The evolution of OA management: from late-stage surgery to a comprehensive prevention and treatment strategy

Professor Ewa Roos, PT PhD
University of Southern Denmark
eroos@health.sdu.dk

OA research during last 20 years
...but evidence is not translated into clinical practice

Good afternoon, Mr. Read. Your knee hurts.
I want to know what is wrong. I want to have it fixed. I need an MRI and surgery.

What are my options?
1. Paracetamol, NSAIDs
2. Imaging
3. Referral to ortho

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The OA Treatment Pyramid

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Pharmacological pain relief, aids and passive treatments given by a therapist
Education, exercise and weight control
Surgery

First line treatment
First+second line treatment
First+second + third line treatment

Research findings from the last 20 years have opened up for a paradigm shift in osteoarthritis management

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Rest ➔ Exercise therapy is good
...but how good? ...can it make a difference?

Exercise therapy is the best non-surgical pain reliever

Exercise therapy is like any drug

Exercise therapy should be OA specific and tailored to the person

If there was a pain management intervention...

... reducing pain by 33% it could save:
- 11.7 billion CDN in cumulative direct health care costs
- 173.0 billion in cumulative productivity loss over 10 years
- 40.8 billion CDN and 447.2 billion CDN over 30 years

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What is exercise therapy?

Exercise therapy involves the use of physical activity to improve physical function, wellness, and quality of life. It can be used to treat a wide range of conditions, including injuries, chronic diseases, and disabilities. Exercise therapy can include various forms of physical activity, such as walking, running, swimming, yoga, and strength training.

How good is surgery, really?

Hip replacement is the most common and successful surgery.

Increasing number of knee and hip replacements world-wide.
3.48 million TKAs projected by 2030 in the US

Kurtz 2006

Is there really a need for more surgery?

What is the outcome from total joint replacement?

20% of TKR and 9% THR unfavorable pain outcome

Beswick et al. BMJ Open 2012

A completely unneeded and hypothetical trial

- Patients with moderate to severe knee OA eligible for unilateral TKR
- Randomize to education-exercise-analgesics-diet OR education-exercise-analgesics-diet + TKR
- Follow-up 12 months:
  - Pain
  - Function
  - Cross-over rate
  - Adverse events

Lack of evidence for TKR

...after all, joint replacements are among the most significant advances of the 20th century; don’t we already know they are successful?
A completely unneeded and hypothetical trial

- Now a couple of statements:
  - TKR+exercise would improve pain more than exercise only
  - Those in favor? Those opposed?
  - TKR+exercise would be associated with more serious adverse events than exercise only
  - Those in favor? Those opposed?
  - That was an easy warm-up, now it gets more difficult: Over the 12 months follow-up, what proportion of exercise-only patients will cross over and have a TKR?
    - 75% Those in favor?
    - 50% Those in favor?
    - 25% Those in favor?

Education

- 2 x 90 min sessions
- Overall focus to increase OA knowledge and how to treat it
- Furthermore, patient education focused on involving the participants

Exercise therapy: Neuromuscular exercise

- Aims at improving dynamic stability and trust in knee/hip
- Studied in moderate to severe knee and hip OA, waitlisted for TJR
- Feasible (Ageberg 2010)
- RCT Pre op exercise: Pain, function and performance improved at 8 wks (Ageberg 2013, Villadsen 2014)
- RCT Pre op exercise: Speeds up post-operative TJR recovery (Villadsen 2013)
- Cost-effective in a 1 yr perspective (Fernandes, OARSI 2015)

Insoles, dietary advice and analgesics

- Insoles offered to all
- Dietary advice offered to obese patients
- Analgesics offered to those considered needing extra pain relief to start exercise therapy
Participants
- N=100
- Mean age 66 years
- 50% women
- Mean BMI 32
- Mostly severe radiographic OA:
  - KL2 12%
  - KL3 42%
  - KL4 46%
- 2/3 used pain medication in past week
- KOOS Pain 48 (0-100, worst to best)
- KOOS ADL 54 (0-100, worst to best)

Results
Education, exercise, insoles, dietary advice, analgesics

At 1 year:
- 30% pain relief
- 74% had not had TKR
- No serious adverse events

KOOS improvements at 1 yr

- Eligibility
- X-rays ✓
- Function ✓
- Pain x
- Non-surgical x

Pain Improvement: 33-35%

- Non-surgical for TKR
- Eligible for TKR

Shared decision making

Surgical AND non-surgical route
- Greater pain relief
- 85% clinically relevant improvement
- 1/5 experience serious adverse events

Non-surgical route
- Lesser pain relief
- 68% clinically relevant improvement
- 3 out of 4 postpone surgery for at least 1 yr
- No serious adverse events

These trials do not tell anything about the effects from surgery only
Implementation lags behind

Politics
Organization
Financing
& Patient beliefs

Research evidence and Clinical results

Barriers to change in health care

- Professional hierarchies
- Financial incentives
- Health care organisation
- Patient beliefs:
  - I need an x-ray
  - I need MR
  - I need surgery

Barrier for implementation of education and exercise:
Not sexy, low tech, cheap with no industry involvement

Good Life with osteoArthritis in Denmark (GLA:D™)
- Implementation of evidence-based care for knee and hip osteoarthritis into clinical practice

Rooz EM, Skou ST.
Research Unit for Musculoskeletal Function and Physiotherapy
University of Southern Denmark, Odense, Denmark
rooz@health.sdu.dk

There is a pain management intervention...

- At 12 months…
- …Education and neuromuscular exercise relieved pain with 36% in thousands of patients in clinical practice in Denmark
- GLA:D Annual Report 2014

In summary...
There is a pain management intervention...

- ... that relieves pain by 33%.
- We just don't use it.

Educate patients and clinicians about non-surgical treatment:

Guidelines recommendations:
1. Education
2. Exercise
3. Weight loss
   Do I believe in that?
   Can I persuade him?
   Can I prescribe that?

Improve the tool kit

- Referral for x-ray and MRI
- Prescription Paracetamol, NSAIDs
- Referral to orthopaedic surgeon: Meniscus surgery, joint replacement

MISSING!
Education + Standardized supervised treatment exercise therapy

OA research during last 20 years

...time to put science in action to improve lives and save costs