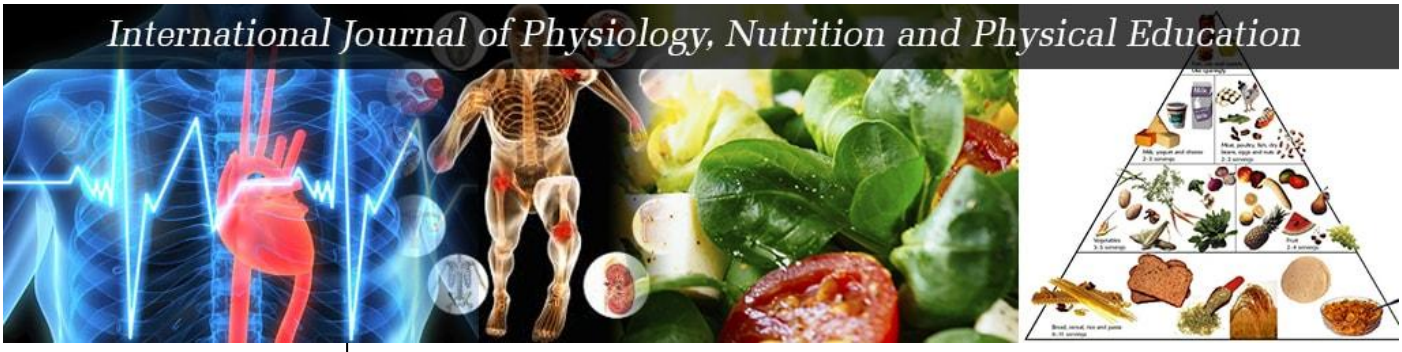


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# Efficacy of knee traction with stimulation and without stimulation on physical activity level among knee osteoarthritis patients

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**Abstract**
The purpose of the research was to find out the effect of knee traction with stimulation and without stimulation on physical activity level among knee osteoarthritis. To achieve the purpose of this research, 30 patients in the age group of 55 to 65 years. The selected subjects were divided into three groups of ten each. Thus, knee traction with stimulation, knee traction without stimulation were selected as independent variables and physical activity level were selected as dependent variables. The treatment period was delimited to twelve weeks, in knee traction with stimulation, knee traction without stimulation were given to respective experimental groups (Group-I & Group-II). The group-III acted as control and did not participate in any systematic treatment. Data were collected before and after treatment. The collected data were statistically treated by using ANCOVA. When the obtained 'F' ratio was significant, Scheffe's post hoc test was used to find out the significant paired mean differences. In all the cases, 0.05 level of confidence was fixed to test the significance. It is inferred that the twelve weeks of knee traction with stimulation treatment have significantly improved physical activity level. The result further reveals that the knee traction with stimulation group has shown significant improvement in physical activity level as compared to the knee traction without stimulation group. Participation in knee traction with stimulation, knee traction without stimulation resulted in a significant development in experimental groups when compared to control group.

**Keywords:** Knee traction, stimulation, knee osteoarthritis, physical activity level, KOOS questionnaire

## Introduction
Degeneration of the joints, particularly the articular cartilage and subchondral bone, results in a collection of mechanical abnormalities called osteoarthritis (OA), also known as degenerative arthritis, degenerative joint disease, or osteoarthrosis (Dashnyam *et al*. 2021) [3].
Osteoarthritis used to be thought of as a degenerative condition entirely brought on by the normal ageing process of cartilage. The condition is now understood to be more dynamic and complex, including a variety of variables that influence the entire joint (Clouet *et al*. 2009) [2]. Every synovial joint can develop osteoarthritis, although the hip, knee, hand, foot, and spine are the most frequently affected (Martin & Buckwalter *et al*. 2003) [8].
Numerous definitions of osteoarthritis as a condition or aging-related change have been offered. Incidence of osteoarthritis increases with age, especially beyond the age of 60, and is twice as common in women as in males (Leskinen *et al*. 2012) [7]. According to estimates, symptomatic osteoarthritis affects 18.0 percent of women and 9.6 percent of men worldwide who are 60 years or older. Even at a younger age (45 years and above), these estimates for radiographic knee osteoarthritis are slightly higher at 14.1 percent for men and 22.8 percent for women. Osteoarthritis in the knee is twice as common as in the hip (Aresti *et al*. 2016) [1]. The most popular radiographic classification criteria for identifying and grading osteoarthritis is the Kellgren and Lawrence (K & L) classification criteria. These standards were established by the World Health Organization (WHO) as the norm for epidemiological investigations of osteoarthritis (Kellgren *et al*. 1963) [5].
Pain is one of the primary symptoms seen in individuals with knee joint degenerative arthritis, and there is a strong association between pain and restricted physical activity. In patients with osteoarthritis, activities that involve the knee, physical issues may result from the illness.

