



EFFECT OF PHYSICAL ACTIVITY PROGRAM ON LEG STRENGTH AND HEALTH STATUS OF KNEE OSTEOARTHRITIS PATIENTS

Mr. Shafi Mohammad, Research Scholar
Dr. Brij Kishore Prasad, Assistant Professor
Department of Health Science,
LNIPE, Gwalior (M.P.)

Abstract

Osteoarthritis is a pathological condition defined by loss of articular cartilage. Knee OA typically have knee pain, joint stiffness, deficits in proprioception, and decreased muscle strength (force-generating capacity). As OA grows, pain could be further unrelenting and may emerge while resting and in the night also. Hardness in the morning is usually associated with inflammation. For this study, total fifty (N=50) male knee osteoarthritis patients were purposively selected from Etawah (U.P.). The age of all the subjects was ranging from 45-60 years. All the subjects were randomly divided into two groups (Experimental Group-25, Control Group-25). Physical activity program is followed by the patients for 14 Weeks (6 days/week) and total time duration of every session was 25 to 40 minutes including warming up, strengthening exercises, Thera Tube exercises and cool down exercises. The variables selected for the study were leg strength and functional status of knee osteoarthritis patients. Leg Strength and functional status of knee OA patients were measured by leg dynamometer and WOMAC (Western Ontario and McMaster Universities) index of knee osteoarthritis. Findings of the present study support the usefulness of prescribing various physical activity programs with general exercise, Thera-Tube and cool down exercises to the patients with osteoarthritis of the knee as a method to enhance their leg strength and functional status of knee osteoarthritis patients.

Keywords: Inflammation, WOMAC index, Strengthening exercises and Thera Tube.

Introduction

Osteoarthritis is a pathological condition defined by loss of articular cartilage. Knee osteoarthritis (OA) is a common musculoskeletal disorder, the prevalence of which increases with age. The chief indicator of the knee OA is pain and the pain usually comes with joint use. As OA grows, pain could be further unrelenting and may emerge while resting and in the night also. Hardness in the morning is usually associated with inflammation. Knee OA patients explain the difficulty of standing up from a chair and movement sloth. In other words Individuals with knee OA typically have knee pain, joint stiffness, deficits in proprioception, and decreased muscle strength (force-generating capacity). Pain is the predominant symptom of knee OA, and the pain is generally related to joint use and it is relived by rest. OA causes include previous joint injury, abnormal joint or limb development, and inherited factors. Risk is greater in those who are overweight, have legs of different lengths, or have jobs that result in high levels of joint stress. Osteoarthritis develops as cartilage is lost and the underlying bone becomes affected. Systemic factors that increase the vulnerability of the joint to osteoarthritis include increasing age, female sex, and possibly nutritional deficiencies. The main features that suggest the diagnosis include pain, stiffness, reduced movement, swelling, and increased age. There are many ways to deal with OA but non pharmacological management is the key stone. The targets of treatments include decreased pain, increased muscle power and stamina and better functioning and class of life. Exercise method of treatment plays a crucial role in the conventional management of knee OA. A moderate exercise program that includes low-impact aerobics and power and strength training has benefits for people with knee osteoarthritis. Rheumatology (ACR) suggests strengthening to deal with indications of Osteoarthritis. Many documents exemplify that strengthening of muscles might heal the pain; improve the functioning and quality of life in knee OA.



Methodology

Total fifty (N=50) male knee osteoarthritis patients were purposively selected from Etawah (U.P.). The age of all the subjects was ranging from 45-60 years. All the subjects were randomly divided into two groups (Experimental Group-25, Control Group-25). Physical activity program is followed by the patients for 14 Weeks (6 days/week) and total time duration of every session was 25 to 40 minutes including warming up, strengthening exercises, Thera Tube exercises and cool down exercises. The variables selected for the study were leg strength and functional status of knee osteoarthritis patients. Leg Strength and functional status of knee OA patients were measured by leg dynamometer and WOMAC (Western Ontario and McMaster Universities) index of knee osteoarthritis. All the patients were informed about the objectives and procedure of the study beforehand. Pre- Post Randomised Group Experimental design was used for the study. To ensure the reliability of data, sufficient number of trials was given to each subject. The gathered data was analyzed through SPSS and dependent 't' test was used and level of significance was set at 0.05.

Results

The results of the study after analyzing the pre and post data of 14 weeks physical training program on selected variables of osteoarthritis patients are shown in the below given tables:

TABLE No. 1
COMPARISON OF PRE AND POST VALUES OF LEG STRENGTH OF GROUPS

Group	Test	Mean	Standard Deviation	Mean Difference	Standard Error	t ratio	p-value
Experimental	Pre	91.90	14.45	7.04	3.33	2.11*	0.45
	Post	98.94	14.74				
Control	Pre	95.02	16.68	3.98	4.47	0.89	0.38
	Post	91.04	17.37				

*Significant at 0.05 level of significance $t_{(24)(0.05)} = 2.06$

Table no.1 shows that significant difference in pre and post test results of leg strength of the experimental group was found as the obtained 't' value 2.11 is significantly higher than the tabulated 't' value 2.06 at the 0.05 level of significance. In case of control group, no significant difference was found in pre and post test results of leg strength of control group as the obtained 't' value 0.89 is significantly lower than the tabulated 't' value 2.06 at the 0.05 level of significance.

TABLE No. 2
COMPARISON OF PRE AND POST VALUES OF PHYSICAL STATUS OF GROUPS

Group	Test	Mean	Standard Deviation	Mean Difference	Standard Error	t ratio	p-value
Experimental	Pre	42.16	10.43	2.04	0.95	2.13*	0.04
	Post	40.12	8.70				
Control	Pre	39.98	8.50	1.63	2.09	0.77	0.44
	Post	41.61	7.37				



*Significant at 0.05 level of significance $t_{(24)(0.05)} = 2.06$

Table no.2 shows that significant difference in pre and post test results of physical status of experimental group was found as the obtained 't' value 2.13 is significantly higher than the tabulated 't' value 2.06 at the 0.05 level of significance. In case of control group, no significant difference was found in pre and post test results of pain of control group as the obtained 't' value 0.77 is significantly lower than the tabulated 't' value 2.06 at the 0.05 level of significance.

Discussion of Findings

After going through the analysis, In case of leg strength, in pre-test and post-test values of experimental group of knee osteoarthritis patients after 14 weeks of physical activity program significant difference was found as it can be seen in table no.1 that the value of t- statistic is 2.11. This t value is significant as the tabulated value is 2.06 which is less than calculated value. In term of functional status, it can be seen in table no.2 that the value of t- statistic is 2.13 which is greater than the tabulated value i.e. 2.06. So, in the experimental group significant difference was found in functional status of knee osteoarthritis patients. So it may be concluded that 14 weeks of physical activity program was effective in both the cases.

Conclusion

Therefore, the results and the discussion of the finding of the present study support the efficacy of prescribing various physical activity programs with general exercise, Thera-Tube and cool down exercises to the patients with osteoarthritis of the knee as a method to enhance their leg strength and functional status of knee osteoarthritis patients. Number of researches shows that the physical activity can play a role for the betterment in the leg strength and functional status of the knee osteoarthritis patients. Similar study may be undertaken to find out the effect of physical activity program on physical, physiological and psychological variable among knee osteoarthritis patients.

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