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**Research Article**

# "Assess The Effectiveness of Directional Movement Exercise on Joint Pain Among Working Women at Selected Area."

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**ARTICLE INFO**

**ABSTRACT**

"A study to assess the effectiveness of directional movement exercise on joint pain among working women at selected area".

**AIM OF THE STUDY:** To assess the effectiveness of directional movement exercise on joint pain among working women at selected area.

**RESEARCH METHODOLOGY**: Quasi - experimental with pre-test post-test control group design was adapted to this study. The study was conducted among working women with joint pain at selected area. 60 sample were selected for the study using simple random sampling technique and they were divided into two group. Data collection was done by using demographic variables and Numeric pain rating scale to assess the level of joint pain. Directional movement exercise was administered for experimental group. Researcher demonstrates directional movement exercise daily three times for one week. after one week post-test done by researcher using numeric pain rating scale, data was analysed by descriptive and interference statistics. Reliability was assessed using test-retest method.

**RESULT:** Average reduction in joint pain score in experimental group was 3.7 which was 0.1 in control group. T-value for this test was 16.7 with 58 degrees of freedom. All the p-values are large (greater than 0.05), none of the demographic variable was found to have significant comparison of reduction in joint pain score among working women in experimental and control group.

**CONCLUSION:** It is concluded that directional movement exercise to the working women with joint pain was effective in reducing the joint pain.

**Key words:** Assess, Effectiveness, Directional Movement Exercise, Joint Pain, Working Women.

## INTRODUCTION

Joint pain is discomfort that affects one or more joints in body. A joint is where the ends of two or more of bones come together. Joint discomfort is common and usually felt in hands, feet, hips, knees or spine. Pain in joints may be constant, or it can come and go. Sometimes, joints can feel stiff, achy or sore. Some people complain of a burning, throbbing or "grating" sensation. In addition, joints may feel stiff in the morning but loosen up and feel better with movement and activity. However, too much activity could make pain worse. Joint pain may affect the function of joints and can limit ability to do basic tasks. Severe, painful joints can interfere with quality of life. Treatment should focus not only on pain but on getting back to daily activities and living life to the fullest.[1]

In men under 45 years of age, Rheumatoid arthritis (RA) is rare, whereas it occurs four times more frequently in women under 50 years of age .With age, the incidence of RA in men increases, but the incidence of RA in women also increases, peaking at menopause .Although the disease can occur in both sexes at any age, it primarily affects middle-aged women. Like men with RA, these women have a higher risk of cardiovascular events and overall mortality.[2]

A study was conducted in Thergaon Pune in India on osteoarthritis (OA) of the knee to determine the effectiveness of the Mulligan maneuver and range of motion techniques for chronic knee pain. The subjects were randomly divided into two control groups (15 people) and experimental groups (15 people). On the first day, each patient performed a 6-minute walking test, where VAS (pain) and walking distance were assessed. The control group received the usual treatment (TENS and exercise program). The result of the study showed that the end of the 3-day treatment sessions, both groups achieved successful results, as measured by the significant reduction in VAS ($p<0.05$) and improvement in test distance 6-minutes in 3-days.[3]

## BACKGROUND OF THE STUDY

Among chronic rheumatic diseases, osteoarthritis of the hip and knee (OA) is the most common and one of the leading causes of pain and disability in most countries of the world. The disease increases with age and affects women more than men. Osteoarthritis is strongly associated with aging and heavy physical activity, which is important for many people living in rural communities in developing countries. Determining local OA prevalence and risk factor profiles will provide important information for planning preventive strategies and subsequent health services.[4]

Osteoarthritis (OA) is a degenerative disease that causes pain in the major joints, especially the knee joint. OA is the eighth most common disease in the world and accounts for approximately 15% of all musculoskeletal disorders. Clinical symptoms and radiographic findings are the basis of diagnosis used to diagnose OA. India has the highest incidence of OA in the world and is expected to become the leading disease by 2025. [5]

A study conducted by Jayaseelan Venkatachalam et al in 2018 with aim of this study was to examine the severity and determinants of knee osteoarthritis in an older population. A community-based survey among 1986 adults living in rural areas of Kanchipuram district, Tamil Nadu, South India, was interviewed and surveyed from January 2014 to December 2014. Data collection done by graduates. Behorzan was trained under the supervision of the Chief Inspector. OA was diagnosed using criteria established by the American College of Rheumatology and confirmed and tested at the study site. Results of the study showed that out of 1986 adult respondents, 27.1% of whom had knee OA. Age over 50 years, female sex, smoking, and illiteracy, low social and economic class, positive family history of OA, diabetes and hypertension were associated to knee OA ($P < 0.05$).[6]

