#### Optimising Exercise Interventions for Rotator cuff Tendinopathy







#### **Prof Karen McCreesh**

School of Allied Health, University of Limerick, Ireland

Ageing Research Centre, Health Research Institute, University of Limerick, Ireland

I have no conflicts of interest to disclose



#### **Managing Rotator Cuff Tendon problems: Challenges**

Diagnosis: Lack of association between structural failure on imaging and symptoms

Dominance of biomedical beliefs

Strong influence of personal factors: genetics, smoking, obesity, psychosocial factors

Long recovery timescales

Lack of clear evidencebased guidance

#### **Treatment options for RC tendinopathy**

Exercise



Good level of effectiveness with low cost, but not optimal results in all populations. Lack of placebo controlled trials **Steroid injections** 



Slightly better pain relief at 6 weeks compared to exs/PT, but no difference after 12 weeks. Side effects Surgery



Similar results to exercise at medium and long term, but higher cost and risks. There may be a cohort that need early surgery

#### **Exercise as a Rx for "shoulder Impingement"- network** meta analysis Dong et al, 2015, Medicine; 94 (10):1-17



MD with 95% CI -1.09 (-4.53, 2.45) -1.06 (-3.61, 1.48) -0.38 (-3.19, 2.43) -0.24 (-3.11, 2.55) 0.21 (-3.00, 3.40) 0.49 (-1.85, 2.78) 0.60 (-2.41, 3.62) 0.61 (-1.44, 2.66) 0.77 (-1.71, 3.17) 1.02 (-0.30, 2.37) 1.23 (-0.29, 2.85) 1.25 (-1.97, 4.49) 1.33 (-1.40, 3.99) 1.35 (-0.26, 3.01) 2.28 (-1.20, 5.83)



- Exercise alone, or multi-modal treatments including exercise, significantly improve pain, but effect sizes are small and variable
- Corticosteroid injections alone are inferior to exercise alone. Combined (Exs + CSI), they showed better treatment effects for pain, but poorer effects for disability



## Exercise for 'Subacromial impingement': meta-analysis

(Steuri et al, BJSM 2017)

- Exercise superior to non-exercise interventions
- "Specific" exercise superior to nonspecific
- All other comparisons of exercise type, dose and mode were inconclusive



## What if we just made the exercise harder?

- Progressive, resistance exercise superior to nonprogressive, non-resisted exercise, for rotator cuff disorders, but low certainty evidence (Naunton et al 2020)
- SEXsi randomised controlled trial: no additional benefit from adding large dose of shoulder strengthening to current nonoperative care
  - BUT ... Patients did not adhere to the additional exercise dose (Bek Clausen et al 2021)





## GRASP trial (Hopewell et al 2021, Lancet)

Supervised progressive exercise was not superior to an advice session and guided home exercise in improving shoulder pain and function in people with rotator cuff disorders.

Both groups had clinically significant improvement in SPADI.

## Management: Guiding Principles (Lewis et al 2015)

#### Manage Loading

• Support rotator cuff tendon health and homeostasis

#### **Rehabilitation**

- Use movement to help reduce pain
- Strengthening programme for rotator cuff and scapular muscles
- Restore function through sports-specific or vocational training

#### Education

• Advise on recovery timescales, explain imaging findings, and help them adopt healthy lifestyle behaviours







## Loading in Rehabilitation: what we want to avoid!



Need to ensure rehab loading dose is

- not too high to allow recovery and avoid exacerbation
- high enough to maintain/restore chronic workload level for return to work or sport

Time







SS Ð Effectiven

- Group exercise is equally effective as individual exercise (O'Keeffe et al 2017
- Economically efficient also

### **Group exercise**





- Motivation to
- adhere
- Peer support
- Exercise mastery
- Education

(Barrett et al 2017, J Hand Therapy)

• Poorer attendance from younger people and those from lower socio-Ca economic groups

utions

(Abramson, 2018, J Nov Physio)



