

# A Quasi - Experimental Study to Assess the Effectiveness of Isotonic Exercises on Functional Performance among Elderly Patients with Knee Osteoarthritis in Selected Old - Age Home of Delhi NCR

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**Abstract:** **Introduction:** A study was done to assess the effectiveness of isotonic exercises on functional performance among the elderly patient with knee osteoarthritis selected old age home of Delhi/ NCR. **Background:** At present survey says that more than 50% of old age people are suffering from joint pain and 25% from cardiovascular diseases and remaining from other health problems, hence exercise is the best method to treat knee osteoarthritis. **Objectives:** (1) To assess the functional performance among patients with knee osteoarthritis the experimental and control group. (2) To evaluate the effectiveness of isotonic exercise on functional performance with knee osteoarthritis experimental group. (3) To determine the association between functional performance of experimental group with demographic variable. (4) To determine the association between functional performance of control group with demographic variable. **Method:** An evaluative approach with Quasi Experimental Non-Equivalent Pre-Test Post-Test Design with intervention was used for this study. The sample consists of 30 elderly people i.e., 15 in experimental group and 15 in control group were selected by using non-probability purposive sampling technique. The functional assessment scale was developed to assess the ability of the samples to perform the activities before & after the intervention. The collective data was analyzed by using descriptive and inferential statistics. **Results:** The result showed that there was a significant difference between pre-test & post-test functional assessment scale score as assessed by the unpaired t-test value at 9.56 at 0.05 level of significance which is higher than the table value at df (28). Hence it is statistically interpreted that isotonic exercises are effective in improving the functional performance of elderly patients of knee osteoarthritis.

**Keywords:** Isotonic exercises, functional performance scale.

## 1. Introduction

Osteoarthritis is the oldest and most common chronic illness known to mankind. Arthritis of the knee is the most common type and is the leading cause of disability and impaired mobility in the majority of the elderly, which is associated with progressive destruction of articular. Inactive lifestyle and poor physical fitness, is a cause of osteoarthritis progression. The use of medication and anti-inflammatory drugs may help patients with a variety of side effects. Exercise as a non pharmacological therapy in osteoarthritis of the knee concluded that exercise can reduce pain, improve performance, improve quality of life and other things get better.

### Problem Statement

“A quasi-experimental study to assess the effectiveness of isotonic exercises on functional performance among elderly patient with Knee osteoarthritis in selected old-age home of Delhi NCR.”

### Objectives of the study

- 1) Assess the functional performance among patients with knee osteoarthritis in the experimental and control group.
- 2) Evaluate the effectiveness of isotonic exercise on functional performance with knee osteoarthritis in experimental group.
- 3) Determine the association between functional performance of experimental group with demographic variable.

- 4) Determine the association between functional performance of controlled group with demographic variable.

### Hypothesis

**H<sub>1</sub>** – There is a significant difference between pre & post interventional functional assessment score regarding functional performance of elderly patient with knee osteoarthritis in experimental group as measured by functional assessment scale at 0.05 level of significant.

**H<sub>2</sub>**– There is no significant difference between pre & post interventional functional assessment score regarding functional performance of elderly patient with knee osteoarthritis in control group as measured by functional assessment scale at 0.05 level of significant.

**H<sub>3</sub>**– There is a significant difference between post interventional functional assessment score regarding functional performance of elderly patient with knee osteoarthritis in experimental group and control group as measured by functional assessment scale at 0.05 level of significance

**H<sub>3</sub>**– There is a significant association between post test interventional score regarding functional performance of elderly patient with knee osteoarthritis with selected demographic variables in experimental group at 0.05 level of significant.

**H<sub>4</sub>**– There is a significant association between post test interventional score regarding functional performance of elderly patient with knee osteoarthritis with selected demographic variables in experimental group at 0.05 level of significant.

The theoretical framework of the study is based on modified Ida Jean Orlando Process Model (1972)

## 2. Methodology

In this study evaluative approach was used. The study was conducted in selected old age home, Delhi NCR. The sample consist of 30 elderly people i.e. 15 in experimental group and 15 in control group were selected by using non-probability purposive sampling method. The dependent variable was functional performance of elderly patient with knee osteoarthritis assessed by functional assessment scale and independent variables – isotonic exercise

The researcher designed a tool consisting of sample demographic variables and functional assessment scale. The rating scale was developed to assess the ability of the subject to perform activities before and after the intervention. There are 15 physical activities such as walking, sitting, standing, climbing, lifting and bending etc. The reliability of the functional assessment scale was calculated by Cronbach's alpha method and found to be  $r = 0.76$  which is indicate that tool is highly reliable. After conducting pilot study, the final study was carried out on 30 elderly patients with knee osteoarthritis i.e. 15 experimental group and 15 control group from selected old age home, Delhi NCR. The pre-interventional assessment was done with functional assessment scale for both the group i.e. experimental and control group and intervention (isotonic exercise) was given to only experimental group of elderly patients with knee osteoarthritis for 30 days continuously. After 30 days post assessment was done for the both groups. The data collected was analyzed by using descriptive and inferential statistics.

