

EXERCISE PRESCRIPTION IN ARTHRITIS: A PRACTICAL GUIDE

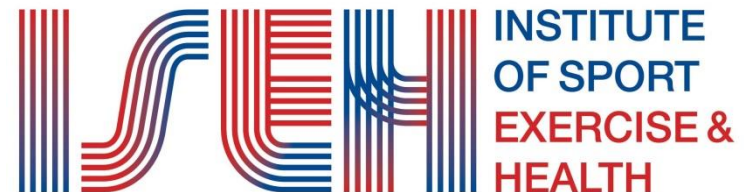
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ELEANOR TILLET

**A Practical Guide For Prescribing Exercise
in Arthritis**

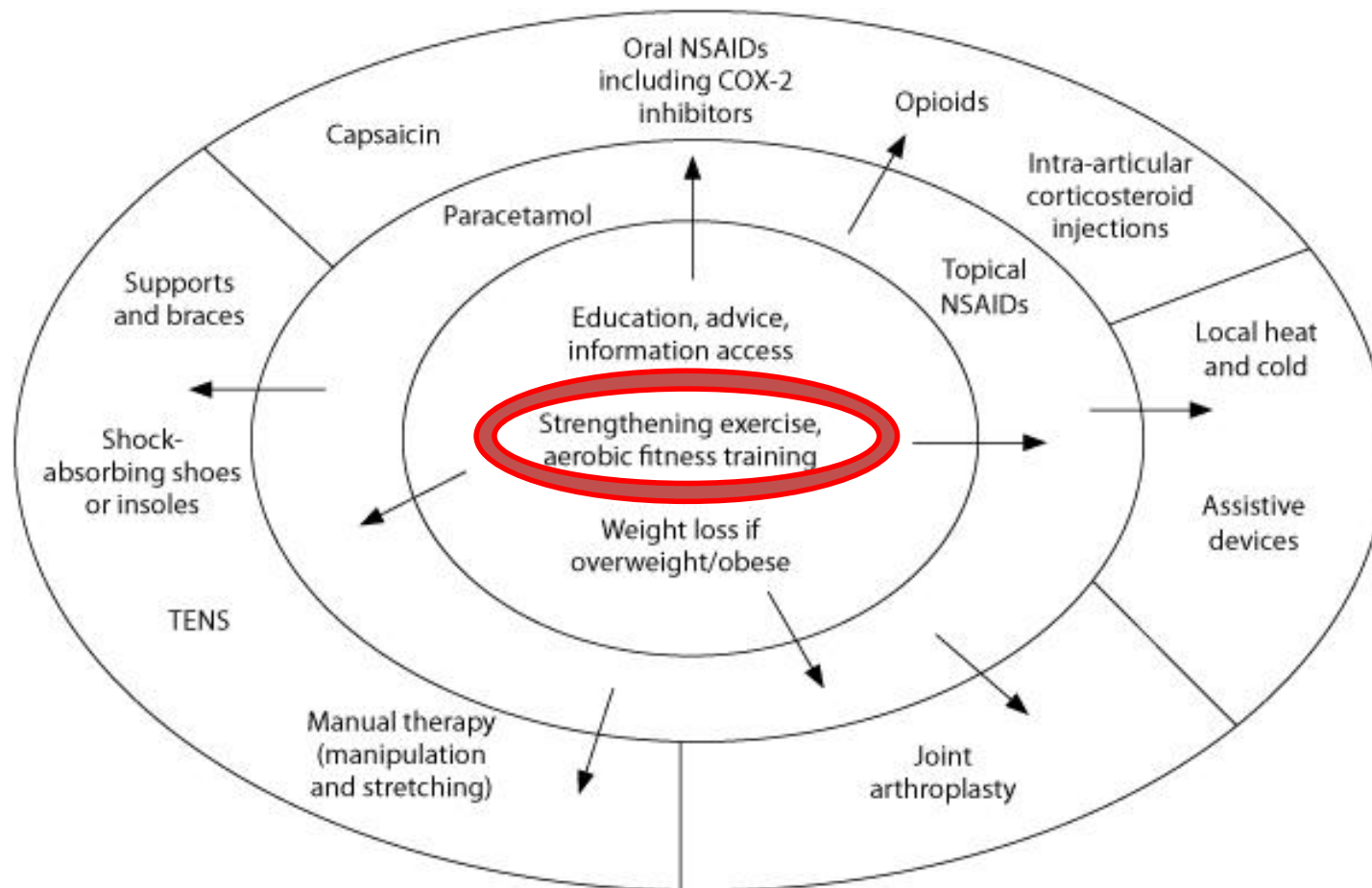
This speaker has no conflicts of interest

