

Exercise Programming for Osteoarthritis

Program Design for Clients With Sub-Optimal Joint Integrity



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Osteoarthritis is accepted by most people as an inevitable consequence of the aging process. With the remarkable improvements in health care, nutrition, and hygiene that have occurred in the last seventy years, people in First World countries are living longer than ever before. This means that conditions which develop insidiously over a long life span, like osteoarthritis and joint degeneration, were not seen on a large scale until recent years.

The incidence of osteoarthritis of the knee in particular has also been influenced by participation in sports, as this condition often develops secondary to traumatic injuries such as ligament tears.

The proliferation of young women in the 1980s in injury-producing sports which were previously not widely available to females, such as basketball, soccer, softball, volleyball, and distance running, led to a dramatic increase in the number of women in the early 2000s being diagnosed with knee osteoarthritis.

Osteoarthritis results from a degeneration of fluid inside joints, called synovial fluid, which acts a lubricant for the moving parts of a joint, called articulating surfaces. Synovial fluid plays much the same role in your joints that oil does in a car engine. When this fluid decreases in quality and quantity, the articular cartilage which covers bones degenerates. Cartilage does not contain pain receptors, and for this reason protects the bones inside joints. When cartilage wears away, surfaces of bones – which do contain pain receptors – begin to rub together. This leads to a wearing away of these surfaces, creating pain and loss of mobility.

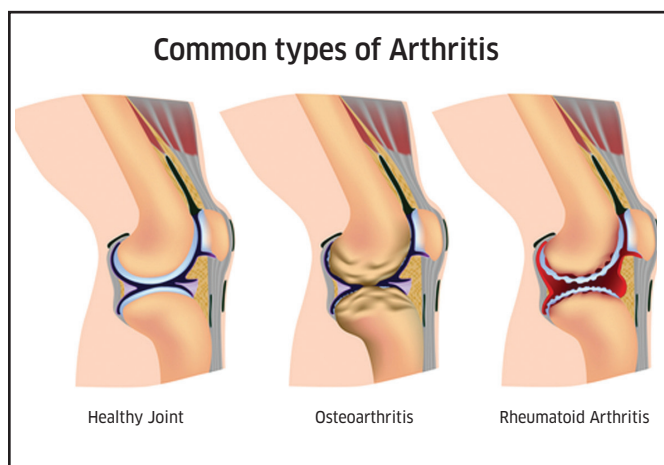
Some people are more likely to develop osteoarthritis than others. Risk factors include:

- **Overweight.** Being overweight leads to excessive force on the articular cartilage, specifically of the knee and hip.
- **Altered gait.** This leads to asymmetrical loading of joints, which increases the risk of joint degeneration.
- **Structural factors such as being bow-legged (varus) or knock-kneed (valgus).** Exercises to correct muscular imbalances that occur due to these factors can be highly beneficial.

• **Surgery on a joint involved in the exercise program.** The initial injury requiring surgical intervention in the vast majority of cases alters the structural integrity of the joint. In addition, it used to be common for surgery to be performed on the knee for certain conditions that are best treated conservatively – in these cases, the surgery itself can be a catalyst the ensuing degeneration.

• **Discomfort and/or tightness the day following physical activity.** The breakdown of cartilage leads to the release of chemicals that irritate the synovial cells. This leads to an increased production of synovial fluid that causes tightness, discomfort and sometimes swelling 10-14 hours after the offending activity. This is called chemical synovitis, and is a main cause of the progression of osteoarthritis.

• **Risky exercises.** Full knee extension in a seated position puts tremendous pressure on the underside the patella and is to be avoided. Deep squats are also an unwise idea for the same reason.



Recommendations for Safe Program Design

Individuals with osteoarthritis usually self-limit their physical activity. This is a mistake, because an appropriately designed exercise program can halt the progression of the condition, as well as restore function and mobility. Moreover, limiting physical activity leads to the development of secondary problems such as cardiovascular disease, diabetes and hypertension. Studies have demonstrated conclusively that a regular exercise program that involves cardiovascular exercise, strength training, and stretching, can create marked improvements in functional capacity, pain, and disability.

• **Have the client stop immediately if pain is felt.** The presence of pain while exercising is a direct sign that the joint is being damaged. Never coach clients to work through joint pain!

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• **Incorporate lower body strength training into the program.** Restoring strength to the muscles that stabilize the hip and knee will remove pressure by providing stabilization so that the joint can function properly. Excessive movement within a joint is usually caused directly by weakness in the surrounding muscle tissue. While the best case scenario is to maintain a high degree of strength throughout the lifespan, thus avoiding the excessive movement that wears down joints, benefits can still be had later in the process of degeneration.

• **Include an extended warm up.** A long warm up – 10 minutes – of low level cardiovascular activity will ensure joint lubrication and increased elasticity of tissues.

• **Have the client exercise in a warm ambient environment.** A warm, moist environment automatically improves range of motion. Paired with an extended warm up, a warm environment will make exercising more comfortable for the client, increasing compliance over the long term.

• **Split up exercise sessions into smaller segments.** Multiple, shorter sessions per day – known as discontinuous training – may reduce joint pain. As fitness level increases, longer sessions can be incorporated.

• **Trial swimming or aqua-therapy.** Exercising in the water may be the best option for individuals who cannot tolerate land-based activities.

• **Think of the future!** Having clients participate in risky exercises may not cause pain now, but may later on. Deep squats, repeated lumbar flexion and cervical extension, and excessive stretching outside the bounds of an individual’s normal range of motion can, and probably will, compromise joint integrity in the future.

• **Consider taking glucosamine sulphate with low molecular chondroitin.** A study by the National Institutes of Health in 2006 reported better relief of pain and no known side effects, as compared to the anti-inflammatory drug Celebrex® or a placebo. This supplement is widely available in pharmacies and health food stores.

As a trainer, the most important advice you can offer your clients is to commit to prevention. Staying strong and flexible throughout the lifespan results in fewer problems as we age. □

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