A study to assess the effectiveness of isometric exercise on reducing the knee pain among osteoarthritis patients in orthopedic ward in Sree Balaji Medical College and Hospital, Chennai

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Abstract

Pain is a feeling that is triggered by harmful stimuli. Osteoarthritis is a highly common ailment that is sometimes referred to as “wear and tear” of the body’s joints when pain is present. The knees, hips, hands, and spine are mostly affected joints as per the data. The cause is employment impairment new males over 50 in the United States, after ischemic heart disease, and it lead to more hospitalizations each year than rheumatoid arthritis (RA). The goal of this study was to see how much knee discomfort patients with osteoarthritis had before they did isometric exercise. The goal of this study was to see how much pain patients with osteoarthritis experienced after doing isometric exercises. To see how isometric exercise affected the level of knee soreness before the exam, to see if there’s a link between knee pain severity and various demographic characteristics. A pre-experimental one-group pretest and post-test research design was adopted in this investigation. The qualitative research took place in the orthopaedic ward of Sree Balaji Medical College and Hospital in Chennai. A non-probability purposive sampling strategy was chosen to select 60 osteoarthritis patients. The majority of the 30 samples have severe joint ache, according to preliminary findings. 15 (50) and 10 (33) percent of experienced severe ligament ache, respectively, while 5 (17) percent had slight discomfort as well as nobody had not at all ache. Previous testing revealed that the majority of the 30 samples were pain-free, with 8 (27%) and 18 (60%) having mild knee discomfort, 4 (13) percent having adequate ache, and nobody having excessive discomfort. paired ‘t’ value calculated was 20.3, suggesting that the difference between the pre- and post-test was statistically significant at P = 0.001. Conclusion: In the orthopaedic ward of the Sree Balaji Medical College and Hospital in Chennai, isometric exercise improves knee ache in osteoarthritis patients.

Keywords

Effectiveness, Pain, Isometric exercise, Osteoarthritis, Arthritis (RA)

Imprint


1 Introduction

Osteoarthritis, often known as degenerative arthritis, degenerative joint disease, or just osteoarthritis, is a kind of joint disease caused by the destruction of joint cartilage and underlying bone. [1] Osteoarthritis is a type of joint disease that primarily affects adults in their forties and fifties, and it is a primary cause of impairment in the elderly. [2] Although it is referred to as joint wear and tear, it is actually a disease that affects the entire joint, including the cartilage, ligaments, and bone. Hips, knees, hands, spine, and great toes are the most usually affected joints. More than 27 million people in the United States have osteoarthritis, according to the Arthritis Foundation. [3] Its affects nearly a billion people in India. Osteoarthritis is more common in women than in males. It is characterised by the breakdown of cartilage, the tissue that cushions the ends of the bones between joints, bony changes in the joints, deterioration of tendons and ligaments, and varying degrees of inflammation of the synovium, or joint lining, often as a result of Physical stress as well as Changes in the values of biochemical properties, causing the bone beneath to fail. [4] Both men and women are affected by the condition. Men are more likely than women to get osteoarthritis at the age of 45. Women are more likely to get osteoarthritis after the age of

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45. The condition is predicted to afflict 33.6 percent of those aged 65 and up, or 12.4 million people. The most common kind of joint disease, osteoarthritis, affects over 27 million Americans. [5] According to the Johnston County Osteoarthritis Project, the lifetime chance of getting hip osteoarthritis is 25%. In India, osteoarthritis is endemic, with around 80% of the population aged 65 and up suffering from joint wear and strain. According to specialists citing the WHO, 40% of them are likely to develop severe osteoarthritis. [6]

2 Review of Research

Osteoarthritis, often known as degenerative arthritis or degenerative joint disease, is a group of mechanical illnesses marked by the breakdown of articular cartilage and subchondral bone in joints. Symptoms include joint pain, soreness, stiffness, locking, and effusion. [7] Osteoarthritis can be caused by a number of factors, including genetic, developmental, metabolic, and mechanical deficiencies, all of which can contribute to cartilage loss. When cartilage protects bone surfaces less adequately, bone might become exposed and injured. As a result of the decreased mobility produced by discomfort, regional muscles atrophy and ligaments may become more flexible. [8] Osteoarthritis is a complex degenerative illness characterised by articular cartilage loss, bone enlargement at the borders, subchondral sclerosis, and a variety of biochemical and morphological changes in the synovial membrane and joint capsule. [9] Softening, ulceration, and localised disintegration of the articular cartilage are pathological alterations in the late stages of osteoarthritis. [10]