Overview

With evidence mounting for the benefits of physical activity for patients with arthritis, this talk will focus on the practicalities:

1. Are there any risks and how to risk stratify patients before prescribing physical activity
2. What are the key components of a physical activity programme and how to get patients started
3. Barriers and adherence, maintenance and prevention of relapse
4. Modifications for more severely affected patients

NICE Guidelines



An Evidence Selection...

- Knee OA: Systematic review of 17 studies (n=2500)
 - Randomly assigned exercise vs other or no treatment
 - Exercise has a positive effect on both pain and physical function in knee osteoarthritis

Fransen M et al. Cochrane Database Syst Rev 2008

- Lower limb OA: Systematic review
 - Exercise improves symptoms

Uthman OA et al. BMJ 2013

- Exercise training compared to NSAID treatment:
 - Greater reduction in pain is seen after 6–8 weeks of exercise training

Pendleton A et al. Ann Rheum Dis 2000

And For Inflammatory Arthritis....

- Regular PA improves:
 - Aerobic capacity
 - Muscle function
 - Bone density
 - Daily activity performance
 - Quality of life

Stenström CH et al. Arthritis Rheum 2003

Eversden L et al. BMC Musculoskeletal Disorders 2007

Mechanisms? OA...

- Muscle activity relieves pain (esp NWB resistance)

Tanaka R et al. Clin Rehabil 2013

- Aerobic fitness training increases endorphin levels
- Increased muscle strength & improved neuromuscular function improve joint stability, thereby reducing loading
- May be associated weight loss, which reduces joint loading
- ?Improves cartilage quality

Roos EM et al. Arthritis Rheum 2005

Mechanisms? Inflammatory Arthritis...

- Daily moderate intensity PA improves muscle function & quality of life in pts with early RA

Brodin N et al. Arthritis Rheum 2008

- General PA appears to be beneficial for maintaining joint flexibility

van den Ende CH et al. Ann Rheum Dis 2000

Han A et al. Cochrane Database Syst Rev 2004

- Systemic benefits including reduced risk of premature death from CVD

Pre Intervention Assessment

1. Medical history / risk stratification
2. Exercise history
3. Goals
4. State of change / motivation

Pre Intervention Assessment

1. **Medical history / risk stratification**
2. Exercise history
3. Goals
4. State of change / motivation

Risks?

1. Risks of exercising
2. Disease specific risks of exercising
 - OA
 - Inflammatory arthritis

1. Risks of Exercising

Paradox...

Regular physical activity (PA) reduces the risk of CVD

Vigorous exercise can transiently raise the risk of a cardiac event in susceptible persons

Incidence Of Cardiovascular Events In Exercising Adults

“No evidence suggests that the risks of physical activity outweigh the benefits for healthy subjects. Indeed, the converse appears to be true.”

