



Exercise for Arthralgia

One of the most effective treatments for joint pain is a program that combines range-of-motion, stretching, strength training and aerobic exercise.

By Matthew David Hansen, DPT, MPT, BSPTS

The term “arthralgia” comes from the Greek *arthro-* (joint) and *-algos* (pain). Arthralgia, or joint pain, can be caused by injury, allergic reactions, degenerative causes, infection and illness. Individuals with an immune disorder who suffer from arthralgia are typically diagnosed with inflammatory arthralgia. However, according to the Medical Subject Headings created by the United States National Library of Medicine, the term “arthralgia” is a misnomer because it should be used only when a condition is not inflammatory;

when it is inflammatory, the term “arthritis” should be used. Nonetheless, for the purposes of this article, and to avoid confusion with the non-related condition of osteoarthritis, the term “inflammatory arthralgia” will be used to refer to joint pain that is a result of an immune disorder.

It is not unlikely that someone suffering from inflammatory arthralgia also could be dealing with osteoarthritis and would benefit from understanding the difference between the two conditions. Osteoarthritis (aka degenerative arthritis)



is the most common form of arthritis, caused by the loss of cartilage (the “cushion” that sits between the bones of joints), and becomes more prevalent as people age. Repetitive use over the years of commonly affected joints can irritate the cartilage and lead to pain and swelling. If the cartilage completely wears out between two joint surfaces, friction between the bones leads to increased pain and loss of joint mobility. Pain from osteoarthritis is worse after activity and at the end of the day, while stiffness in the morning or after inactivity usually lasts only a few minutes. On the other hand, stiffness from inflammatory arthralgia tends to last more than an hour. Joints on both sides of the body usually are involved, with the smaller joints of the hands and feet most affected. In addition, redness, swelling and warmth near the joint is more prominent than with osteoarthritis.

The Role of Autoimmune Disease

Several of the most common autoimmune diseases associated with inflammatory arthralgia include rheumatoid arthritis, systemic lupus erythematosus, scleroderma, Sjögren’s disease and mixed connective tissue disease.

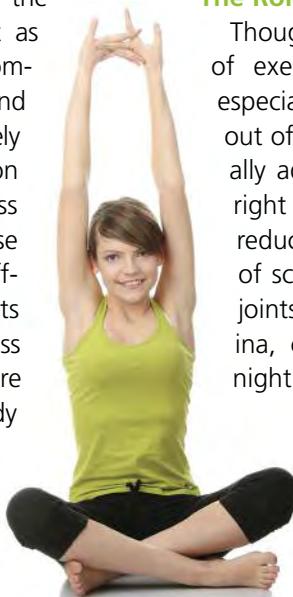
The reason individuals with autoimmune diseases experience inflammatory arthralgia is because their body doesn’t respond normally to infection. Here’s why: When the body’s inflammatory response is working properly, increased blood flow to the surrounding injured or infected area creates an environment that is bathed in the enzymes needed for tissue repair and the leucocytes (white blood cells) used to fight infection. Once their mission has been accomplished, the swelling leaves the area, along with the cell debris, recruited enzymes and white blood cells. But, in the case of inflammatory arthralgia, the body views its own tissues as the foreign invader, and a chronic inflammatory response ensues as immune cells attack the joint capsule and/or synovial membrane, ligaments, blood vessels, tendons and muscles surrounding a joint.

Unless the inflammatory process can be stopped, tissue will be destroyed and fibrous scarring will occur in the areas of greatest damage. Scar tissue is not pliable, and as a consequence, frequently has a severe impact on one’s functional movement. With decreased movement comes the risk of bone and muscle atrophy (wasting), muscle imbalance and possible related dislocations or subluxations (partial dislocations) of the joint surfaces, and eventual complete immobility of the joint (ankylosis).

The Role of Exercise

Though it may be difficult to imagine that any type of exercise could be good for joint arthralgia, especially for those who moan and groan their way out of bed in the morning, lack of movement actually adds to disabling joint pain and stiffness. The right type and amount of exercise can help to reduce inflammation and pain, prevent the buildup of scar tissue, strengthen the muscles around the joints, maintain bone strength, improve daily stamina, control body weight, contribute to a good night’s sleep and improve self-esteem.

Individuals who haven’t been active for a while should start slowly and ease into exercise. Overdoing it can aggravate joint structures and cause more inflammation and pain. Therefore, if patients’ condi-



tions get worse after exercise and if symptoms continue, a doctor should be contacted. When approved by a doctor, applying superficial heat like a warm towel, hot pack, heating pad or warm shower to a joint for 15 to 20 minutes before exercise — or when patients feel particularly stiff — can help to relax the body, relieve pain and possibly reduce the chance of a flare-up (i.e., acute inflammation). If

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joints are able to tolerate the cold, applying a bag of frozen vegetables or an ice pack wrapped in a towel for 10 to 15 minutes immediately following exercise also can help to reduce pain and swelling. Those who have Raynaud's syndrome, a condition not uncommon in people with inflammatory arthralgia that causes the blood vessels in the fingers and toes to constrict when exposed to cold, should probably not use ice.

Range of Motion and Stretching

One of the best things that people with inflammatory arthralgia can do to preserve the movement they have is to just keep moving. That advice may seem obvious, but there will be many days when it is the last thing that they want to do. Range-of-motion exercises that are performed in a non-weight-bearing position should normally be performed two to three times daily. For example, to "range" elbows, they should be bent toward the body (i.e., flexed) and then extended as far as they can in each direction without increasing pain. Knees can be ranged by sitting in a chair and extending them up into the air, then returning them to a position slightly under the seat, as tolerated; this is considered a non-weight-bearing exercise because patients are not standing while bending their knees and thereby not applying the additional force of their body weight through the joints. Exercises should be repeated slowly for three to five minutes for each joint that is being targeted (e.g., shoulders, hips, ankles, wrists, etc.).

