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***Comparison between Immediate Effect Land based and Water based Squatting Activity on Pain in Osteoarthritis Knee Patients.***

***Clinical Question:*** Will a 56 yr old patient with OA have reduced pain with aquatics compared to traditional exercise?

***Clinical Bottom Line:*** This study concludes that water based squatting activity shows immediate pain relief than land based squatting.

* ***Keywords:*** Knee Osteoarthritis, pain, aquatics, land based

**INTRODUCTION/BACKGROUND**

**What is osteoarthritis?**

Osteoarthritis is sometimes called degenerative joint disease or degenerative arthritis. Osteoarthritis (OA) is the most common chronic condition of the joints, affecting approximately 27 million Americans. OA can affect any joint, but it occurs most often in knees, hips, lower back and neck, small joints of the fingers and the bases of the thumb and big toe.

In normal joints, a firm, rubbery material called cartilage covers the end of each bone. Cartilage provides a smooth, gliding surface for joint motion and acts as a cushion between the bones. In OA, the cartilage breaks down, causing pain, swelling and problems moving the joint. As OA worsens over time, bones may break down and develop growths called spurs. Bits of bone or cartilage may chip off and float around in the joint. In the body, an inflammatory process occurs and cytokines (proteins) and enzymes develop that further damage the cartilage. In the final stages of OA, the cartilage wears away and bone rubs against bone leading to joint damage and more pain.

**Who’s affected?**

 Although OA occurs in people of all ages, osteoarthritis is most common in people older than 65. Common risk factors include increasing age, obesity, previous joint injury, overuse of the joint, weak thigh muscles, and genes.

**FOCUSED CLINICAL QUESTION:**

Will a 56 year old patient with knee osteoarthritis have reduced pain with aquatics compared to traditional exercise?

**ARTICLE RELEVANCE WITH PATIENT**

 This patient is 56 year old woman, former college volleyball player and recreational jogger turned triathlete.  She has bilateral knee pain and received a diagnosis of osteoarthritis 2 years ago. She continues to actively train and participate in triathlons, and enjoy a healthy lifestyle.  She aspires to coach track for the Special Olympics. Since retiring from work she has gained about 10 pounds and finds that her knee pain is increasing. The knee pain is worse when descending stairs (2/10).  She reports joint stiffness on waking. She has begun to feel a bit unsteady when transitioning from floor to standing and has noticed that she has slowed quite a bit when working on pacing her athletes. PT states that there is crepitus and cracking in her knee, which makes the Physical Therapist to believe that it is osteoarthritis.

**Patient goals:**  Decrease knee pain, increase steadiness with floor to stand movements, return to pre-retirement weight, and to keep pace with her 1600 meter runner who runs a 9:30 pace.

 This was a comparative article that fits perfect with this specific patient because it will provide the patient an alternative way to exercise and stay active with less pain.  This article was also very relevant with the patient because it was within the same age group and had the same goal. With the water, it will equally distribute the pressure in the knees and that in turn will help with the pain and  feel less pain in their joint because hydrostatic pressure of water equally distributes the pressure of the movement throughout the body. With that in play the patient is also strengthening muscles while doing a squat.  It compares squats on land and in water.  Under the principle of buoyancy doing a squat partially or wholly under water it produces an up thrust that decreases the effect of weight bearing. Hydrostatic pressure then equally distributes on all surface areas of an immersed body at rest at a given depth.

**OTHER FOREGROUND QUESTIONS:**

* Will aquatics produce a greater decrease in pain compared to IFC in a 56 year old female with OA?
* Would a 56 year old with osteoarthritis have less pain with aquatic therapy or with a cortisone shot?

**SEARCH STRATEGY**

 **Search Terms**: (Osteoarthritis ) AND (Aquatics OR traditional land based therapy) AND (Reduces pain) on APTA then went on Evidence & Research. There were a lot of promising articles on this specific topic and all five of the articles were related to knee osteoarthritis. Squatting Activity on Pain in Osteoarthritis Knee Patients” was found and with p score of <0.05 labeled as a comparative study

Other articles were reviewed on last page.

**ARTICLE REVIEW**

 In this article, it’s goal is to compare immediate effect of land-based and water based squatting activity on pain in osteoarthritis knee patients. To assess the pain using VAS (visual analog scale) before and after performing each task, which is measurable. Since the squat is one of the most frequently used activity in the day to day life, they thought it was a great exercise to test on.

This is a comparative study that lasted 6 months with 60 people involved. The ages of the patients were between 50-60 years old. The patient was asked to perform 10 repetitions (as many as he/she could perform) of squatting activity outside the pool. Now, the patient is given rest for some time. After rest, the patient was asked to be waist high in the pool doing 10 repetitions again or as many as he/she can do. There were no said drop outs in this study.

With this information, I know osteoarthritis is inevitable with most patients, so knowing that aquatic therapy can be such a significant pain relief for them is beneficial for me as a clinician. While in clinical working with some patients with osteoarthritis, there was so much pain so it was hard to really get a good treatment session in. Now with being in the water, we can get a really effective workout, plus take away some pain for them for that moment. In the clinic, if I had a pool accessed to me, I think I would 90% of the time bring them in the pool to help take some of the pain away. I would do more exercises more than just squats, but squats are essential for walking and just helping to be able to stand upright.

**RESULTS**

 This study concludes that water base squatting activity shows immediate effect on pain relief than land based on this activity. This study shows that patients with osteoarthritis will benefit from aquatic therapy and work on strengthening in the pool to help the surrounding muscles to take pressure off of the body part that has osteoarthritis.

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