

The Effects of Thermal Aquatic Therapy

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Abstract

The primary outcomes for this study included observing possible improvements of pain, stiffness, quality of life, physical activity, and muscle strength in the diseased hip of. The participants in this study (N=40) ranged from 50-75 years of age and were diagnosed with OA of the hip. Every participant, including the non-aquatic therapy group, was assessed at 0-weeks and 6-weeks. However, only the aquatic therapy participants were assessed once more at 12-weeks. To assess the participants the WOMAC, 6-minute walk test, and the Up and Go test were used.

Keywords: hip osteoarthritis, aquatic physical therapy, rehabilitation, pain, function, WOMAC, "Up and Go test", 6-minute walk test

Introduction

- Osteoarthritis (OA) currently affects 32.5 million adults in the US and the number of OA patients is predicted to increase to 78.4 million effected by 2040 (Osteoarthritis Action Alliance, 2020).
- The area of study and efficacy to help reduce pain and help gain function is lacking.
- Hip osteoarthritis (OA) is a condition where the cartilage in the joint degenerates. OA will cause inflammation, pain, loss of range of motion (ROM) and mobility of the hip joint.
- Historically, it was thought that osteoarthritis (OA) was a disease that was caused by aging; however, it will not cause the development of OA (Rahmann, 2010).

Operational Definitions

- **Osteoarthritis** : Type of arthritis that occur in the protective cartilage that cushions the ends of bones
- **Aquatic Physical Therapy** : treatment and exercise that is performed in the water for rehabilitation, fitness, and relaxation
- **Rehabilitation** : action of restoring a person health through training and therapy
- **Functional Ability** : capacity of an individual that can perform activity and tasks of everyday life.

Methods

Participants

- 40 participants in this study ranged from 50-75 years of age with OA of the hip.
- Of the participant population, 20 will be females and 20 will be males.
- Pain that was greater than 3 on a 10 VAS, along with difficulty climbing stairs, walking, and getting in and out of a chair
- Informed consent must be signed

Intervention

- 6-week intervention period consisted of aquatic physical therapy or no aquatic physical therapy.
- All participants were assessed at 0 weeks, immediately after the 6-week period of treatment. And aquatic physical therapy group underwent an assessment at 12 weeks to determine if the benefits of the intervention were long lasting (Hinman, Heywood, & Day, 2007)
- Sessions were controlled environment with progressive exercise conducted by a physical therapist (Hinman, Heywood, & Day, 2007)
- Aquatic physical therapy consisted of 12 phases
 - Progressive and functional weight bearing exercises
 - Each session lasted 60 minutes, two sessions per week for 6 weeks
 - Aquatic physical therapist instructed the participants (Bennell, et al., 2014).
 - Pool temperature kept at 34 °C,
 - 6 participants in the pool exercising at a time.
- The control group did not receive aquatic physical therapy.

Instrumentation

- WOMAC was used to assess pain, stiffness and physical function of the diseased joint
- 6-minute walk test measured the exercise tolerance of the hip OA participants
- Timed "Up and Go" test was used to assess functional ability
- visual analog scale (VAS) measured severity of pain

Research Design

- The use of intervention and questionnaires were used to standardize the data collection process (Bennell, et al., 2014).
- **Dependent variables**; pain, function, and quality of life
- **Independent variable** ; aquatic physical therapy
- **Controlled variables** : the pool temperature, water depth, the intervention period, the exercises, number of individuals in a session, and the physical therapist (Bennell, et al., 2014).
- Selected at random, 10 females and 10 males were put in the aquatic physical therapy 6-week trial
- Remaining 10 females and 10 males were in the control group which was no aquatic physical therapy

Data Analysis

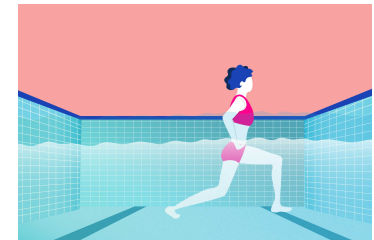
- Data collected was analyzed by a statistician
- The data was coded to allow blinding of the participants group location (Dias, 2017).
- SPSS software with a significance level of 0.05 on the intention to treat basis was used
- Mean scores at 0-weeks, 6-weeks, and 12-weeks (aquatic group only) were compared between groups (Fernandes, et al., 2010).

Purpose Statement & Hypothesis

The purpose of this study is to observe the effects of thermal aquatic therapy and its improvement of pain and function in adults who suffer from osteoarthritis (OA) of the hip. It was hypothesized that thermal aquatic physical therapy will improve pain, physical function, and quality of life in participants when compared to participants who did not part engage in thermal aquatic physical therapy.

Discussion

The possible sources of bias were the participants, the therapist, the statistician, and the examiner. To prevent bias the examiner was unaware of the group assignment, they conducted all outcome assessments for the participants (Cowan, et al., 2010). It is understood that every person and hip pain is different, some participants may have a higher pain tolerance than the next. There are a few limitations to the study. First the sample size poses a limitation because the small size of the study. Also, another limitation included that the outcomes could have been influenced by the lack of placebo group. Thirdly, the 12-week follow up assessment for the aquatic therapy group is a quick turnaround period to be testing the participants. Also, there needs to be more follow up assessments after the 12-week follow up because this is a chronic condition that requires a much longer period to evaluate a lasting treatment for OA (Ceballos-Laita, et al., 2019). For future research I would have a larger sample size and focus on how OA in the hip effected only females.



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