

## **The Benefits of Incorporating an Aquatic Workout Program in Combination to Osteopathic Joint Mobilization Techniques in the Treatment of Osteoarthritis**

### Manual Osteopathy

Osteopathy is a natural and non – invasive manual medicine founded by Andrew Taylor Still in 1874(). Still took a holistic approach to manual medicine where he would focus on the entire body and all of its aspects not just the problem area in question. He believed that all the separate parts of the body work together to form a functional unit. Meaning that if there is an unwanted change in one area of the body, it could result in swelling, pain, redness, discomfort and many other issues in another location due to the body trying to adapt itself to that unwanted change. Stills theories and perseverance paved the way for the healing profession of osteopathy making it into what is now considered one of the foremost alternative medicines available.

Manual osteopaths, through the use of manual techniques, greatly improve the body's ability to heal itself. Some of the techniques manual osteopaths use include visceral, cranialsacral, strain/ counterstrain, muscle energy, soft tissue, myofascial release and mobilizations. During a treatment you can expect a full body physical examination followed by a series of movements to test for mobility and range of motion. Your manual osteopath will then uses their hands to gently find and treat any underlying causes of discomfort or pain. Osteopaths help their patients restore and maintain mobility, structural stability, and optimal body function in addition to decreasing the risk of future injuries allowing patients to improve their overall quality of life.

### Osteopathic Joint Mobilization Techniques

Today, chiropractors, osteopaths, physiotherapists, occupational therapists, medical doctors and numerous other health professionals incorporate joint mobilizations into their manual therapy treatment to address impairments. Passive movement to the joint, and related soft tissues, at varying speeds and amplitudes

with the aim to introduce motion back to the joint, characterizes joint mobilizations (Vernon, 2013). Joint mobilizations have mechanical as well as neurophysiological effects on the body. The mechanical effects will in turn “improve extensibility of joint tissue, improve joint alignment, and enhance mobility” (Puniello, 2006). While the neurophysiological effects decrease pain and muscle spasms resulting in greater joint range of motion. Osteopathic joint mobilizations have been shown to produce noteworthy improvements to individuals with musculoskeletal issues.

### Osteoarthritis

Osteoarthritis is a degenerative condition, which is the most common disorder of the joints (Belza et al., 2001). It affects millions of people and the number continues to increase in prevalence as the older adult and obese population grows. As these demographics are at a higher risk of developing this disease (Mont et al., 2012). Osteoarthritis is described as a progressive fray, wear, or disappearance of hyaline cartilage within the joint, sclerosis of the subchondral bone, and the formation of bone spurs (Cleland et al., 2006). Cartilage is the tough elastic material that covers and protects the ends of bones. It allows smooth joint movement and acts as shock absorber making it an essential component to a healthy functioning joint. The joints most commonly affected by osteoarthritis are weight-bearing joints such as hips, knees, ankles, and the spine. Initially it only affects 1 joint or a few joint with the onset being gradual (Bartels et al., 2009). These joints are essential to a person’s ability to live a normal active life.

Individuals with osteoarthritis experience numerous signs and symptoms. They will feel pain with activity due to developing bone spurs or growths, and bone on bone friction without a protective cartilage barrier (Deere et al., 2001). This results in the joint becoming inflamed, warm, and swollen, which damages the cartilage even more. They will feel joint stiffness and have a significant decrease in joint range of motion (Mont et al., 2012). Pain and stiffness results in the joints being used less often, causing atrophy to the muscles surrounding the joint. Tenderness upon palpation to affected joints and muscles is also common. Conditions of osteoarthritis progression includes “articular components begin to show structural

changes such as the evidence of crepitus or grinding; joint enlargement occurs due to the stimulation of proliferative cells of bone and cartilage; and ligamentous instability develops” (Deere et al., 2001). Osteoarthritis is also classified by morning stiffness and pain lasting approximately 30 minutes or less. Pain and stiffness will also increase as the day progresses and the joints are used more.

There are two types of osteoarthritis, primary and secondary. Primary osteoarthritis is more commonly diagnosed and results from everyday wear and tear, aging, normal environment and abnormal factors such as a family history of the disease (Mont et al., 2012). Secondary osteoarthritis has a specific cause such as obesity, injury, overuse, inactivity, and inflammation from other diseases (Allison et al., 2013). The criteria for a symptomatic primary or secondary osteoarthritis diagnosis entails decrease in joint range of motion, weakness in surrounding muscles, swelling and heat in the joint, and consistent pain in joint for at least 3 months (Cardarelli et al., 2004). Treatment usually consists of medication for pain and traditional exercise, however individuals are starting to look for alternative treatments to help battle this disease, such as manual therapy.