## NEED OF THE STUDY

Arthritis is a common chronic disease affecting people over the age of 35. Estimates of the prevalence of arthritis in adults over the age of 30 suggest that up to 6% of adults have symptoms of knee arthritis and approximately 3% have symptoms of hip arthritis. The prevalence of osteoarthritis increases with age and as the population ages, the impact of the disease will represent an increasing burden on health care. Hip and knee arthritis are the most common cause of mobility difficulties. It is estimated that more than one million total hip replacements are performed worldwide each year. [7]

In India, nearly 80% of the population suffers from osteoarthritis among the patients with knee pain, of whom about 20% report being unable to perform daily activities and about 11% require specialized care. About 40% of the population above 70 years of age suffers from osteoarthritis, of whom nearly 2% suffer from severe and disabling knee pain (Jain S, 2011).[8]

## PROBLEM STATEMENT

A study to assess the effectiveness of directional movement exercise on joint pain among working women at selected area.

## OBJECTIVES

1. To assess the level of joint pain among working women in selected area.
2. To assess effect of directional movement exercise on level of working women in the experimental group.
3. To compare the post test score of joint pain among control group and experimental group

## HYPOTHESIS

**$H_0$ -**There will be no significant difference in the level of joint pain after directional movement exercise among working women with joint pain in the experimental group and control group.

**$H_1$ -**There will be significant difference in the level of joint pain after directional movement exercise among working women with joint pain in experimental group and control group.

## VARIABLES

**Independent variable:** Directional movement exercise

**Dependent variable:** Level of joint pain

## ETHICAL CONSIDERATION
The research study was conducted after the approval of the Institutional Ethic Committee of Dr. D.Y. Patil Institute of Nursing Education Pimpri, Pune.

## RESEARCH METHODOLOGY
**RESEARCH APPROACH**: Quantitative research approach.
**RESEARCH DESIGN:** Quasi - experimental with pre-test post-test control group design
**SETTING OF THE STUDY:** Sane Guruji Adarsh Vidya Niketan Thergaon, Pune.
**POPULATION:** Working women, who are in the age group of 35 years and above, and suffering with joint pain.
**SAMPLE:** Working women suffering with joint pain.
**SAMPLE SIZE:** 60 Samples.
**SAMPLING TECHNIQUE:** Simple random sampling technique.

## SAMPLE CRITERIA
### INCLUSION CRITERIA
1.Working women who have joint pain of joints such as ankle, elbow, neck and shoulder.
2.Female aged 35 years and above with joint pain.
3.Working women whose screening score is below 10 with use of Numeric pain rating scale.

### EXCLUSION CRITERIA
1.Working women who does not have joint pain.
2.Working women with injured joint and fracture.
3.Working women who had undergone surgery.
4.Working women who are handicapped.

## DESCRIPTION OF THE TOOL
The tool comprised of three sections.

## SECTION-A: DEMOGRAPHIC VARIABLES
Demographic variables are age, gender, and educational status, and occupational status, duration of pain, taking drugs to relieve pain, health status, and type of daily living activities.

## CLINICAL PROFILE
Diet, pain, other therapies (home remedies)

## SECTION-B: NUMERIC PAIN RATING SCALE
**Numerical Pain Rating Scales (NRSs)** The numerical scale is most commonly 0 to 10, with 0 being no pain, and 10 being worst pain imaginable." The patient picks (verbal version) or draws a circle around the written version, the number that best describes the pain dimension, usually intensity.
Scoring and Interpretation:
- Minimum pain score: 0 (would not be seen in a person with true pain)
- Maximum pain score: 10
- The higher the pain scores, the greater the pain.

## SECTION-C-DIRECTIONAL MOVEMENT EXERCISE
In this study, the directional exercise was carried out 2 times a day and lasts for 10 min each time. It can be done for 30 directional movements at a time, before breakfast at 9 am, also, before lunch at 12 pm and before dinner at 7 pm.

## RELIABILITY OF TOOLS
Reliability was assessed using the test-retest method. Pearson's correlation coefficient was found to be 0.94.

