

EXERCISE AND ARTHRITIS

PART 1: Exercise for Rheumatoid Arthritis

Lucy Darbishire

There are approximately 120 different forms of arthritis. This article is the first of a 2-part series looking at the two most common forms of arthritis: rheumatoid arthritis (RA) and osteoarthritis (OA). Because the two diseases have distinctly different pathological mechanisms, the exercise programme design considerations vary. For this reason this article will address the issues surrounding RA and the next issue will address OA.

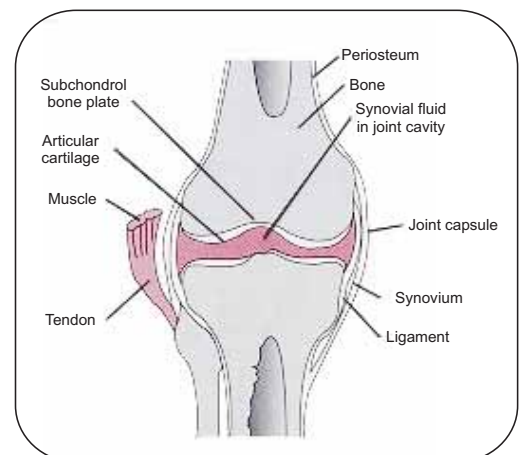
Quote: As part of a comprehensive treatment plan, exercise can decrease pain and improve function in people who have RA or OA. (Bouleware & Byrd, 1993)

Rheumatoid arthritis is a chronic, inflammatory disease that usually involves multiple synovial joints (e.g. those of the wrist, hand, elbow, and knee) and often affects the organ systems (such as the heart, lungs, skin and nervous system). Its aetiology is not known, but immunologic factors are considered to be of great importance. The prevalence of RA is about 1% to 2% of the population (Lawrence et al 1989) but increases with age. It affects women two to three times as often as men, and commonly affects younger women aged 20-50 years.

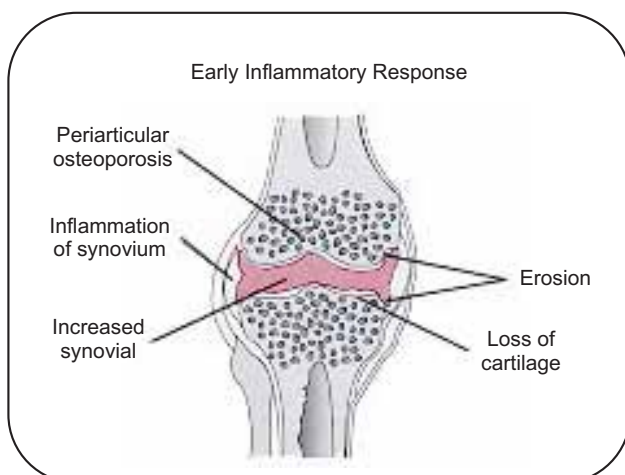
Description

The condition leads to a progressive destruction of joints. The synovium (see diagram) becomes much thicker and changes its character so that the inflammatory cells within it start to eat away at everything they touch, eroding the cartilage and bone. Synovial fluid accumulates, and the joint swells. If uncontrolled, the joints affected by RA often become unstable and slip out of place, causing deformities. Joint involvement is generally symmetrical.

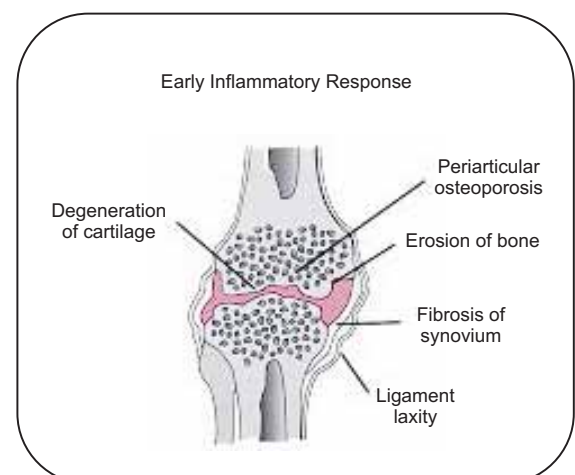
Although about 80% of individuals with RA are functionally independent, functional disability is often observed over time in the average patient (Wolfe & Cathey, 1991). Fatigue is a common symptom of RA, which probably results from deconditioning, depression, and altered biomechanics from affected joints.



Normal joint function depends on the integrity of all the joint structures. (Adapted from AHPA Arthritis Teaching Slide Collection. American College of Rheumatology, Atlanta, Georgia.)