2. Disease Specific Risks: OA

- Injury will potentially worsen OA
- Consider appropriateness of impact & contact sports

2. Disease Specific Risks: Inflammatory Arthritis

- Appears to be no evidence that moderate to high-intensity PA will increase disease activity

de Jong Z et al. Arthritis Rheum 2003

- No negative effects of moderate intensity PA on joint destruction (limited studies)

de Jong Z et al. Curr Opin Rheumatol 2005

- Long periods of high-intensity PA appear to accelerate joint destruction

Munneke M et al. Arthritis Rheum 2005

NB

- *Other disease risks:* pericarditis, CHF, pleuritis, pulmonary fibrosis, vasculitis, nephritis
- *Treatment risks:* steroid injections

Questionnaire: PAR-Q+

http://www.csep.ca/CMFiles/publications/parq/PARQplusSept2011version_ALL.pdf

PAR-Q+

The Physical Activity Readiness Questionnaire for Everyone

Before starting a physical fitness program and before you start your weekly work-out plan, it is important to know if you are fit enough to start. The questionnaire below is designed to help you determine if you are fit enough to start.

| Question | Yes | No |
|--|-----|----|
| 1. Have you ever had chest pain or trouble breathing while doing physical activity? | | |
| 2. Have you ever had dizziness or lightheadedness while doing physical activity? | | |
| 3. Have you ever had fainting spells or feeling dizzy while doing physical activity? | | |
| 4. Have you ever had a headache while doing physical activity? | | |
| 5. Have you ever had a heart attack or other cardiovascular disease? | | |
| 6. Have you ever had a stroke or other neurological disease? | | |
| 7. Have you ever had a blood clot or other circulatory disease? | | |
| 8. Have you ever had a bone fracture or other orthopedic disease? | | |
| 9. Have you ever had a kidney stone or other urological disease? | | |
| 10. Have you ever had a diabetes or other endocrine disease? | | |
| 11. Have you ever had a thyroid disease or other endocrine disease? | | |
| 12. Have you ever had a high blood pressure or other cardiovascular disease? | | |
| 13. Have you ever had a low blood pressure or other cardiovascular disease? | | |
| 14. Have you ever had a high cholesterol or other cardiovascular disease? | | |
| 15. Have you ever had a low cholesterol or other cardiovascular disease? | | |
| 16. Have you ever had a high triglyceride or other cardiovascular disease? | | |
| 17. Have you ever had a low triglyceride or other cardiovascular disease? | | |
| 18. Have you ever had a high blood sugar or other endocrine disease? | | |
| 19. Have you ever had a low blood sugar or other endocrine disease? | | |
| 20. Have you ever had a high blood calcium or other endocrine disease? | | |
| 21. Have you ever had a low blood calcium or other endocrine disease? | | |
| 22. Have you ever had a high blood iron or other endocrine disease? | | |
| 23. Have you ever had a low blood iron or other endocrine disease? | | |
| 24. Have you ever had a high blood sodium or other endocrine disease? | | |
| 25. Have you ever had a low blood sodium or other endocrine disease? | | |
| 26. Have you ever had a high blood potassium or other endocrine disease? | | |
| 27. Have you ever had a low blood potassium or other endocrine disease? | | |
| 28. Have you ever had a high blood magnesium or other endocrine disease? | | |
| 29. Have you ever had a low blood magnesium or other endocrine disease? | | |
| 30. Have you ever had a high blood zinc or other endocrine disease? | | |
| 31. Have you ever had a low blood zinc or other endocrine disease? | | |
| 32. Have you ever had a high blood copper or other endocrine disease? | | |
| 33. Have you ever had a low blood copper or other endocrine disease? | | |
| 34. Have you ever had a high blood manganese or other endocrine disease? | | |
| 35. Have you ever had a low blood manganese or other endocrine disease? | | |

Full assessment is 0-40. If the assessment score is 0-10, you are considered to be at low risk. If the assessment score is 11-20, you are considered to be at moderate risk. If the assessment score is 21-30, you are considered to be at high risk. If the assessment score is 31-40, you are considered to be at very high risk.

Green checkmark icon: If your assessment score is 0-10, you are considered to be at low risk. You can start your physical activity program.

- Do not start your physical activity program until you have been cleared by your doctor.
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Red X icon: If your assessment score is 11-20, you are considered to be at moderate risk. You should consult your doctor before starting your physical activity program.