## PILOT STUDY
The pilot study was conducted at Sane Guruji Adarsh Vidya Niketan Thergaon, Pune. The pilot study was conducted in September (21/09/2024 to 28/09/2024) for one week.

## PROCEDURE FOR DATA COLLECTION
After obtaining the permission from the Sane Guruji Adarsh Vidya Niketan Thergaon, Pune, for conducting the study. Experimental and control group was selected from the Sane Guruji Adarsh Vidya Niketan. The researcher assessed their level of joint pain with the Numeric Pain Rating Scale. Information about the exercise was given to the samples of the experimental group. The working women with joint pain were made to perform

the directional movement exercise, standing with both legs apart at a width roughly equal to that of the shoulder.

## DATA ANALYSIS:

### Section I

**Description of samples (working women) based on their personal characteristics**

**Table 1: Description of samples (working women) based on their personal characteristics in terms of frequency and percentage N=30, 30**

| Demographic variable | Experimental | | Control | |
|---|---|---|---|---|
| | Freq | % | Freq | % |
| **Age** | | | | |
| 35-45 Years | 30 | 100.0% | 28 | 93.3% |
| 46-55 Years | 0 | 0.0% | 2 | 6.7% |
| **Marital status** | | | | |
| Single | 7 | 23.3% | 6 | 20.0% |
| Married | 20 | 66.7% | 17 | 56.7% |
| Widow | 2 | 6.7% | 4 | 13.3% |
| Divorced | 1 | 3.3% | 3 | 10.0% |
| **Religion** | | | | |
| Hindu | 24 | 80.0% | 29 | 96.7% |
| Muslim | 2 | 6.7% | 1 | 3.3% |
| Cristian | 4 | 13.3% | 0 | 0.0% |
| **Educational status** | | | | |
| Primary | 0 | 0.0% | 1 | 3.3% |
| Secondary | 2 | 6.7% | 4 | 13.3% |
| Higher Secondary | 28 | 93.3% | 25 | 83.3% |
| **Occupation** | | | | |
| Private employee | 27 | 90.0% | 26 | 86.7% |
| Labourer | 3 | 10.0% | 4 | 13.3% |
| **Type of work** | | | | |
| Sedimentary | 30 | 100.0% | 29 | 96.7% |
| Heavy work | 0 | 0.0% | 1 | 3.3% |
| **Family income** | | | | |
| <Rs. 10,000 | 1 | 3.3% | 1 | 3.3% |
| Rs.10,001-20,000 | 6 | 20.0% | 16 | 53.3% |
| Rs.20,001-30000 | 21 | 70.0% | 10 | 33.3% |
| > RS.30,001 | 2 | 6.7% | 3 | 10.0% |
| **Dietary habits** | | | | |
| Vegetarian | 12 | 40.0% | 17 | 56.7% |
| Non-vegetarian | 13 | 43.3% | 6 | 20.0% |
| Mixed | 5 | 16.7% | 7 | 23.3% |

**Table 1 cont.**

| Demographic variable | Experimental | | Control | |
|---|---|---|---|---|
| | Freq | % | Freq | % |
| **Pain status** | | | | |
| Acute pain | 15 | 50.0% | 18 | 60.0% |
| Chronic pain | 15 | 50.0% | 12 | 40.0% |
| **Duration of pain** | | | | |
| Below 2 years | 13 | 43.3% | 16 | 53.3% |
| 2-4 years | 16 | 53.3% | 14 | 46.7% |
| Above 4 years | 1 | 3.3% | 0 | 0.0% |
| **Are you consuming pain killers** | | | | |
| Yes | 24 | 80.0% | 18 | 60.0% |
| No | 6 | 20.0% | 12 | 40.0% |

Table 1 shows that, in experimental group, all of the working women had age 35-45 years, 66.7% of them were married, 80% of them were Hindu, 93.3% of them had higher secondary education, 90% of them were private sector employees, all of them had sedimentary work, 70% of them had family income Rs. 20001-30000, 43.3% of them were non-vegetarian, 50% of them had acute pain and 50% of them had chronic pain, 53.3% of them had pain for 2 to 4 years, 80% of them were consuming pain killers.
In control group, 93.3% of them had age, 56.7% of them were married, 96.7% of them were Hindu, 83.3% of them had higher secondary education, 86.7% of them were private sector employees, 96.7 of them had sedimentary work, 53.3% of them had income Rs.10001-20000, 56.7% of them were vegetarian, 60% of them had acute pain, 53.3% of them had pain for less than 2 years, 60% of them were consuming pain killers.