Early inflammatory joint response to rheumatoid arthritis includes pannus formation and erosion of cartilage and bone.



Post inflammatory irreversible joint changes include destruction of cartilage, bone and soft tissues and fibrosis of the joint capsule. Damage affects joint alignment, stability, and range of motion. (Adapted from AHPA Arthritis Teaching Slide Collection. American College of Rheumatology, Atlanta, Georgia.)

The main goals in rehabilitation of individuals with RA are firstly the prevention of functional decline, and then to maximise strength, flexibility, endurance, and mobility. Aerobic exercise seems superior to non-aerobic methods of exercise (Minor et al, 1989), and dynamic exercise that requires muscles to lengthen and shorten, allowing the joint to move through a range of motion to generate a force seem to be superior to static (isometric) exercise (Ekdahl, et al, 1990).

Phases of Rheumatoid Arthritis

It is always important to consider the functional capacity of your client when designing an exercise programme, but this is specifically so with a RA client. The course of RA is variable and characterised by exacerbations (flares) and remissions. During a flare joints are hot and swollen, morning stiffness is present and often lasts longer than 60 minutes, and systemic effects might be more obvious. This is considered an acute phase of the disease. As the effects decrease the disease state is considered to be sub-acute. Between exacerbations the disease state is considered to be chronic. In the classification of functional status proposed by the American College of Rheumatology (www.rheumatology.org), patients are divided into four groups of functioning (Table 1).

Table 1

Classification of Functional Status of Rheumatoid Arthritis Patients

Class I Complete functional capacity with the ability to carry out all of the usual duties of everyday life

Class II Functional capacity that is adequate to conduct normal everyday activities despite discomfort or limited mobility in one or more joints

Class III Functional capacity that limits people to performing few or none of the duties of their usual occupation or self-care

Class IV People are largely or wholly incapacitated bedridden or use a wheelchair, permitting little or no self-care

Treatments

Rheumatoid arthritis is usually painful, sometimes very painful, and therefore analgesics or 'pain killers' are an essential part of treatment. They can be taken regularly for long-term pain control, and to control the destructive inflammatory process. Paracetamol-based drugs are usually recommended but other medication can be used. Other medicinal treatments include non-steroidal anti-inflammatory drugs (NSAID's); drugs (suppressive agents) such as sulphasalazine, gold and methotrexate; cortisone injections and cortisone-like tablets (also known as steroids).

Exercise

Ideally, however, care is co-ordinated in a multi-disciplinary setting that offers preventative and rehabilitative care as well as medical management. In conjunction with medication and other therapies, exercise can play a significant role in easing the pain of RA, and improving function at all ages and activity levels. Regular exercise can strengthen muscles and connective tissue, increase flexibility, improve aerobic fitness, increase bone density, help with weight loss, improve range of motion (ROM), and add to a person's overall sense of well-being.

Some exercise regimens are more effective and easier on joints than others. The key is to tailor the exercise programme to each of your client's needs. For example, those with acute RA might not be able to advance beyond passive ROM exercises. In contrast those with sub-acute RA might be able to progress to isometric and then resistance exercises with light weights. Many patients can begin with active ROM exercises and gradually advance through stretching, resistance, and aerobic exercises. See Table 2 for a summary of exercise recommendations.

Table 2

Summary of Exercise Recommendations

Disease Status

Acute flare 'hot joint'

Sub-acute Active ROM exercises to involved joints: 2 repetitions/joint/day
Active ROM exercises: 8-10 repetitions/joint/day
Static exercises: 4-6 contractions of 6-second duration
Isotonic exercises with light resistance; avoid if joints are unstable.
Aerobic training (15-20 mins, 3 x per week).

Stable or inactive Active ROM and flexibility exercises Static and dynamic strength training; avoid dynamic exercises if joints are unstable
Aerobic training 15-20 minutes, 3 x week.
Iversen, M. D., Liang, M. W. & Bae, S-C. (1999)

Range of Motion (ROM) and stretching exercises

RA can lead to tightening of the soft tissue, tendons, and joint capsules. Loss of bone and cartilage reduces joint space, structurally restricting joint motion. Because ROM exercises may maximise joint function, they should be performed daily. During active flares less repetitions are recommended and may need to be done with assistance. As inflammation subsides, passive stretching will increase joint ROM. Applying heat prior to stretching increases the extensibility of soft tissue and maximises the stretching effect (Hicks, 1994). Research shows that ROM exercises safely and efficiently maximise joint motion in patients with variable disease activity; they do not appear to increase joint damage, joint flares, or swelling over periods ranging from 6 weeks to 48 months (see Iversen et al 1999 for review).