Functioning difficulties, discomfort, and a decline in the quality of life itself is the source of psychosocial issues.

**Knee Traction**

Knee traction helps patients with degenerative arthritis reduce discomfort and improve their daily activities, and it will eventually be used as a treatment to strengthen the joint structure. On the other hand, India has extremely few studies on knee joint traction. However, because it necessitates surgery and necessitates wearing the device during the day, external fixation devices are difficult to apply to a significant number of people. Therefore, this study looked at how knee joint traction therapy affected individuals with knee arthritis in terms of pain, physical function, and depression (Lee *et al*. 2019) [6]

**Stimulation**

Electrical stimulation (ES) is a noninvasive therapy method that uses electrodes applied to the skin to provide different stimuli superficially. It is frequently used for teaching, treatment, and other reasons in a variety of industries. Different ES techniques exist, such as transcutaneous electrical nerve stimulation (TENS), neuromuscular electrical stimulation (NMES), interferential current (IFC), pulsed electrical stimulation (PES), noninvasive interactive neurostimulation (NIN), etc. The choice of high-frequency (50-100 Hz) or low-frequency (2-10 Hz) delivery for TENS is also essential for effectiveness. Testing the therapy effects has seen a fast increasing amount of interest over the past few years, but no consensus has been obtained (Zeng *et al*. 2015) [9].

**Methodology**

The purpose of the study was to find out the effect of knee traction with stimulation and knee traction without stimulation on physical activity level among knee arthritis patient. The subjects selected were thirty patients of knee osteoarthritis in the age group of 55 to 65 years. Knee radiographies of patients were taken and classified according to Kellgren-Lawrence classification. The subjects were female subjects were selected from Spot hospital, chennai to participate in this cross-sectional investigation. The selected subjects were assigned into two experimental group and a control group. Each group consisted of ten subjects (n=10). Group I acted as Experimental Group I - (knee traction with stimulation), Group II acted as Experimental Group II - (knee traction without stimulation) for a period of 12 weeks and Group III acted as a Control group. Pre-test was conducted for all the subjects on physical activity level using KOOS questionnaire. For both experimental group, treatment procedure were explained and demonstrated to the subjects. After treatment Post test was conducted.

**Results on physical activity level**

**Table I:** Computation of Analysis of Covariance on Physical Activity Level

| Test | Exp Group 1 | Exp Group 2 | CG | SV | SS | df | MS | F |
|---|---|---|---|---|---|---|---|---|
| Pre test | 2.77 | 2.98 | 2.70 | Between | 0.42 | 2 | 0.208 | 1.91 |
| | | | | Within | 2.94 | 27 | 0.11 | |
| Post test | 3.10 | 2.80 | 2.47 | Between | 2.00 | 2 | 1.00 | 9.68 |
| | | | | Within | 2.78 | 27 | 0.10 | |
| Adjusted | 3.13 | 2.71 | 2.54 | Between | 1.89 | 2 | 0.94 | 13.32 |
| | | | | Within | 1.842 | 26 | 0.07 | |

*Significant at 0.05 level of confidence for df (2, 27) is 3.35 & (2, 26) is 3.37

The table I shows that the obtained F value on pre test scores on Physical Activity Level was 1.91 lesser than the required value of 3.35 to be significant at 0.05 level. This proves that there is no significant difference between the groups at the initial stage and the randomization at the initial level are equal. The obtained posttest F value of 9.68 was greater than the required F value of 3.35. Further the obtained adjusted F value of 13.32 was greater than the required F value of 3.37. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test.

