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# A Study to Assess the Effectiveness of Home-based Stretching Exercises on Joint Pain Among Clients with Osteoarthritis in Selected Old Age Home, Rajkot City, Gujarat

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***Abstract***

*Osteoarthritis (OA) is a commonly encountered condition in middle-aged and older individuals, marked by its slow development. Strengthening exercises targeting the quadriceps muscles, situated in the front thigh, can mitigate knee pain, and reduce disability associated with OA. The musculoskeletal system encompasses the bones of the skeleton, the joints where these bones connect, and the muscles responsible for enabling and regulating movement. The knee, the largest and most complex joint, bears the body's weight, supports upright posture, acts as a hinge for walking, and endures considerable stresses during physical activities like running and sports. OA, known as degenerative joint disease, is a persistent ailment marked by the slow deterioration of the cartilage found in joints. It commonly affects weight-bearing joints such as hips, knees, and finger joints, leading to symptoms like joint pain, stiffness, swelling, audible cracking during movement, and diminished joint function. Globally prevalent, OA significantly impacts functionality and diminishes life quality. Clinically, it presents joint pain, stiffness, restricted movement, occasional swelling, and varying degrees of localized inflammation. Pain in OA stems from structural changes and peripheral and central pain processing, affecting physical abilities. OA-induced changes can restrict mobility, hinder daily activities, personal care, work performance, and household management. Joints are typically composed of hyaline cartilage, pivotal for joint functionality during bodily movements. This cartilage primarily consists of collagen type II and aggrecan proteoglycan, contributing to its viscoelastic and compressive properties. Osteoarthritis, characterized by articular cartilage degeneration without inflammation, affects weight-bearing joints like hips, knees, and finger interphalangeal joints. Symptoms include joint pain, stiffness, swelling, cracking noises during movement, and reduced joint function.*

**Keywords:** Osteoarthritis, joint function, musculoskeletal system, knee pain, peripheral and central pain processing

## INTRODUCTION

Osteoarthritis (OA) is a prevalent issue among the elderly, ranking as a significant concern in the American population as individuals age. With advancing age, the cartilage, responsible for cushioning between bones, undergoes changes, losing its suppleness and flexibility, eventually becoming rigid and damaged. The deterioration of these cartilages and ligaments contributes to the development of joint pain, a prevailing issue among older individuals. Pharmacological, non-pharmacological, and complementary treatments such as acupuncture, acupressure, oil massage, physical therapy, yoga, thermotherapy, and hydrotherapy may become the first line of treatment options to treat osteoarthritis [1].

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Around 13% of women and 10% of men aged 60 and above experience symptomatic knee OA. The incidence of symptomatic knee OA is expected to rise due to both the aging populace and the prevalence of obesity or being overweight among the general population. Over a year, about 25% of individuals older than 55 may exhibit continual episodes of knee pain, prompting roughly one in six to seek consultation from their primary care physician within the same duration. Approximately 10% of those aged over 55 grapples with painful, incapacitating knee OA, with a quarter facing severe disability. Knee OA is less prevalent among men compared to women. Frequent squatting increases the likelihood of developing knee OA. At roughly 25 years old, roughly 40% of men and about 68% of women reported squatting for an hour or more each day. Extended squatting significantly elevates the risk of tibiofemoral knee OA among the elderly. Moreover, obesity contributes to hip and hand OA, indicating that excessive fat tissue releases specific substances that alter the metabolism of joint cartilage. Incorporating regular exercise into daily routines is beneficial for enhancing muscle strength. Engaging in exercises that boost the strength of the quadriceps (front thigh muscles) can effectively alleviate knee pain and mitigate subsequent disability linked with osteoarthritis. Collaborating with a physical or occupational therapist is advantageous for learning optimal exercises and selecting suitable supportive devices for joint health. For individuals dealing with obesity, shedding weight can alleviate pain and hinder the progression of OA. Maintaining an ideal weight can significantly impact overall comfort levels. Aging is often likened to a second childhood, marked by physical and mental fragility, leading to dependency on others for care. Older individuals possess limited regenerative capabilities and are more susceptible to illnesses and syndromes compared to younger adults. This life stage requires adaptation to evolving roles and role diminishment. Exercise remains pivotal for maintaining strength, vitality, and wellness during the aging process. Physical activity serves as a valuable tool in aiding older individuals to better cope with role changes while offering opportunities to expand social connections, foster new friendships, and embrace positive new roles during retirement [2–6].

Individuals with chronic aging-related conditions like osteoarthritis represent a significant and expanding segment of the populace. Despite the established health benefits of regular exercise, older individuals tend to become less active as they age. For individuals managing osteoarthritis, consistent exercise can notably enhance pain management, proprioception, muscle strength, balance, and stamina, all of which contribute to enhanced functional autonomy. Clinical guidelines for treating knee osteoarthritis have underscored exercise as a crucial non-pharmacological strategy. Moreover, it directly diminishes disability and addresses gait irregularities. Effective management of arthritis necessitates a multidisciplinary or collaborative approach. A variety of healthcare professionals, including physical therapists, physicians, rheumatologists, and nurse educators, are involved in the care of arthritis patients, integrating a blend of non-drug and drug-based therapies. Engaging in exercises at home is advantageous for enhancing joint mobility among older individuals. As joint mobility increases, the severity of joint pain diminishes. Various methods for conducting home-based exercises have been experimented with in different nations. These exercises are time-efficient, and necessitate no specialized equipment, aside from a comfortable space for practice. This straightforward technique is deemed suitable for individuals with limited financial resources and is easily adaptable for the elderly [7–9].