#### Supervised vs home-based interventions

**RC repair: No significant difference** in outcomes between **supervised or unsupervised exercise** postrotator cuff repair. Higher costs for supervised care *(Guttierez-Espinosa et al 22, Longo et al 20)* 

**RC disorders:** Supervised physiotherapy and home exercise programs have **similar effectiveness**, BUT are there some patient groups who need more support e.g. those **returning to work**, **have comorbidities**, **low self efficacy**, **poor health literacy** 

(Guttierez\_Espinosa et al 20)







#### Telerehabilitation



Cottrell et al 2016: SR

13 studies (1 shoulder)

**Telerehab** was as effective as usual care methods of physiotherapy delivery for pain and function outcomes, **BUT** studies limited to predominantly elective orthopaedic conditions where natural recovery is expected.



Telerehab for RC related pain: feasibility study (Malliaris et al, 2020)

- Advice only (n=12)
  - VS
- Online education and self-guided exercise (n=12)
   VS
- Telerehab with a physio (n=12)

Acceptable levels of adherence to the exercise **Pain and function outcomes equivalent to face to face care**.



#### 11 Best Practice Recommendations for Care in Musculoskeletal Pain



Ivan Lin et al. Br J Sports Med 2019;53:1250



## Importance of Psychosocial Factors



#### ORIGINAL ARTICLE

'Down to the person, the individual patient themselves': A qualitative study of treatment decision-making for shoulder pain

```
Christina Maxwell MSc, Clinical Lead and Advanced Practice Physiotherapist<sup>1,2,3</sup> 
Karen McCreesh PhD, Senior Lecturer and Discipline Lead<sup>1,2,3</sup> 
Jon Salsberg PhD, Senior Lecturer<sup>2,4</sup> 
Katie Robinson PhD, Senior Lecturer and Course Director<sup>1,2,3</sup>
```



- Semi-structured interviews with 13 patients and 30 clinicians (Physios, orthopaedic surgeons, GPs, specialist nurses)
- Patients emphasised therapeutic alliance and trust in the HCP, however, mismatched treatment expectations was one important barrier to good TA
- Shared decision-making was emphasised as important by clinicians, but there was limited evidence of shared decision making practices
- Patients sought a thorough assessment and a clear pathway of care

#### WILEY

# SHARED DECISION MAKING



Baseline:	<ul> <li>What have they been told/ what do they understand about their condition?</li> <li>What are they worried about?</li> <li>What do they want to know more about?</li> </ul>
Education Planning:	<ul> <li>Choose appropriate language</li> <li>Be flexible with the medium of education</li> <li>Divide into 'digestible chunks"</li> </ul>
Delivery of education:	<ul> <li>Pacing: decide the appropriate timeline, how will you progress/regress?</li> <li>How will you optimise engagement?</li> <li>What supporting resources will you use?</li> </ul>
Evaluation:	<ul> <li>How will you check understanding/clarify any misunderstanding?</li> <li>How will you reinforce the learning as part of a self management approach?</li> </ul>

Education programme (Ask Me 3) aimed at improving communication between patients and HC professionals (National Patient Safety Foundation, USA)

Encourages patients to <u>ask</u>, and <u>understand the answers to</u>, 3 key questions:



Ask Me 3 is a registered trademark licensed to the National Patient Safety Foundation®

- What is my main problem?
- What do I need to do?
- Why is this important for me?

## Remember.....Exercise adds years to life!

Figure 2-1. Relationship of Moderate-to-Vigorous Physical Activity to All-Cause Mortality





- Biggest health benefits from exercise occur at the **lower** levels
- Resistance exercise twice weekly

30

• Sit less, move more!

Source: Adapted from data found in Moore SC, Patel AV, Matthews CE. Leisure time physical activity of moderate to vigorous intensity and mortality: a large pooled cohort analysis. PLoS Med. 2012;9(11):e1001335. doi:10.1371/journal.pmed.1001335.

## In Summary: The Art of exercise prescription!







REHABILITATION SOCIETY

#### Thank you!



PhD students: Christina Maxwell, Lorna Barry, Niamh Brady, Kathryn Fahy