reported anxiety or depression
- Worse pre-operative physical status
- Presence of other conditions affecting mobility
- Previous knee arthroscopy [Ditton 2020, Sanchez-Santos 2018]

Arthroscopies +/- debridement

Arthroscopy with lavage and/or debridement is considered ineffective and is not recommended in patients with knee OA [Abram 2019, Siemieniuk 2017].

Arthroscopic partial meniscectomy (APM) in patients with knee OA and a meniscal tear is also not recommended, with some studies showing no improvement or a worsening in pain and/or function when compared with conservative treatment [Abram 2019, Lee 2020, Siemieniuk 2017].

Resources

South Tyneside Community HealthPathways

<https://southtyneside.communityhealthpathways.org/LoginFiles/Logon.aspx?ReturnUrl=%2f>

Chronic Pain

<https://southtyneside.communityhealthpathways.org/37163.htm>

An evidence review for osteoarthritis that outlines the underlying pain mechanisms and a review of the evidence for rehabilitation based management options is available here (for clinicians):

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6912819/>

New Zealand Pain Society has produced a **patient resource – Navigating pain** available here:

<https://www.nzps.org.nz/painresource/>

The International Association for the Study of Pain (IASP) has information under the **education** section including terminology, pain scale (faces with translations in several languages) available here:

<https://www.iasp-pain.org/Education/?&navItemNumber=503>

Retrain pain: a **science-based approach for patients** on how to help overcome persistent pain. Sections on Understanding pain (8x one minute), Mind and goals, sleep and pain, medication and Relationships: <https://www.retrainpain.org/>

Greg Lehman: a **free pain guide and workbook** for patients to read and work through to identify their individual pain contributors and how they can plan to address them.

The Overflowing Cup analogy is described on p48

Has been translated into German, French, Italian, Swedish, Dutch, Chinese, Hebrew and Spanish

<http://www.greglehman.ca/pain-science-workbooks>

Patient friendly resource from Greg Lehman – Physical Therapist to support exercise, activity and knowledge

<https://www.oaoptimism.com/why-does-it-hurt>

Pain Science Yoga Life: a website with information that blends current pain neurobiology with applications in the practice of yoga (does not work on internet explorer. Use chrome, safari or edge)

<https://www.painscienceyogalife.com/>

Mental Health Foundation UK <https://www.mentalhealth.org.uk/your-mental-health/looking-after-your-mental-health>

A link to a short **video** ‘Understanding pain: What to do about it in less than five minutes’ is available here: <https://vimeo.com/87769347>

Pain-ed website with information based on **current best evidence**; sections for patients and health care professionals; includes links to discussion of published pain related articles. Available here: <http://www.pain-ed.com/>

A **five minute video** produced by the Australian and New Zealand College of Anaesthetists **for patients** to help them have informed discussion on opioids and chronic non-cancer pain is available here: <https://www.anzca.edu.au/patient-information/pain-medicine-information-for-patients-and-carers/opioids>

Versus Arthritis website has information for patients including what arthritis is, how to live well with it plus exercise (types, forms, starting out plus motivation tips and tricks), a helpline and chat function. Available here: <https://www.versusarthritis.org/>

An orthopaedic surgeon from the US provides evidence informed discussion on the benefits of exercise for OA for patients <https://www.howardluksmd.com/knee/arthritis-knee/exercise-improves-knee-arthritis-pain/>

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