## Section II

**Analysis of data related to joint pain among working women in selected area**

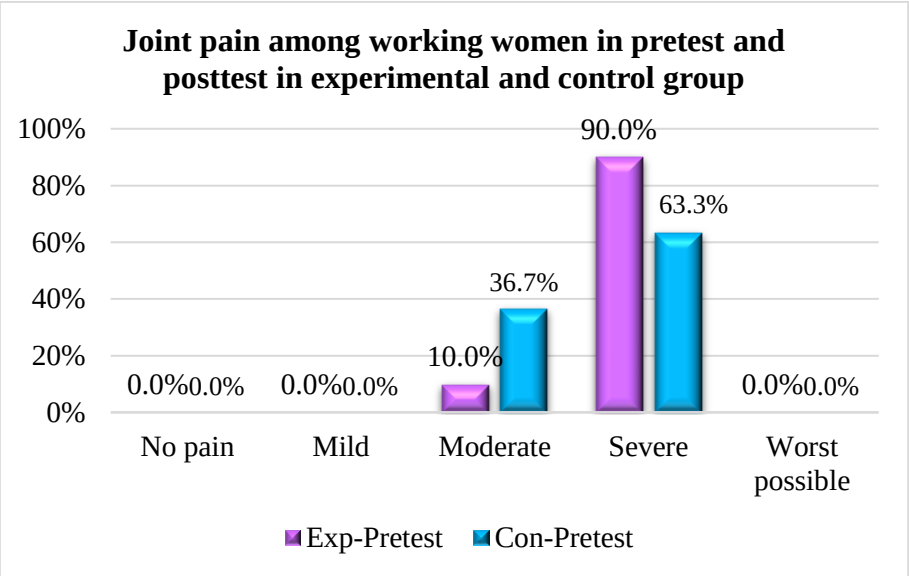



**Figure 1: Joint pain among working women in selected area**

Figure 1 shows that, in experimental group, 10% of the working women had moderate joint pain and 90% of them had severe joint pain in pretest. In control group, 36.7% of the working women had moderate joint pain and 63.3% of them had severe joint pain in pretest.

## Section III

**Analysis of data related to the effectiveness of directional movement exercise on level of joint pain on working women in experimental group**

**Table 2: Effectiveness of directional movement exercise on level of joint pain on working women in experimental groups. N=30, 30**

| Joint pain | Experimental | | | | Control | | | |
|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | Pretest | | Posttest | |
| | Freq | % | Freq | % | Freq | % | Freq | % |
| No pain | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Mild | 0 | 0.0% | 12 | 40.0% | 0 | 0.0% | 0 | 0.0% |
| Moderate | 3 | 10.0% | 18 | 60.0% | 11 | 36.7% | 11 | 36.7% |
| Severe | 27 | 90.0% | 0 | 0.0% | 19 | 63.3% | 19 | 63.3% |
| Worst possible | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |

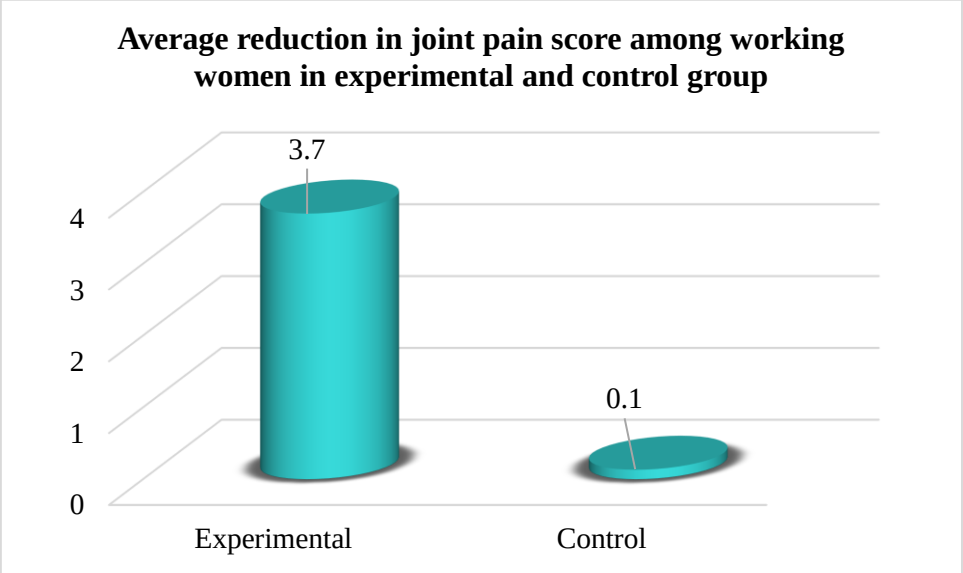
Table 2 shows that, in experimental group, 10% of the working women had moderate joint pain and 90% of them had severe joint pain in pretest. In posttest, 40% of them had mild join pain at all, 60% of them moderate joint pain. In control group, 36.7% of the working women had moderate joint pain and 63.3% of them had severe joint pain in pretest and posttest. This indicates that the joint pain among working women reduced remarkably after directional movement exercise.