Yellow exclamation mark icon: If your assessment score is 21-30, you are considered to be at high risk. You should consult your doctor before starting your physical activity program.

Black exclamation mark icon: If your assessment score is 31-40, you are considered to be at very high risk. You should consult your doctor before starting your physical activity program.

CSEP logo

Section 1: General Health

1. Heart condition OR high blood pressure?
2. Pain in your chest at rest, during your daily activities of living, OR when you do physical activity?
3. Lose balance because of dizziness OR have you lost consciousness in the last 12 months?
4. Diagnosed with another chronic medical condition?
5. Prescribed medications for a chronic medical condition?
6. Bone or joint problem that could be made worse by becoming more physically active?
7. Has your doctor ever said that you should only do medically supervised physical activity?

Section 2: Other Medical Conditions

1. Arthritis, Osteoporosis, or Back Problems
2. Cancer
3. Heart Disease
4. Metabolic Conditions
5. Mental Health Problems or Learning Difficulties
6. Respiratory Disease
7. Spinal Cord Injury
8. Stroke / TIA
9. Do you have any other medical condition not listed above or do you live with two chronic conditions?

PAR-Q+ Outcomes

If you answered NO to all of the questions:

- **Ready to become more physically active**

If you answered YES to one or more of the questions:

- **Seek further information from a licensed HCP before becoming more active**

Delay becoming more active if:

- **Not well because of a temporary illness (wait until recovered)**
- **Pregnant (seek further advice from your health care practitioner)**
- **Your health changes (seek further advice from your health care practitioner)**

ACSM Classification

- Class A:

- Apparently healthy (No CVD)
- May have CVD risk factors



Moderate intensity PA
without further screening

- Classes B & C:

- Symptomatic CVD



Examination and maximal
exercise test before
participate in moderate or
vigorous PA

- Class D:

- Unstable CVD



Further evaluation but generally
contra-indicated

Pre Intervention Assessment

1. Medical history / risk stratification



2. **Exercise history**



3. Goals

4. State of change / motivation

Exercise History

- Previous PA
- Current PA
- What enjoy / not enjoy
- Solitary vs team
- Indoors / outdoors
- 'Formal' or 'informal'