### Osteopathic Joint Mobilization Techniques in the treatment of Osteoarthritis

Taking into consideration the growing number on individuals with osteoarthritis, health care professionals and researchers have made it a priority to find an effective treatment plan for this disease. Mont et al. (2012) stated that in the treatment of osteoarthritis attention must be placed on joint mobility through the use of osteopathic joint mobilization techniques. They found that as ”joint motion decreases the integrity of the cartilage decreases because of impairment of nutrients entering and metabolites exiting the joint” (Monte et al., 2012).

Research by Cleland et al. (2006) examined outcomes of individual patients with hip osteoarthritis treated with manual therapy, including joint mobilizations and exercise. This study focused on 7 patients who received joint mobilization techniques on average 2 times a week for 9 months. A numeric pain rating score (NPRS) and a Harris Hip scale (HHS), used to measure disability, were applied throughout the experiment. During the 9-month NPRS and HHS were taken weekly.

At the end of the 9-months, the progressions of results from both tests were examined. They showed that patients who received joint mobilization techniques exhibited “reductions in pain and increases in passive range of motion, as well as a clinically meaningful improvement in function” (Cleland et al., 2006). The outcome of this research is supported by other studies that focused on the use of mobilization techniques in the treatment of osteoarthritis (Cleland et al., 2006).

### Aquatic Workout Program

Aquatic therapy, also known as pool therapy and hydrotherapy involves a patient performing an exercises program in the water as part of their treatment plan. This workout program takes place in water that is heated to approximately 32-36 degrees Celsius and may include aerobic activities, strengthening exercises, and stretching (Bartels et al.). The aquatic workout program, run by certified instructors, focuses on joints of the trunk, shoulders, elbows, wrists, fingers, hips, knees, ankles, and toes and also concentrates on the muscles associated with these joints (Belza et al 2006). The aim of this type of workout is to increase joint flexibility and range of motion, and preserve or increase muscular strength (Belza et al 2001). Warm water is extremely beneficial as an exercise medium as it promotes muscle relaxation and movement. Additionally, the buoyancy of the water reduces gravitational force making the body feel lighter and allowing the joints to go through a greater range of motion. Water also acts as an excellent form of resistance, which encourages all the muscles surrounding a joint to increase in strength equally.

### Aquatic Workout Programs for individuals with Osteoarthritis

People with osteoarthritis find it difficult to execute an adequate exercise program due to the pain and low functional levels associated with the disease. Specifically, increasing damage to the joint may prohibit them from performing a lot of exercise that are normally done on land (Bartels et al., 2009). There are many findings that support the benefits of aquatic exercise for people with osteoarthritis. Exercise in water is often gentler on the body, less painful and easier than on land due to its buoyancy. Additionally, it “allows people with arthritis to exercise with

less effort and greater range of movement” (Belza et al., 2006). Research done by Belza et al. (2006) found that 3 months of aquatic exercise significantly improved pain, physical function, and psychological well-being in people with osteoarthritis. While a study done by Suomi and Lindauer (1997) found that after a 6-week aquatic workout program, individuals with osteoarthritis had an increase in isometric muscle strength and range of motion. Clearly, a properly structured aquatic workout program that is executed on a regular basis has the ability to significantly improve the quality of life for individuals with osteoarthritis.

Taking these findings into consideration, it should be kept in mind that little research has been done on the long-term effects of an aquatic workout program for osteoarthritis (Deere et al., 2001). Additionally, those with no access to aquatics programs or are unable to afford the cost of such programs, despite the cost being low, will not be able to partake in this type of treatment. These factors need to be taken into consideration for future studies.

### Conclusion

The finding shows that both osteopathic joint mobilization and aquatic workout programs are beneficial in the treatment of osteoarthritis. Joint mobilization techniques, which improve joint alignment, mobility and overall range of motion, are crucial in improving the quality of movement to a joint with osteoarthritis. Furthermore, introducing an aquatic workout regimen into a person with osteoarthritis treatment plan will help alleviate pain, increase muscle strength, and improve joint range of motion. Joint mobilization and aquatic exercise appear to be key aspects in creating an efficient treatment option for patients suffering from osteoarthritis.

Osteopathy is a “holistic manual medicine” that is founded on the principles that the body is a unit, structure governs function, the body is a self-regulatory mechanism, and it has the capacity to heal itself (NAO, 2010). Today people are leaning towards this natural form of healing over the invasive process of self-medicating and/or surgery. Implementing a rehabilitation plan consisting of joint mobilizations and an aquatic workout program gives the patient the power and

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control over their own treatment, which helps with their overall state of mind (Cleland et al., 2006).

In conclusion, the overall goal of a rehabilitation plan is to help a patient regain or maintain optimal function, and to help prevent future injuries from occurring. Applying an aquatic workout program in combination with osteopathic joint mobilization techniques to an individual with osteoarthritis improves muscular strength, range of motion, mobility, and decreases inflammation, stiffness and pain, all in a gentle and ideal environment. Making it an optimal option for treatment.

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