Stretching involves moving a joint and its surrounding muscles to the end of — or slightly beyond — their normal range of motion and holding the position for at least 30 seconds. Many people are accustomed to holding a stretch for shorter periods of time; however, scientific research has demonstrated that at least a 30-second hold is needed to produce lasting effects. Because inflammatory arthralgia can cause different deformities over time, and even some conditions that should not be stretched (e.g., joint dislocations), a doctor and/or physical or occupational therapist should inspect patients' joints before prescribing a particular program.

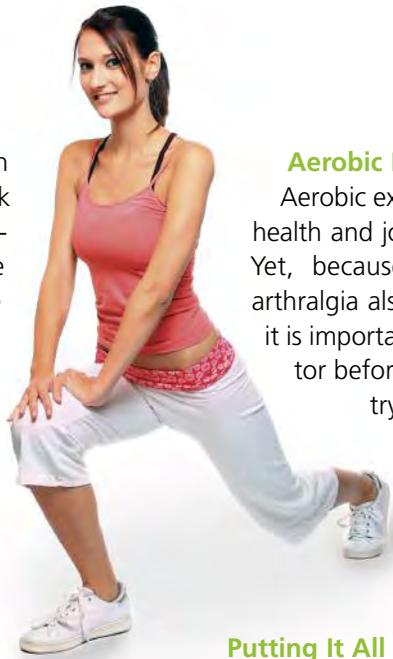
Strengthening Exercises

Strengthening exercises can help to build the muscles that surround a joint, thus reducing the load put through the joint and its structures. In general terms, there are two types of strengthening exercises: isometric and isotonic. Isometric exercises involve simply contracting a particular muscle group in place, holding it against gravity without moving, or pushing it against an immovable object (e.g., a wall). The joints do not move during isometric exercises, so they may be a good place to start for people who experience significant joint pain. Isometric exercises are convenient because most of them can be performed at the same time as everyday tasks, without anybody else being the wiser. For example, knee muscles can be exercised while sitting in a business meeting, etc., by extending one leg out in front, contracting the thigh muscles for 10 seconds and relaxing for 10 seconds, and then repeating the pattern three to five times on each side.

The opposing hamstrings can be exercised by bending the knee so that the heel is pressed against the sofa or chair leg and then pulled into the surface, following the same pattern described above. Finally, the calf musculature behind and below the knee can be targeted by rising up onto tiptoes (while still sitting with knees bent) and squeezing. Similar activities can be performed all the way up and down the body to work different muscle groups. The length and amount of contractions just need to be adjusted to meet patients' fitness levels. Isotonic exercises involve moving a joint through its range of motion against resistance (gravity and/or an external weight like a dumb-



bell). The muscle groups targeted above can be exercised by standing with the back against the wall and working the quadriceps by bending just enough to make the tip of the toes disappear from site before returning to a fully upright position. Individuals also can sit in a chair and straighten out one of their knees in the air in front of them (with or without an ankle weight for added resistance). The hamstrings can be exercised by either lying on the stomach or holding onto the back of a chair while standing, and then bending one of the knees so that the heel is lifted up off the ground. One of the best exercises for the calf muscles (gastroc-soleus complex) is to perform toe raises. Toe raises are performed by holding onto the back of a chair or a stair railing, raising up onto the balls of the feet so that the heels are off of the ground, pausing for two seconds, and then returning to the starting position. Enough resistance should be added so that individuals are able to comfortably perform three to five sets (groups) of eight to 10 repetitions of each exercise, every other day. This is a typical prescription for an intermediate load on muscles, although a therapist can help to tailor-fit each individual's program.



Aerobic Exercise

Aerobic exercise can improve patients' cardiovascular health and joint symptoms by controlling body weight. Yet, because many diseases causing inflammatory arthralgia also can affect the heart, lungs and kidneys, it is important that patients get clearance by their doctor before beginning activity. If cleared, they should try to work their way up to 20 to 30 minutes of low-impact aerobic exercise three to five times a week. Some examples of good activities are swimming and water aerobics, walking and bicycling (especially on a stationary recumbent bike).

Putting It All Together

Individuals with inflammatory arthralgia will likely feel overwhelmed with starting an exercise program, especially one that involves range-of-motion and/or stretching exercises two to three times daily, strengthening exercises every other day, and aerobic exercises three to five times a week. But, it is important for these individuals to understand that any movement is better than no movement. If it helps, they can begin by making just the range-of-motion and/or stretching exercises part of their normal day, and incorporating them into activities that they are already doing (eating meals, watching TV, reading, etc.). Once they have been able to successfully do that, some isometric or isotonic exercises can be added into the routine, eventually designating several 20- to 30-minute blocks during the week when they can do their aerobic exercise, even if it's just a walk around the neighborhood.

When looking for a place to exercise, local hospitals, clinics, health clubs and community centers sometimes offer exercise programs for people with physical limitations. And, whether individuals continue to exercise during flare-ups is up to them and their doctors, but in most cases, they should still be able to perform non-weight-bearing range-of-motion exercises just to keep moving. That's the key: Just keep moving.

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Isotonic exercises are widely thought to be more effective for functional movement than isometric exercises, because they work the muscle through its different lengths/positions. However, during joint flares or when inflammatory arthralgia is advanced, isotonic exercises can cause more pain than isometric activity. There really aren't any universally prohibited exercises for inflammatory arthralgia; nevertheless, patients should be careful with any high-impact activity that puts a lot of stress on the joint (e.g., heavy weightlifting, jogging, squeezing objects with their hands, jumping repeatedly or climbing lots of stairs).