**Table 3: Paired t-test for the effectiveness of directional movement exercise on level of joint pain on working women in experimental group**

| | Mean | SD | T | df | p-value |
|---|---|---|---|---|---|
| Pretest | 7.7 | 1.0 | 18.6 | 29 | 0.000 |
| Posttest | 4.0 | 1.2 | | | |

Table 3 shows that, Researcher applied paired t-test for the effectiveness of directional movement exercise on level of joint pain on working women in experimental group. Average joint pain score in pretest was 7.7 which reduced to 4 in posttest. T-value for this test was 18.6 with 29 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average join pain in posttest is significantly less than that in pretest. It is evident that the directional exercise is significantly effective in reducing the joint pain among working women.

**Two sample t-test for the comparison of reduction in joint pain score among working women in experimental and control group**




Researcher applied two sample t-test for the comparison of reduction in joint pain score among working women in experimental and control group. Average reduction in joint pain score in experimental group was 3.7 which was 0.1 in control group. T-value for this test was 16.7 with 58 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average reduction in join pain in experimental group is significantly higher than that in control group. It is evident that the directional exercise is significantly effective in reducing the joint pain among working women.

## DISCUSSION

A quasi-experimental study was conducted in China in July 2019. This was a two-group, superiority, quasi-experimental trial. The purpose of this study was to assess the efficacy of a home-based exercise intervention (HBEI) aimed at alleviating KOA symptoms and enhancing the physical capabilities of older patients.
In total, 171 patients (IG: n = 84, CG: n = 87) were included. Data were collected from 141 patients with an average age of 68 (ranging from 60 to 86 years) who completed the 12-week study (IG: n = 71, CG: n = 70). No significant differences between groups were found in any outcome measures at the start. At week 12, the pretest/posttest changes showed significant between-group differences in reductions in pain intensity (– 1. 60 (CI, – 2. 75 to – 0. 58)) and stiffness (– 0. 79 (CI, – 1. 37 to – 0. 21)), with the IG showing notably greater improvements in both areas compared to the CG. The IG also demonstrated significantly better results in all secondary outcomes than the CG.[9]
Similarly, the present study was conducted to assess the effect of directional movement exercise on joint pain among working women at selected area. In this study, the numerical pain rating scale is used to assess the level of join pain. The researcher demonstrated directional movement exercise daily for one week after one week. The post-test was done by researcher using numeric pain rating scale, where the data was analysed by descriptive and interference statistics study result found that major findings related to level of joint pain among working women with joint pain.

## SUMMARY

The aim of the study was to assess the effect of directional movement exercise on joint pain among working women at selected area at kai Nagnath Maruti Gadsingh Guruji Junior College, Krishnanagar, Pune.
Research method adopted for the present study was Quasi experimental, Pre-test Post-test design. The settings for this study at kai Nagnath Maruti Gadsingh Guruji Junior College, Krishnanagar, Pune.
Based on the directional movement exercise the joint pain among working women in experimental group reduced significantly more than that in control group. It is evident that the directional movement exercise is significantly effective in improving the joint pain among the working women with joint pain.

## CONCLUSION

The study concluded that directional movement exercise to the working women with joint pain was effective in reducing the joint pain. This alternative therapy was not only cost effective but also easy to follow. The working women with joint pain can include this therapy in their routine activities. The old working women leisure time may be enough and utilized for doing these directional movement exercise.

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