**Table II:** Scheffe's Post Hoc Test on Physical Activity Level

| Exp Group 1 | Exp Group 2 | CG | MD | CI |
|---|---|---|---|---|
| 3.13 | 2.71 | - | 0.43 | 0.30 |
| 3.13 | - | 2.54 | 0.60 | 0.30 |
| - | 2.71 | 2.54 | 0.17 | 0.30 |

*Significant at 0.05 level of confidence

The multiple mean comparison showed in Table II proved that there were significant differences exists between the adjusted means of Experimental Group 1 (knee traction with stimulation) and Experimental Group 2 (knee traction without stimulation) was 0.43, Experimental Group 1 and control groups was 0.60. Since, the mean differences were higher than the confidence interval value of 0.30 at 0.05 level of significant. There was no significant difference between Experimental Group 2 (knee traction without stimulation and control Group as the mean difference were lesser than the obtained confidence interval of 0.30.

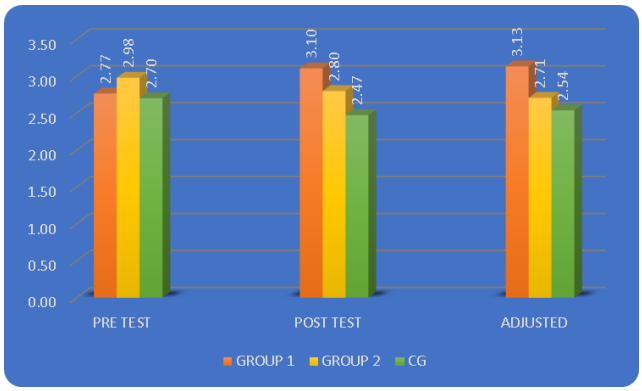


**Fig 1:** Experimental Group

**Conclusion**

Within the limitations and delimitations of this study, the following conclusions were drawn based on the results of the study. It was concluded that the Experimental Group 1 (knee traction with stimulation) and Experimental Group 2 (knee traction without stimulation) significantly improved physical activity level when compared to control group. However, there was no significant difference between Group II (knee traction without stimulation) and control group. Hence, it is

put forward that, performed appropriately, knee traction with stimulation can significantly improve the physical activity level on experimental group compared to the control group.

**References**


1. Aresti N, Kassam J, Nicholas N, Achan P. Hip osteoarthritis. BMj, 2016, 354.
2. Clouet J, Vinatier C, Merceron C, Pot-vaucel M, Maugars Y, Weiss P, *et al*. From osteoarthritis treatments to future regenerative therapies for cartilage. Drug discovery today. 2009;14(19-20):913-925.
3. Dashnyam K, Lee JH, Singh RK, Yoon JY, Lee JH, Jin GZ, Kim HW. Optimally dosed nanoceria attenuates osteoarthritic degeneration of joint cartilage and subchondral bone. Chemical Engineering Journal. 2021, 422, 130066.
4. Di Cesare A, Di Meglio P, Nestle FO. The IL-23/Th17 axis in the immunopathogenesis of psoriasis. Journal of Investigative Dermatology. 2009;129(6):1339-1350.
5. Kellgren JH, Lawrence JS, Bier F. Genetic factors in generalized osteo-arthrosis. Annals of the rheumatic diseases. 1963;22(4):237.
6. Lee DK. The effect of knee joint traction therapy on pain, physical function, and depression in patients with degenerative arthritis. The Journal of Korean Physical Therapy. 2019;31(5):317-321.
7. Leskinen J, Eskelinen A, Huhtala H, Paavolainen P, Remes V. The incidence of knee arthroplasty for primary osteoarthritis grows rapidly among baby boomers: A population-based study in Finland. Arthritis & Rheumatism. 2012;64(2):423-428.
8. Martin JA, Buckwalter JA. The role of chondrocyte senescence in the pathogenesis of osteoarthritis and in limiting cartilage repair. JBJS, 2003;85(suppl_2):106-110.
9. Zeng C, Yang T, Deng ZH, Yang Y, Zhang Y, Lei GH. Electrical stimulation for pain relief in knee osteoarthritis: systematic review and network meta-analysis. Osteoarthritis and cartilage. 2015;23(2):189-202.