Pre Intervention Assessment




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Types Of Goals

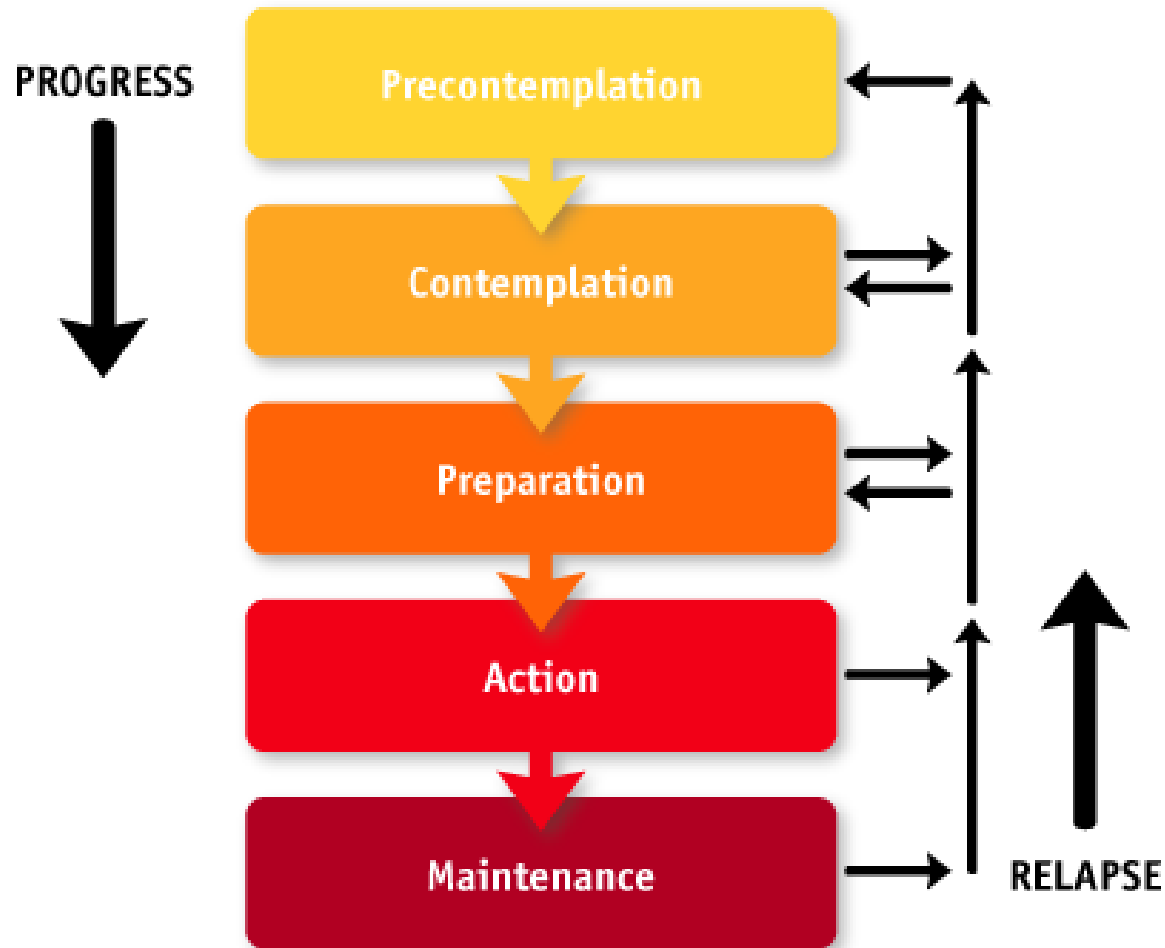
- Pain reduction
- Weight loss
- Live independently
- Continue work
- Become healthier
- Improve fitness
- Play with children / grandchildren
- Disease modification
- Specific sporting challenge

etc





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Readiness To Change



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Exercise / Physical Activity Intervention

1. Lifestyle advice
2. Formal prescription / referral

Advice

- Still needs to be specific
 - Tailor to state of change / goals
- Written & verbal
 - Message consistency & frequency





- Starting an exercise programme

<http://exerciseismedicine.org/documents/StartingExProgram.pdf>

- Exercising with arthritis

http://exerciseismedicine.org/documents/YPH_Arthritis.pdf

More Patient Info



- Exercise and arthritis 'Keep Moving'

<http://www.arthritisresearchuk.org/arthritis-information/arthritis-and-daily-life/exercise-and-arthritis.aspx>

- Disease specific additional guidance

<http://www.arthritisresearchuk.org/arthritis-information/arthritis-and-daily-life/exercise-and-arthritis/exercise-guidelines-for-specific-conditions.aspx>