Osteoarthritis is a common cause of diminished function and decreased quality of life. Osteoarthritis is present in more than half of adults over the age of 65. [11] Approximately 10% of men and 18% of women over the age of 60 develop osteoarthritis, which causes pain and disability. [12] If no steps are done to promote disease prevention, the incidence and prevalence of osteoarthritis will continue to climb as the population ages. [13]

Dieppe PA, Lohmander LS. (2011) conducted a population-based study in rural Puvaneswar to evaluate the frequency and severity of osteoarthritis in 1637 people aged 65 to 74 years. They chose a list of houses using a systemic random sampling technique. The information was gathered through a pre-designed and pre-tested house-to-house survey. Osteoarthriti-

tis was defined as discomfort, swelling, and limited movement of a bigger joint in an elderly person, or if the person had already been diagnosed with osteoarthritis. According to the report, the bulk of the elderly (61.6%) were between the ages of 65 and 74, with 7.6% being over 85. In Puvaneswar, the overall prevalence of osteoarthritis in the elderly was 52.6 percent in rural areas, 32.6 percent in urban areas, and 60.3 percent in both. (p < 0.001). Females were more likely than males to have osteoarthritis (68 percent vs 44.7 percent). [14]

ZA Marcum (2019) at Turkey's Hacettepe University was conducted a randomized controlled research with the aim of effects of varied strength training on muscle architecture in patients knee osteoarthritis were investigated 61 patients were assigned six exercise categories as follows isometric, isotonic, isokinetic in right and left[15]. The study concluded that Muscle strengthen exercise was having more effects in knee osteoarthritis.

2.1. The Study’s Materials and Methods

The Study Used A Pre-Experimental Design With A One-Group Pretest And Post-Test. The Orthopaedic Ward At Sree Balaji Medical College And Hospital In Chennai Served As The Venue For The Qualitative Research. A Total Of 60 Osteoarthritis Patients Were Chosen Using A Non-Probability Purposive Sampling Method.

3 Study and Analysis

The majority of the 30 samples in the pre-test show severe joint pain 15 (50) percent and 10 (33) percent of experienced severe ligament ache, respectively, while 5 (17) percent had slight discomfort, nobody had no ache. Previous testing revealed that the majority of the 30 samples were pain-free, with 8 (27%) and 18 (60%) abstaining minor knee discomfort, 4 (13%) having modest ache, and nobody having excessive ache. Paired ‘t’ assessment calculated was 20.3, suggesting that the changes between the pre- and post-test was statistically important at P. (0.001). According to the researcher, the null hypothesis was rejected because there was no major link in the middle of isometric exercise and knee discomfort in osteoarthritis patients. “p” values are less than 0.001, according to the study. The experimental group that received isometric exercise was shown to be effective. Table 1 represents the Percentage distribution of age.
The above graph reveals that the bulk of the participants (19%) were between the ages of 50 and 55, a small percentage (4%) were between the ages of 55 and 60, and a very small percentage (3%) were between the ages of 45 and 49. Figure 1 shows the percentage distribution of age.

Table 2 and Figure 2 show the efficiency of isometric exercise on knee pain. The mean assessment before intervention was 54.1, and after intervention, it was 18.2. The S.D value was 11.8 before intervention and 12.1 after intervention. The standard deviation is 8.3 while the difference between the mean and standard deviation is 35.1. The significance level for the 't' test is 20.3. Isometric exercise is expected to have a significant impact on effectiveness. The experimental group that received isometric exercise was determined to be successful at the p 0.001 level.

4 Conclusion

According to the findings of the study, osteoarthritis patients who received an easy-to-follow and potentially risk-free isometric exercise intervention had a considerable reduction in pain as well as concluding...
that the provided hypothesis is correct. Implication: The outcomes of presentation area of nursing field. The study’s findings were beneficial to the nurse in the following ways: Early detection of osteoarthritis risk factors and prevention in older individuals. Encouraging senior citizens to eat well and exercise regularly in order to improve their functional abilities. After isometric exercise, the majority of the elderly were relieved of osteoarthritis knee pain, according to the study. Furthermore, consistent isometric exercise can provide long-term pain relief and help to overcome the side effects of allopathic medicines. Isometric exercise has been shown to reduce knee pain in osteoarthritis patients at the orthopaedic ward at Sree Balaji Medical College and Hospital in Chennai.

Statement on ethical issues
Research involving people and/or animals is in full compliance with current national and international ethical standards.

Conflict of interest
None declared.

Author contributions
The authors read the ICMJE criteria for authorship and approved the final manuscript.

Reference