Strengthening exercises

Strengthening programmes may be static or dynamic, or a combination of the two, depending on the phase of illness. In static exercises (isometric), muscle tension is generated without changing muscle length or moving through the joint range. These exercises help prevent muscle atrophy; they also produce less inflammation and fewer changes in intra-articular pressure than do other forms of resistive exercise (Hicks, 1994). Patients tolerate them well, even during periods of acute joint inflammation (Semble, 1995). Dynabands are excellent to assist in performing static exercises (see diagram 1). Those with stable disease tolerate dynamic as well as static exercises, and the former lead to greater improvements in muscle strength and function. However, those with active or severe disease should avoid dynamic strengthening exercises during acute flares. Other contraindications to dynamic strengthening exercises in RA include instability in a joint.

Diagram 1:

Example of an isometric exercise for the biceps and triceps muscles
Place a looped band around your forearms, just above your wrists. Hold both arms in front of the body with the elbows bent at 90o and one forearm just above the other. Turn the palm of the top hand so that it is facing upwards and the palm of the bottom hand facing downwards. For 6 seconds try to bend your top elbow and straighten your bottom elbow, keeping the arms close to the body. Relax and repeat switching arm positions.



Aerobic Exercises

Aerobic exercise can improve immune responses, aerobic capacity, endurance, and function in healthy individuals. Patients with RA have decreased aerobic capacity. Cycling, swimming, water-based exercises, and walking are all appropriate aerobic exercises for RA patients. The buoyancy of water facilitates exercises that are difficult to perform on land.

Special Considerations

1. Because many people with RA have morning stiffness, the best time for them to exercise may be later in the day.
2. Stretching/warm-up should be used daily, even on the days when the disease flares and activity is undesirable
3. Recommend that the person learn a strengthening routine
4. Include flexibility and joint ROM as key exercise components
5. Avoid overstretching and hypermobility
6. Select shoes and insoles for maximum shock attenuation during weight-bearing activities
7. If necessary, accumulate exercise dose in several sessions throughout the day
8. Set time goals, rather than distance goals, to encourage a controlled pace of activity
9. Avoid activities that cause increased joint pain lasting more than an hour or two after exercise
10. Some post-exercise soft tissue discomfort may be expected.

Possible exercise limitations (Stenstrom, 1994)

As mentioned previously, the severity of the disease process in RA should be considered in the exercise recommendation. Vigorous exercise is contraindicated in the presence of acute joint inflammation; however, the more common presentation of a person with RA is sub-acute or chronic joint symptoms and a possible sequelae of previous systemic inflammation (Minor & Kay, 1994).

Case study

Carol is a 35-year old secretary with rheumatoid arthritis. She has been taking NSAID's for 2 years and has little or no functional limitation, although she increasingly has to arrange her day according to the physical demands of her activities. Her occupation requires mild lifting and a great deal of typing. Carol complains of neck pain and has mild synovitis in her wrists and some of the joints in her fingers. Elbows are minimally involved, and she has a rheumatoid nodule on her left elbow. Her knees show small effusions and fine crepitus (joints rubbing on one-another).

What rehabilitation programme would you advise?? What restrictions to her activities would you recommend??

This patient presents with early, stable rheumatoid arthritis (RA). Her rehabilitation programme therefore should include a combination of ROM exercises for the involved joints, strength training (both static and dynamic), and aerobics to maximise her endurance and function. It should address static posture (particularly while typing), ergonomic factors, and adaptive equipment (wrist splints). Education would include a thorough discussion of her disease and information on how to modify her exercise programme based on her disease activity.

Summary

In summary, exercise is a proven method for improving function, endurance, and mood in patients with rheumatoid arthritis. An understanding of the disease, however, is essential for a safe and suitable exercise programme to be recommended. Careful consideration of and adaptation to the phase of the illness will ensure you are recommending the most suitable exercise for your client with RA.

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Lucy Darbishire BSc (Hons), MSc (Dist) CLC is a researcher at Guys, Kings and St Thomas' School of Medicine, and a Sport and Exercise Science teaching assistant at the University of Essex. She can be contacted at:

Address: Guys, Kings and St Thomas' School of Medicine
Department of General Practice
5, Lambeth Walk
London, SE11 6SP
Telephone: 020 7840 9437
E-mail: lucy.darbishire@kcl.ac.uk