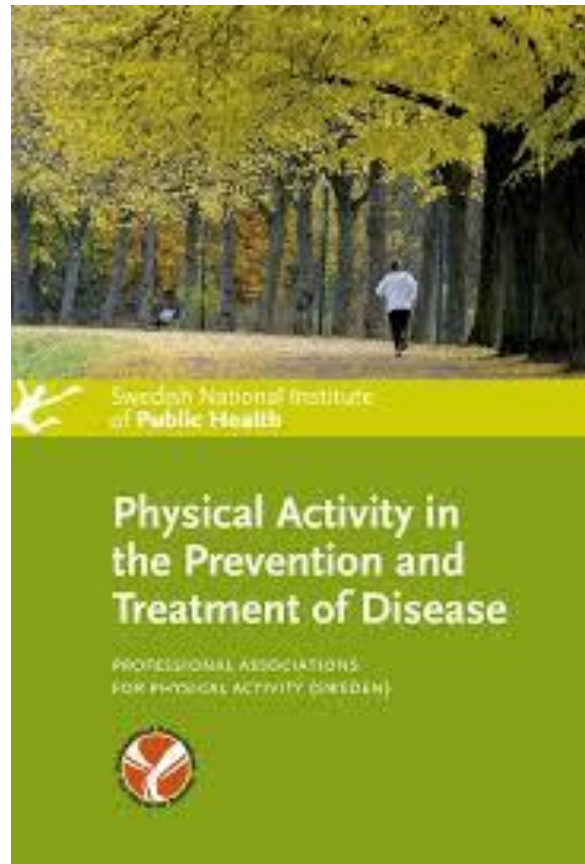
- NHS Health & fitness

<http://www.nhs.uk/Livewell/fitness/Pages/Fitnesshome.aspx>

- Walking for health

<http://www.walkingforhealth.org.uk>

<http://www.fyss.se/fyss-in-english/>



Adapted From FYSS Activity Pyramid



Adapted From FYSS Activity Pyramid

Inactivity

Strength &
Balance

Measuring PA Intensity:

Able to sing – low

Able to talk – moderate

Not able to talk - high

Walking, using stairs, getting off bus/tube a stop early, gardening,
playing with children / grandchildren,
housework, shopping *etc* **PLUS** daily mobility/flexibility exercises

Adapted From FYSS Activity Pyramid



Minimise



2-3 x weekly

1-2 sets x 8-10 exercises, 8-12 reps

Body weight / resistance / bands

Tai Chi, yoga, pilates



5 x 30mins / week

Moderate intensity

Walking, Nordic walking, cycling, swimming, aqua
aerobics *etc*



Walking, using stairs, getting off bus/tube a stop early, gardening,
playing with children / grandchildren,
housework, shopping *etc* PLUS daily mobility/flexibility exercises

F.I.T.T. Principle

Frequency

5 days per week (most days)

Intensity

Moderate

Time

30 minutes (60 minutes) in minimum of 10 minute bursts

Type

Cardio, strength, flexibility, core

Details eg specific exercises, sets/reps/time

Plus warm up / cool down

Formal Exercise Rehab Programme: OA



Mr Bruce Paton – Specialist Musculoskeletal
Physiotherapist, ISEH / UCLH
Thank you for the IP & Data!

Example Programme

Knee Circuit Exercises

- 6 week program
 - 2 x 1 hour sessions/ week
- Warm up 15 min
- Leg press
- Bike
- Functional: sit to stand / steps
- Glutes / hamstrings / calf
- Proprioception/ balance work
- Modelled on evidence based programs

Hurley et al Arth& Rheum2007
MCarthy et al HTA 2004

Education



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Outcomes (N=126)

Primary Outcome

Baseline WOMAC (OA index) = 66.13

FU WOMAC = 60.23

Mean difference = -5.907
($p < 0.001$)

Other Outcomes

- Age and symptom duration were the only 2 factors that predicted outcome
- Severity of KL scale did not predict response

Recommendations: Inflammatory Arthritis Prescription

- Very active disease status or significant disability, emphasise:
 - Flexibility
 - Strength training abdominals, gluts & quads
- All pts (irrespective of disease status):
 - Low-intensity exercise (land or water based)
- Moderate to high-intensity exercise for 30 minutes at least 3 times a week:
 - To increase oxygen uptake capacity, muscle function, bone density & ability to carry out daily chores

Cautions / Adaptations

1. Reduce the risk of aggravated symptoms introduce PA slowly
 - Initial loads should be smaller than generally recommended
 - Increased every 2-3 wks
2. Counsel re potential initial increase in symptoms
 - Temporary & not related to disease
3. Step down as well as up
 - According to disease status
4. Use the '24-hour rule'