## 3. Major Findings

**Section I-** Finding related to frequency and percentage distribution of elderly patient with knee osteoarthritis in terms of demographic variables.

- Considering the age in experimental group majority of the i.e. 46.6% elderly knee osteoarthritis patient were under the age category of 71-75 years where as in control group it was 33.3% (5) elderly knee osteoarthritis patients were under the age category of 66-70 years.
- Regarding the gender in experimental group majority of the sample i.e. 40% were male and 60% were female, whereas in control group majority i.e. 66.6% were female and 33.3% were male.
- Considering the educational status in experimental group majority of the sample i.e. 46.6% were received the primary education, whereas in control group majority i.e. 53.3% were received no formal education.
- Regarding the income of the elderly knee osteoarthritis patient majority were below 50,000 i.e. 80% in experimental group and 86.6% in control group.
- Considering the dietary pattern in experimental group majority of the 46.6% were vegetarian whereas in control group 40% were non-vegetarian
- Regarding the years of suffering from knee osteoarthritis in experimental group majority of the 60% were suffering from >3 years to 5 years, whereas in

control group 40% were also suffering from >3 years to 5years

- Considering the regular exercise in experimental group majority of the 73.3% were not doing the exercise, whereas in control group 60% were not doing.
- Regarding the family history of osteoarthritis in experimental group majority of the 60% where as in control group 73.3% were having the family history
- Considering the taking of medication in experimental group majority of the 46.6% were taking allopathic and ayurvedic medication, whereas in control group 46.6% were taking allopathic medication.

**Section II -** Finding related to effectiveness of isotonic exercises in experimental group of elderly patients with knee osteoarthritis, **N=15**

	Experimental group			t-value
	Mean	Mean difference	Standard deviation	
Pre test	41.6	18	2.71	15.01*
Post test	23.6		3.95	

df (14)t = 1.76 at 0.05 level of significance

The data in the table depicts that in experimental group mean post test of functional assessment scale score (41.6) of elderly patient is less than the mean pre test of functional assessment scale score (23.6), with the mean difference of 18. The obtained mean difference was found to be statistically significant at 0.05 level. The calculated 't' value is 15.01 at 0.05 level of significance which is higher than the table value at df (14). Hence, it concludes that isotonic exercise was effective in improving the functional performance of elderly patient with knee osteoarthritis.

## References

- [1] Bosomworth NJ. Exercise and knee osteoarthritis: benefit or hazards. Canadian family physician 2009.
- [2] Suddhartha and Brunner. Medical Surgical Nursing. 11<sup>th</sup> edition New Delhi. Jaypee Brother 2000.
- [3] Black M Joyce. Medical surgical Nursing. 8<sup>th</sup> edition New Delhi. Elsevier publisher.2009.
- [4] Serkan Bakirhan. Bayram Univer. Knee version associated with anterior knee pain. Journal of orthopaedic and sports physical therapy 2016
- [5] Ozyemisci-Taskiran O, Özdoğan V, Sepici V, et al. : Test-retest and inter-rater reliability of isokinetic ankle dorsiflexor and plantar flexor strength measurement in healthy adults. *Turk J Phys Med Rehabil*, 2013, 59: 32–35
- [6] Gao F, Ren Y, Roth EJ, et al. : Effects of repeated ankle stretching on calf muscle-tendon and ankle biomechanical properties in stroke survivors. *Clin Biomech (Bristol, Avon)*, 2011, 26: 516–522.
- [7] Kang MK, Nam BR, Lee YS, et al. : Relationship between the application of TENS to the lower limbs and balance of healthy subjects. *J Phys Ther Sci*, 2013, 25: 1079–1081
- [8] Yuk GC: The acute effects of 15 minutes plantarflexor static stretch in quiet stance. *J Korean Soc Phys Med*, 2012, 7: 191–197.
- [9] Soda N, Ueki T: Electromyography study of forward-stepping motion. *J Phys Ther Sci*, 2013, 25: 615–617
- [10] Sears ML and Mead A; A major pathway for the regulation of IOP. *Int Ophthalmol Clin* 6: 1983; 201-

209. 14. Florian Rufer et al. Comparison of the influence of aerobic and resistance exercise of the upper and lower limb on intraocular pressure. *Acta Ophthalmol.* 2014; 92: 249–252.

- [11] Bouhuys, A., Pool, J., Binkhorst, R. A., and Van Leeuwen, P: Metabolic acidosis of exercise in healthy males, *Amer. J. Physiol.* 1966; 2: 1040.
- [12] Arijita Banerjee, InduKhurana and C. S. Dhull, 2016. “Effect of ocular perfusion pressure to isometric handgrip test in patients with primary open angle glaucoma (poag): a test for autonomic activity”, *International Journal of Current Research*, 8, (06), 33064-33067