## NEED FOR THE STUDY

Osteoarthritis is a chronic condition characterized by cartilage deterioration in joints, causing stiffness, pain, and limited movement as bones rub against each other. It commonly affects joints in the knees, hands, feet, spine, and occasionally the shoulders and hips. While aging is a factor, OA is linked to various controllable and uncontrollable risk factors such as obesity, lack of physical activity, genetic predisposition, bone density, work-related injuries, trauma, and gender.

The prevalence of arthritis, especially OA, is notably high among the population. In England and Wales, around 1.3 to 1.75 million people suffer from OA, with an additional 0.25-0.5 million diagnosed with rheumatoid arthritis (RA). In France, approximately 6 million new OA cases are reported annually. As arthritis predominantly affects older individuals, a segment of the population

 

that is growing, its prevalence is anticipated to rise in the coming years. Musculoskeletal diseases like arthritis impose a significant economic burden, accounting for up to 1–2.5% of the gross national product in Western nations.

The impact of arthritis on the quality of life is substantial, particularly in terms of bodily pain (average score from the Medical Outcomes Study (MOS) 36-item Short Form Health Survey of 52.1) and physical functioning (49.9). These scores are lower compared to gastrointestinal conditions (bodily pain 52.9, physical functioning 55.4), chronic respiratory diseases (72.7, 65.4), and cardiovascular conditions, indicating a significant impact on quality of life [10].

## OBJECTIVES OF THE STUDY

1. To assess the pre-test level of joint pain among clients with osteoarthritis in selected old age homes of Rajkot City, Gujarat.
2. To assess the post-test level of pain among clients with osteoarthritis in selected old age homes of Rajkot city. Gujarat."
3. To evaluate the efficacy of at-home stretching routines in alleviating joint discomfort among osteoarthritis patients residing in chosen elderly care facilities in Rajkot City, Gujarat.
4. To determine the notable correlation between the pain severity post-assessment among osteoarthritis patients in selected elderly care homes and specific demographic factors of these individuals.

## HYPOTHESES

The research hypothesis was stated as follows:

- *H0:* There will be a significant association between the pre-test and post-test levels of joint pain among clients with osteoarthritis.
- *H1:* There is expected to be a notable connection between the post-assessment pain levels in individuals with osteoarthritis and their chosen demographic characteristics.

## MATERIAL AND METHODOLOGY

### Research Approach

The Research approaches provide the framework for conducting a study, directing the researcher on what to investigate, analyze, and interpret. In this study, a quantitative approach was employed to evaluate the impact of home-based stretching exercises on joint pain among osteoarthritis clients residing in selected old age homes in Rajkot.

### Research Design

The researcher's comprehensive strategy for answering research inquiries or testing hypotheses is known as the research design. In this study, a pre-experimental design, specifically the one-group pretest-posttest design, was utilized.

### Setting

Sadbhavna Old Age Home.

### Population

The population of the present study was comprised of all clients diagnosed and fulfilling the criteria of osteoarthritis in selected old age homes.

### Sample

The sample consists of 60 clients who fulfilled inclusion criteria and were staying in Sadbhavna Old Age Home, Rajkot.

### Sampling Technique

In this present study, the non-probability method convenient sampling technique.

 

***Data Analysis and Interpretation***

The gathered data underwent analysis through experimental statistical techniques.

**Major Findings**

The major findings of the study include.

The maximum score of level of physical function in the pre-test of pain was 20, the range of pain was 6–16, the mean was 9.98, with SD of 2.46 and mean % was 49.9, stiffness maximum score was 8, range of stiffness was 3–6, the mean was 4.55, with SD of 0.69 and mean % was 56.8, physical function score was 68, range of physical function was 21–49, mean was 31.75, with SD of 6.58, and mean % was 46.7, the overall pre-test range was 32–62, mean was 46.28, with SD of 8.93 and mean% was 48.3%.

The pain level reached a maximum score of 20, with a range spanning from 3 upwards. The mean value stood at 6.78, with a standard deviation of 1.98, translating to an average percentage of 33.9. Stiffness, having a maximum score of 8 and a range from 2 to 4, exhibited a mean of 3.65 and a standard deviation of 0.78, equating to an average percentage of 45.6. Lastly, in terms of physical function, the maximum score was 68, ranging from 13 to 38. The mean value for physical function was 24.78, with a standard deviation of 7.55, corresponding to an average percentage of 36.4. The overall physical function maximum score was 100, the overall pre-test range was 19-48, the mean was 34.64, with an SD of 9.85 and the mean percentage was 36.3%.

The chi-square value calculated from the age distributions within the sample is 25.103 with 12 degrees of freedom (df). Comparing this to the tabulated chi-square value for df 12, which stands at 21.06, the calculated chi-square value surpasses the tabulated value. This indicates a notable association. Consequently, the research hypothesis was embraced, and the null hypothesis was discarded.

## CONCLUSION

Osteoarthritis (OA) is the most common form of arthritis, frequently known as degenerative joint disease or described as arthritis related to “wear and tear.” Its most frequent occurrences appear in the hands, hips, and knees, leading to the deterioration of cartilage within a joint and subsequent alterations in the underlying bone structure. The study was done through a process as official permission was taken for the research study and Ethical considerations were taken then by the researcher administered the Modified WOMAC Osteoarthritis Index among 60 samples.

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