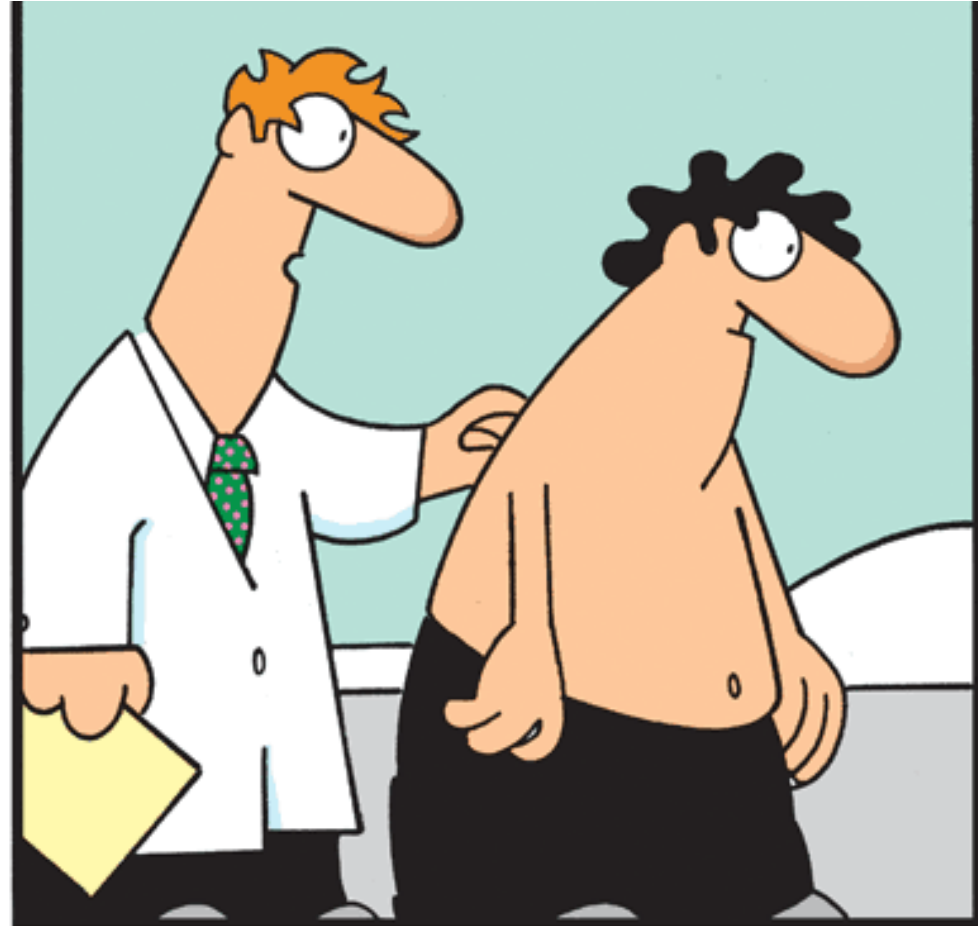
Inflammatory Arthritis: Example Prescription

(Adapted from FYSS)

| Objective | Frequency | Intensity | Type | Time |
|--------------------------------|------------|-------------------------------|--|--------------------------|
| Promote health | 4-7 / week | Low - moderate | Aerobic eg walking, gardening, housework etc | 30mins / session |
| Improve mobility / flexibility | Daily | Sensation of stretch, no pain | All major muscle groups, dynamic +/- static | 10-20mins / session |
| Improve aerobic fitness | 3 / week | Moderate - high | Aerobic eg walking, cycling, water based etc | 30-60mins / session |
| Increase strength | 2-3 / week | 50-80% of 1RM | All major muscle groups (weight bearing) | 1-2 sets, 8-12 exercises |
| Improve muscle endurance | 2-3 / week | 30-40% of 1RM | All major muscle groups | 1-2 sets, 8-12 exercises |
| Improve balance | 2-3 / week | Low | Home exercises double/single leg, Tai Chi | 10-30mins / session |

Summary

- Consistency & frequency of message
- Goal-oriented
- Tailored advice based on 'stages of change'
- Don't try and change too much at once
- Be specific
 - FITT principles
- Support systems
- Follow-up



“It’s not a rash, it’s moss. You need to start being more active than a tree.”